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МАТЕРІАЛИ
З НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ З МІЖНАРОДНОЮ УЧАСТЮ
"МЕДИЧНА СИМУЛЯЦІЯ- ПОГЛЯД У МАЙБУТНЄ"

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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.

М 42 Медична симуляція — погляд у майбутнє (для лікарів, науковців та молодих учених): наук.-практ. конф. з міжнар. участю.

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Integrating PBL into a Special Histology course proved to be an effective strategy for fostering early development of critical thinking and collaborative skills among second-year medical students. The structured process not only enhanced their understanding of histological concepts but also promoted the application of these concepts to clinical problem-solving scenarios. Feedback from both students and educators highlighted the method's ability to stimulate active engagement and interdisciplinary integration. This experience demonstrates the potential of PBL to bridge foundational sciences and clinical applications, paving the way for broader adoption in preclinical medical education. Future efforts will focus on scaling this approach and assessing its long-term impact on students' clinical competency.

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MODERN POSSIBILITIES OF CONDUCTING SIMULATION CLASSES IN CONDITIONS OF LIMITED RESOURCES

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Introduction. Simulation-based education has become a cornerstone in training healthcare professionals, offering opportunities to practice clinical skills, enhance decision-making, and build teamwork without jeopardizing patient safety. However, implementing high-quality simulation classes can be resource-intensive, requiring advanced equipment, dedicated spaces, and specialized personnel. Institutions with limited resources face unique challenges in adopting this educational approach. This article explores strategies and modern solutions for conducting effective simulation classes in resource-constrained environments [1, 2].

The main part.

Simulation-based education provides a safe, controlled, and replicable environment for students to learn and practice essential skills. It bridges the gap between theoretical knowledge and clinical practice, helping students build confidence and competence. However, the high cost of simulation tools, such as high-fidelity mannequins and virtual reality systems, can be prohibitive for many institutions [2].

Challenges in Resource-Limited Settings

1. **Financial Constraints**: Advanced simulators and equipment require significant investment.
2. **Infrastructure Limitations**: Many institutions lack dedicated simulation labs or adequately equipped spaces.
3. **Faculty Expertise**: Specialized training is often required to facilitate simulation sessions effectively.
4. **Access to Technology**: Limited access to cutting-edge technology, such as virtual or augmented reality systems, hinders innovation [3, 4].

Modern Solutions for Simulation Classes with Limited Resources

1. **Low-Fidelity and Hybrid Simulations**. While high-fidelity simulators are ideal, low-fidelity models can effectively teach fundamental skills like suturing, intravenous line insertion, or cardiopulmonary resuscitation (CPR). Combining low-fidelity models with role-playing or case-based discussions creates hybrid simulations that simulate real-life scenarios without significant costs.
2. **Peer-to-Peer Learning**. In resource-constrained environments, students can act as patients, healthcare providers, or observers. This role-playing approach requires minimal equipment while fostering critical communication and decision-making skills.
3. **Mobile Simulation Units**. Mobile simulation labs equipped with essential tools can serve multiple institutions or remote locations. These units can deliver hands-on training to underserved areas, maximizing resource utilization.
4. **Open-Source Educational Resources**. Free or low-cost online platforms and open-source tools provide access to virtual simulations, clinical case scenarios, and instructional videos. Examples include platforms like OpenSim, Virtual Patients, and interactive anatomy apps.
5. **3D Printing Technology**. Affordable 3D printers can produce custom anatomical models for training. Institutions can create cost-effective replicas of organs, bones, and surgical instruments tailored to their curriculum.
6. **Task Trainers and DIY Simulators**. Simple, low-cost task trainers can be created using readily available materials. For example, homemade models for

venipuncture or intubation practice can substitute expensive commercial products.

7. **Collaborative Partnerships**. Partnerships with other educational institutions, hospitals, or non-profit organizations can provide shared access to simulation resources, equipment, and expertise.

8. **Video-Based Simulations**. Video scenarios and debriefings allow students to analyze clinical cases and decision-making processes without physical simulators. These tools can be supplemented with group discussions or interactive Q&A sessions.

9. **Blended Learning Models**. Combining online learning with hands-on practice optimizes resource use. Students can study theoretical concepts and practice basic skills virtually before attending in-person sessions for advanced training [4, 5].

Maximizing the Impact of Limited Resources

1. **Faculty Development**. Training educators to maximize the use of available resources ensures that simulation sessions are effective, even with constraints. Faculty should be skilled in creating realistic scenarios and facilitating meaningful debriefings.

2. **Scenario Customization**. Tailoring simulation scenarios to focus on high-priority learning objectives minimizes the need for advanced tools. For example, teaching communication skills or emergency response protocols can be achieved with minimal equipment.

3. **Effective Scheduling**. Sharing simulation resources among departments and scheduling sessions efficiently can maximize their use. Rotational access ensures that all students benefit from available tools.

4. **Feedback and Continuous Improvement**. Collecting feedback from students and faculty helps identify areas for improvement and ensures that simulations remain relevant and impactful [1, 3, 6].

Conclusion.

Resource constraints should not hinder the adoption of simulation-based education in medical training. By leveraging innovative approaches, low-cost alternatives, and collaborative efforts, institutions can deliver high-quality simulation experiences. These strategies not only enhance student learning but also ensure the development of competent and confident healthcare professionals, regardless of the resources available.

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