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### **THE USE OF SIMULATION TECHNOLOGIES FOR THE FORMATION OF PROFESSIONAL COMPETENCIES OF MEDICAL INSTITUTE STUDENTS IN PSYCHIATRY**

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### Abstract

Simulation-based education is not sufficiently implemented in many higher educational institutions. In the process of creating a tool for the formation and final assessment of specific competencies, we mainly rely on this pedagogical technology to support the development of psychiatry as a science.

The study presented in this article focuses on examining the learning process and the impact of simulation in psychiatry, as well as the support it provides to medical institute students in mastering the subject.

**Keywords:** Psychiatry, simulation technology, medical institute, educational process.

### ИСПОЛЬЗОВАНИЕ СИМУЛЯЦИОННЫХ ТЕХНОЛОГИЙ ДЛЯ ФОРМИРОВАНИЯ ПРОФЕССИОНАЛЬНЫХ КОМПЕТЕНЦИЙ СТУДЕНТОВ МЕДИЦИНСКОГО ИНСТИТУТА В ПСИХИАТРИИ

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### Аннотация

Симуляционное обучение во многих высших учебных заведениях не проводится в высших учебных заведениях, как это должно быть. При создании инструмента для формирования и окончательной оценки определенных компетенций мы в основном полагаемся на эту педагогическую технологию для поддержки развития этого метода в психиатрической науке.

Исследование, представленное в этой статье, сосредоточено на изучении процесса обучения и влияния, поддержке студентов медицинских институтов в изучении науки во время моделирования в психиатрии.

**Ключевые слова:** психиатрия, симуляционная технология, медицинский институт, образовательный процесс.

### Introduction

Modern medical training is undergoing an active transformation aimed at integrating theoretical knowledge with practical skills and developing the professional competence of future physicians. Psychiatric training is particularly important in this context, as working with patients suffering from mental disorders requires not only in-depth knowledge but also high levels of communication, emotional, and ethical competencies [3,7]. Mental illnesses have a wide range of manifestations—from depressive and anxiety states to psychoses and severe organic disorders—requiring students to accurately assess a patient's

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mental state, make prompt clinical decisions, and demonstrate empathy and professionalism in complex situations [1].

However, psychiatric training faces a number of objective challenges. Firstly, students' limited access to clinical practice and insufficient time for direct interaction with patients significantly hinder the development of practical skills [9]. Secondly, the ethical and legal aspects of working with psychiatric patients impose restrictions on students' independent participation in diagnosis and treatment, particularly when working with patients with acute psychotic states. Thirdly, psychological barriers, fear of potentially aggressive or unstable patient behavior, and lack of experience in assessing psychiatric symptoms can reduce the effectiveness of the educational process and the development of professional confidence in students.[6]

In these circumstances, modern simulation technologies, allowing the creation of clinical situations as close to reality as possible in a safe and controlled educational environment, are particularly important. Simulation in medical education includes the use of standardized patients (actors simulating the clinical manifestations of mental disorders), virtual simulators, interactive electronic training devices, and computer programs simulating psychiatric syndromes.[2] These technologies allow students not only to hone diagnostic and clinical reasoning skills, but also to develop communication skills, teamwork, and the ability to manage emotional reactions, which is especially important when interacting with patients with mental disorders [4].

Simulation technologies provide the opportunity for safe practice: students can make mistakes and receive immediate feedback from instructors without risking real patients. This builds confidence in students, reduces anxiety during subsequent clinical work, and promotes deeper learning through hands-on activities. Furthermore, research shows that simulations increase student motivation, interest in psychiatry, and the development of professional identity, which is especially important in settings with limited clinical experience.

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Particular attention should be paid to the interdisciplinary aspect of using simulations: they facilitate the integration of psychiatric knowledge with other areas of medicine, including internal medicine, neurology, pediatrics, and general practice. This allows students to develop a comprehensive approach to patients, taking into account psychological, social, and biological factors in assessing their condition and planning treatment [5, 8].

Thus, the introduction of simulation technologies into psychiatry education is a relevant and necessary area for the development of medical education. They ensure the effective development of practical skills, improve the quality of training for future specialists, reduce psychological barriers to working with patients, and promote the development of professional competence. In today's environment, where demands on physician training are becoming increasingly stringent and access to real-world clinical practice is limited, simulation-based teaching methods represent a key tool for improving the quality of medical education and preparing specialists for safe and professional work in psychiatry. Since the late 1990s, pedagogical changes have attempted to overcome the classical "learning paradigm," challenging the traditional pedagogical system that supports passive learning from master's degree to undergraduate [7].

