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IMPROVING CASE-BASED PEDIATRICS TEACHING METHODOLOGY THROUGH AN INTEGRATIVE APPROACH

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Abstract
This article examines the theoretical, methodological, and practical aspects of improving pediatric teaching through clinical cases and an integrative approach. The relevance of this topic is determined by the need to prepare future physicians for comprehensive clinical thinking, interdisciplinary analysis of a child's condition, and the selection of sound diagnostic, treatment, and preventive tactics, taking into account age-related, anatomical, physiological, psychological, pedagogical, and social factors. The role of the clinical case as an educational model combining fundamental knowledge, clinical disciplines, preventive pediatrics, communication skills, and an evidence-based approach is substantiated. A methodological structure for the lesson is proposed, including preliminary preparation, group discussion, interdisciplinary data interpretation, decision-making, reflection, and assessment of student competencies.

Keywords: Pediatrics, clinical cases, integrative education, teaching methods, clinical thinking, medical education, competent education, mejdistdisciplinarnost, practical skills, assessment.

Introduction

Modern medical education focuses not only on imparting theoretical knowledge but also on developing future physicians' ability to apply this knowledge in specific clinical situations. This requirement is particularly important for pediatrics, as children are not miniature models of adult patients: the course of illnesses, clinical manifestations, response to therapy, communication patterns with family, and preventive measures depend on age, developmental stage, premorbid background, and social conditions.

The traditional teaching model, based primarily on lectures and repeated assessments, does not always ensure students are sufficiently prepared for independent clinical analysis. Students may know the classification, symptoms, and treatment regimens, but struggle to compare complaints, medical history, objective data, laboratory and instrumental results, and risk factors. Therefore, case-based learning, which allows students to simulate real-life clinical situations in a safe learning environment, is particularly valuable.

An integrative approach to teaching pediatrics involves combining knowledge from normal and pathological anatomy, physiology, biochemistry, microbiology, pharmacology, the propaedeutics of childhood diseases, neonatology, infectious diseases, child neurology, rehabilitation, psychology, and

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public health. With this approach, the clinical case becomes not an illustration of a predetermined topic, but a central learning tool, guiding analysis, discussion, the search for diagnostic solutions, and the assessment of professional competencies.

The relevance of developing this methodology stems from the need to increase the practical focus of pediatric classes, strengthen the connection between fundamental training and clinical practice, and develop students' skills in interdisciplinary interaction, communication with parents, and decision-making based on clinical data.

The purpose of this article is to substantiate and describe the methodology of teaching pediatrics based on clinical cases through an integrative approach aimed at developing clinical thinking, practical skills, communicative competence and the readiness of students to comprehensively assess the child's condition.

To achieve this goal, the following objectives were defined: to analyze the pedagogical significance of a clinical case in pediatric teaching; to determine the components of an integrative approach in the structure of a practical lesson; to develop stages for organizing a lesson based on a clinical case; to propose criteria for assessing the development of students' competencies; to substantiate the expected educational results of applying this methodology.

The article is analytical and methodological in nature. The materials used are modern approaches to competency-based medical education and case - based principles. learning , elements of problem-based learning, experience in organizing practical classes in pediatrics and analysis of typical difficulties students face when analyzing clinical situations.

The methodological framework was based on systemic, integrative, competency-based, and activity-based approaches. The systemic approach allowed for the clinical situation to be viewed as a set of interconnected medical, psychological, and social factors. The integrative approach ensured the unification of knowledge from various disciplines around a single clinical problem. The competency-based approach was used to define expected learning outcomes, and the activity-based approach was used to organize students' active learning.

The proposed basic model for the lesson is a step-by-step analysis of a clinical case: problem statement, anamnesis analysis, interpretation of objective data, formulation of a preliminary diagnosis, selection of additional studies, differential diagnosis, justification of treatment and preventive tactics, risk assessment, communication with parents, and reflection.

The clinical case in pediatric teaching serves several interrelated functions. First, it increases student motivation, as the educational information is perceived not as an abstract set of characteristics, but as the real-life problem of a specific child. Second, the clinical case develops the ability to conduct a step-by-step diagnostic search. Third, it allows for the integration of theoretical knowledge with practical actions: collecting anamnesis, physical examination, data interpretation, and choosing a treatment strategy.

In pediatrics, it is especially important for a clinical case to include the child's age, body weight, gestational age at birth, feeding characteristics, vaccination status, family and social history, growth and development data, epidemiological information, information about previous therapy, and the family's response to the disease. Without these elements, a student cannot fully assess the patient's condition and justify a medical decision.

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It's advisable to structure an integrated lesson not as a sequential retelling of a textbook, but as a guided solution to a clinical problem. In this case, the instructor acts as a moderator: asking clarifying questions, guiding the discussion, helping students identify contradictions, but not replacing the students' analytical work. This organization promotes active learning and the development of independence.

