Editorial

The role of virtual reality in the development strategy of the Medical Simulation Centre: Polish experiences

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The main objective of the Centre for Medical Simulation (CMS) is to improve the quality of students' practical education. The current approach to medical simulation has been largely focused on the use of high and low fidelity simulators and their usefulness in the educational process (Munshi et al., 2015; Roberts and Cooper, 2019). With the further development of technology, work began on the use of virtual reality (VR) and its effectiveness in educating future medical staff (Watari et al., 2020), including nurses (Chen et al., 2020; Saab et al., 2021). With its advanced infrastructure and cooperation with specialists in various medical fields, CMS should also direct its development strategy to research activities.

Thanks to the project A. Mestre supported by Centro 2020, PT2020 and European Union research grant (no 41388), Centre for Medical Simulation of the University of Rzeszów had the opportunity to use a virtual patient simulation tool Body Interact (BI) in the education of future medical staff (nurses and doctors) (Mestre et al., 2022).

BI is a tool for teaching (improving clinical education), optimizing learning, and assessing the effects of these activities. The assumption of the project was the implementation of selected scenarios of clinical cases with the participation of a virtual patient. Participating in the study provided an excellent way to apply theoretical knowledge in practice by practicing clinical reasoning skills, improving the ability to diagnose and, consequently, making the right decisions regarding the patient. The clinical decisions of each scenario were made under controlled conditions under the supervision of the academic teacher conducting the classes.

Selected universities from Europe and the world participated in the project, including Portugal, Spain, Canada, the United States, Japan, Norway, and Georgia. On the part of the University of Rzeszów, the study covered over 220 students of the College of Medical Sciences, including 90 students of the 5th year of the faculty of medicine (full-time and part-time studies) during neurosurgery classes, and 130 students of the 1st year of nursing (1st and 2nd degree, full-time and part-time studies) during physical examination and intensive care classes. The project was carried out under special conditions – during the SARS-CoV-2 coronavirus pandemic, which meant that the entire study was conducted remotely using the ZOOM and MS Teams platforms. As a part of the study, students completed two evaluation questionnaires (before and after classes), in which they defined *i.e.*, to what extent classes with a virtual patient fill the gap in the teaching and learning process, what extent they enable the identification of individual competency weaknesses.

The observations clearly show that the perception of the individual learning process and program integration has improved. The results indicate that BI training in small (several people) groups had a positive impact on the individual learning process, including the balance between theoretical and practical application of knowledge, development of communication skills, and evaluation of group and risk management skills. BI training also improved perceived curriculum integration, including the degree of integration of training content, the applicability of learning to clinical cases, and the ability to participate in clinical simulations. Learning activities using BI in small groups has proven to be a useful, low-risk educational strategy that can improve students' perception of individual learning processes and curricular content (Mestre et al., 2022).

The reality of teaching nurses in our CMS poses both advantages and disadvantages. Nursing students need to practice their skills in various clinical conditions, which can be difficult nowadays. CMS ensures great openness and independence in this regard. The variety of clinical situations brings a greater perspective and understanding of this profession. In addition, learning in simulated conditions allows them to work safely in the future. Unfortunately, our own experience shows that students, regardless of the scenario, have a huge problem with „getting into the role". On the other hand, after completing their education, a nurse should be aware of the differences and specificity of working with a real patient and his or her needs. From the point of view of continuity of education, it is also important to ensure adequate CMS funding, maintenance of used equipment, and continuous improvement of teachers.

To sum up, thinking about the near-future development of the strategy of the Centre for Medical Simulation will be inextricably linked to the development of alternative teaching methods, such as those created by virtual reality. It should be

assumed that the development of these tools will gradually create competition on the medical market, resulting in these tools becoming more affordable. At the same time, it is advisable to emphasize that no simulation can replace working with a living patient in a real environment, especially in the professions of future medical staff.

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