Despite a number of criticisms, the concept of a "professional competence paradigm" serves one of the main goals of teaching [1]. Competence can be defined as "a complex capacity created by a professional, starting from a specialized knowledge base developed and monitored by the colleagues who make up the profession," which creates or enhances new competencies for VAZ "reflective practice within and after the movement." However, in the French context, this paradigmatic revolution has not yet occurred, including in psychiatry [3]. Furthermore, there is no engineering and didactic work on the specific skills that a physician (psychiatrist or not) must know when caring for a patient with a mental disorder. Students admitted to the Department of Psychiatry and Neurology at the Andijan State Medical Institute in September and October 2022

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for an internship with students from the Faculty of Psychiatry, Addiction Medicine, and Medical Psychology for five years of treatment and professional development will each complete 78 hours of psychiatric simulation training, during which students will explore various mental disorders: mood disorders, anxiety disorders, eating disorders, and borderline.

Participants will be asked to complete a portfolio about the educational process during the fall semester, including its nature, conceptual gaps before and after each session, and a "learning inventory effectiveness scale" at the end of the simulation.

A target sample of students will be required to complete a one-on-one semi-interview (until data saturation). To improve the triangulation process, video and audio recordings of the simulation were analyzed.

**Purpose of the study.** The aim of this study is to evaluate the effectiveness of using simulation technologies in the educational process of medical students to develop professional competencies in psychiatry.

**Research Materials and Methods.** The study involved third- to fifth-year medical students enrolled in the general practitioner training program. A total of 120 students (65 women and 55 men) voluntarily participated. The average age of the participants was 20-23 years.

Simulation sessions were conducted using standardized patients—professional actors simulating various psychiatric conditions, including depressive, anxiety, psychotic, and cognitive disorders. These sessions allowed students to practice skills in collecting anamnesis, assessing mental status, making a preliminary diagnosis, and communicating with patients.

Virtual simulators and electronic training devices are software products that simulate psychiatric syndromes, allowing students to independently make decisions about diagnosis and treatment, receive feedback, and adjust their actions.

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### Research methods:

Student surveys and questionnaires before and after simulation sessions to assess their subjective perceptions of learning effectiveness, confidence, and psychological comfort when interacting with patients.

Faculty observations of student actions during simulations, recording errors, successful solutions, and communication strategies.

Analysis of the results of practical assignments, including assessment of diagnostic skills, patient interviews, decision-making in clinical situations, and the application of theoretical knowledge in practice.

Comparative analysis of the effectiveness of traditional teaching methods and simulation-based methods to identify advantages and potential limitations.

### Research procedure:

Students were divided into two groups: a control group (traditional teaching) and an experimental group (simulation-based teaching).

Simulation sessions were held regularly throughout the semester. Each session lasted 60–90 minutes and included a clinical case analysis, hands-on work with a "patient," and a group discussion of student performance.

After the course's completion, questionnaires, instructor observations, and practical assignment results were analyzed.

### Data Processing:

Quantitative and qualitative methods of analysis were used to process the results. Quantitative data (skill assessments, test results) were processed using descriptive statistical methods, as well as a comparative analysis between the control and experimental groups. Qualitative data (student feedback, instructor observations) were content analyzed to identify key themes and trends in practical skill acquisition.



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The use of an integrated approach combining observation, questionnaires, and practical assignments allowed us to obtain objective data on the impact of simulation technologies on the development of students' professional competencies in psychiatry.

### Study Results:

The results of this study will be used to develop a tool for the development and final assessment of students' knowledge in psychiatry. This technological methodology involves medical students divided into two groups, totaling 72 students. The students included those who attended practical classes in September 2022, September 2022, and October 2022.

Modern medical education requires the implementation of innovative methods that bring student training as close as possible to real clinical conditions. One such method is simulation technology, which provides the opportunity for safe and controlled development of professional competencies. The data presented reflects a comparative analysis of the effectiveness of traditional training and a simulation-based approach in developing key skills in future doctors in the field of psychiatry.