Including elements of differential diagnosis in the clinical analysis is particularly important. For example, when discussing a child with a cough and shortness of breath, students should compare the evidence supporting bronchiolitis, pneumonia, asthma, a foreign body in the respiratory tract, congenital heart disease, or an allergic disease. Each hypothesis should be supported or refuted by specific clinical, laboratory, and instrumental data.

An integrative approach also expands the scope of assessment. Assessments should include not only the accuracy of diagnosis and knowledge of treatment regimens, but also logical reasoning, the ability to identify the underlying syndrome, justify the need for examination, consider age-appropriate norms, adhere to safety principles, explain the action plan to parents in understandable language, and provide preventative counseling.

Table 1. Methodological structure of a lesson on pediatrics based on a clinical case

Stage of the lesson	Actions of the teacher	Students' actions	Expected result
1. Motivation and problem statement	Presents a brief clinical situation and formulates the key question	They identify the problem, highlight the main complaints and possible risks	Formation of cognitive motivation and clinical orientation of thinking
2. Data collection and analysis	Consistently reveals the anamnesis, results of examination and tests	They systematize the data, clarify age-related characteristics, and identify syndromes	Developing the skill of structured clinical analysis
3. Knowledge integration	Links the case to physiology, pharmacology, infectious and preventive aspects	They explain the pathogenesis, select the necessary studies, and conduct differential diagnostics.	Strengthening interdisciplinary connections
4. Decision making	Guides the discussion of diagnostic and treatment tactics	Formulate a diagnosis, plan for examination, treatment, prevention and monitoring	Development of competence for making informed decisions
5. Communication and prevention	Models conversations with parents, focusing on ethics and safety	Explain the child's condition, recommendations, and danger signs in accessible language.	Development of communication and preventive skills
6. Reflection and evaluation	Provides feedback on criteria and records typical errors	They evaluate their own decisions and adjust their reasoning algorithms	Enhancing learning awareness and clinical judgment resilience

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Methodological model of an integrative clinical session

The proposed model can be used to study the topics of "Acute Respiratory Infections in Children," "Childhood Anemia," "Pneumonia," "Broncho-Obstructive Syndrome," "Nutrition in Young Children," "Emergency Conditions in Pediatrics," and "Dispensary Observation and Rehabilitation of Children at Risk." For each topic, the clinical case should include the following mandatory structural blocks: the child's passport data, complaints, medical history, medical history, objective status, preliminary examination results, problematic questions, group work assignments, and assessment criteria.

In the first stage, students are presented with a brief case study without a full set of data. This encourages the formulation of diagnostic hypotheses and clarifying questions. In the second stage, students receive additional information and identify the primary syndrome. In the third stage, knowledge is integrated: clinical symptoms are linked to pathophysiological mechanisms, age-related norms, and risk factors. In the fourth stage, an examination and treatment plan is developed. In the fifth stage, communication with parents and preventive counseling are modeled. The final stage includes reflection and error analysis.

A key prerequisite for the effectiveness of this method is the gradual increase in complexity of clinical cases. In junior courses, it is advisable to use typical situations with a clear clinical picture, while in senior courses, cases with incomplete data, comorbidity, social factors, the need to choose between several treatment options, and the analysis of medical errors.

An example of a clinical case fragment for a training session

A 2-year-old child was admitted to the outpatient clinic with complaints from his mother of a fever of 38.5° C , cough, rapid breathing, loss of appetite, and lethargy. The child's medical history revealed that he attended preschool, had been ill for three days, and had previously received antipyretic medications. His immunization status was incomplete. Examination revealed tachypnea, intercostal retractions, moist rales in the lower lungs, and moderate pallor. Students are asked to identify the underlying syndrome, assess danger signs, develop an examination plan, differentiate between viral infections, bronchiolitis, and pneumonia, and explain to the mother the need for observation and possible hospitalization.

This fragment allows for the integration of knowledge on the anatomical and physiological characteristics of the respiratory system of young children, infectious diseases, pharmacotherapy, radiological diagnostics, principles of rational administration of antibacterial drugs, and the prevention of complications.