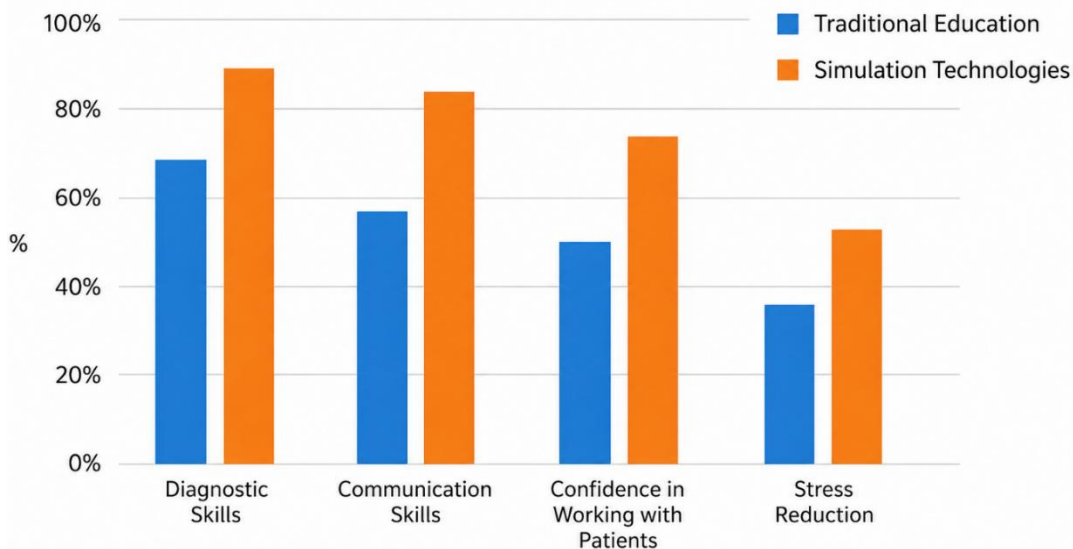
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**Diagram 1. Use of simulation technology to develop professional competencies in psychiatry among medical students.**

Analysis of the diagram shows that the use of simulation technology significantly improves students' professional competencies compared to traditional training. Particularly pronounced benefits are observed in the development of communication skills, confidence in interacting with patients, and stress reduction. Thus, simulation technology can be considered an effective tool for training specialists in psychiatry, facilitating deeper acquisition of practical skills and improving the quality of medical education.

Each participant is required to complete 78 hours of psychiatric simulation training, working with mood disorders, anxiety disorders, eating disorders, borderline disorders, substance abuse, and schizophrenia. The study design is a mixed-methods study based on grounded theory, including: - quantitative features: - pre-/post-test concept map - self-assessment questionnaires: "Educational Effectiveness Inventory" - socio-demographic data and other questions - qualitative features: content theory - semi-structured interviews with

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students - questionnaire completed during clinical work, after simulation for each pathology studied - pre-/post-test concept map (for clinical reasoning) - consists of processes such as simulation video recording

Conclusion. The analysis of the obtained data convincingly demonstrates that the introduction of simulation technologies into the educational process of medical students is a more effective approach compared to traditional teaching methods. While classical teaching methods emphasize primarily theoretical knowledge, the simulation format allows for this to be combined with practical skills, as close as possible to real clinical conditions. Comparative data show that students demonstrate significantly higher diagnostic skill development when using simulation technologies. This is particularly important in psychiatry, where diagnostic accuracy directly impacts the quality of treatment and clinical outcomes.

Furthermore, improved communication skills are a clear benefit. Students trained using simulations more easily establish rapport with patients, are able to ask the right questions, and are more confident in conducting conversations. This not only facilitates the diagnostic process but also fosters trusting relationships between physician and patient, which is crucial in psychiatric practice.

Equally important is confidence when working with patients. Results show that future physicians who have experienced interactions in simulated settings feel more prepared and experience less stress during real clinical encounters. In turn, reduced stress levels contribute to the development of a stable psycho-emotional foundation in students, which positively impacts their professional performance and prevents burnout in the future. Thus, it can be concluded that simulation technologies represent a promising and highly effective tool for training specialists in psychiatry. They not only help develop practical skills but also contribute to the comprehensive development of future physicians, improving the quality of medical education and ensuring its compliance with modern requirements.

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