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Table 2. Criteria for assessing students' work when analyzing a clinical case

Criterion	Assessment content	Maximum score
Analysis of anamnesis and complaints	Highlighting significant data, risk factors, and age-related characteristics	10
Physical assessment	Determination of the leading syndrome, signs of severity and urgency	15
Differential diagnosis	Comparison of several possible diagnoses with argumentation	20
Survey plan	Selection of necessary laboratory and instrumental methods without redundancy	15
Treatment and preventive tactics	Rationale for treatment, monitoring, prevention and rehabilitation measures	20
Communication	Ability to explain the child's condition and recommendations to parents	10
Reflection	Analysis of own mistakes and correction of clinical decisions	10

Pedagogical effectiveness of the proposed methodology

The expected impact of implementing this methodology is increased student engagement in classes, a better understanding of the relationship between fundamental and clinical disciplines, the development of argumentation skills, and a less formal approach to diagnosis. Students begin to perceive pediatric pathology not as an isolated list of symptoms, but as a dynamic process requiring a comprehensive assessment of the child.

A particularly important outcome is the development of clinical reasoning. Clinical reasoning in this context refers to the student's ability to consistently collect data, identify key points, formulate diagnostic hypotheses, test them, assess risks, make decisions, and communicate them to the patient or their legal representative. In pediatrics, this ability must be complemented by an understanding of age norms, developmental characteristics, preventive programs, and the family and social context.

The use of integrative clinical cases also promotes teamwork. Group discussions allow students to assign roles, compare arguments, learn to listen to colleagues, and justify their own positions. This brings the learning process closer to real-life clinical practice, where the quality of care for a child depends on the interactions between the physician, nurse, laboratory staff, allied health professionals, and the family.

Practical recommendations

To effectively implement the methodology, it is recommended to create a clinical case bank in advance, covering the main areas of pediatrics. Each case should include a description, a brief description of the problem, step-by-step disclosure, questions for students, expected answers, assessment criteria, and methodological comments for the instructor.

When developing cases, it's essential to adhere to the principle of clinical validity. The situation should reflect real-life pediatric practice, contain sufficient data for decision-making, and still allow

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for discussion. It's advisable to include elements of prevention, rehabilitation, clinical observation, balanced nutrition, vaccination, and communication with parents in the assignments.

At the departmental level, it's advisable to use standardized assessment forms to objectively assess knowledge and skills. Assessment results can be used not only for assigning grades but also to identify common educational deficiencies, such as poor medical history analysis, insufficient knowledge of age norms, errors in selecting examinations, or difficulties in explaining recommendations to parents.

Conclusions

Case-based pediatric training is an effective means of developing clinical thinking, practical knowledge, and professional preparedness in future physicians. An integrative approach combines fundamental, clinical, preventative, and communicative components of training around the child's specific situation.

The proposed methodology ensures students' active participation in the learning process, develops their ability to make differential diagnoses, make informed decisions about examinations and treatment options, and develops communication skills with parents. The most important conditions for its effectiveness are the systematic use of clinical cases, a gradual increase in the complexity of assignments, and the use of transparent assessment criteria.

The introduction of this methodology into the educational process in pediatrics can contribute to improving the quality of training of medical personnel, strengthening the interdisciplinary connection of education and bringing educational activities closer to the real conditions of clinical practice.

References

1. World Federation for Medical Education. Basic Medical Education WFME Global Standards for Quality Improvement. WFME, 2020.
2. van der Vleuten CPM, Schuwirth LWT, Driessen EW Competency-based medical education: implications for assessment and learning. Medical Teacher, 2024.
3. AAMC. Competency-Based Medical Education (CBME). Association of American Medical Colleges, 2024.
4. Ali R. et al. Case-Based Integrated Learning Development and Implementation in Medical Education. Medical Science Educator, 2025.
5. Adams SN et al. Development of a Case-Based Learning Framework for Medical Education: A Scoping Review. Medical Science Educator, 2026.
6. Saari ME et al. Leading practices in the development and delivery of case-based learning training. BMJ Open, 2025.
7. Akhmedova E. A. Transformation of traditional approaches in teaching pediatrics through the integration of theory and practice // Education News: Research in the 21st Century. - 2025. - Vol. 4. - No. 40. - P. 478-482.
8. Akhmedova E. A. Clinical cases as a basis for integrative learning in pediatrics // PEDAGOG . - 2025. - Vol. 8. - No. 11. - P. 1-5.
9. Akhmedova E. A. Clinical thinking as a goal and result of integrative teaching of pediatrics // Education News: research in the 21st century. - 2025. - Vol. 4. - No. 40. - P. 1034-1039.

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webofjournals.com/index.php/5

1 0 . WHO. Transforming and scaling up health professionals' education and training: World Health Organization guidelines. Geneva: WHO, 2013.
11. Grant J. Principles of curriculum design. In: Understanding Medical Education. Wiley-Blackwell, 2018.
12. Cook DA, Artino AR Motivation to learn: an overview of contemporary theories. Medical Education, 2016.
13. Bandura A. Self-efficacy: The Exercise of Control. New York: W. H. Freeman, 1997.
1 4 . Biggs J., Tang C. Teaching for Quality Learning at University. 4 th ed . Open University Press , 2011.
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