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UDC 37.01.611**INTEGRATION OF BASIC AND INNOVATIVE METHODS OF PHYSIOLOGY TEACHING TO STUDENTS OF SPECIALITY 223 “NURSING”**

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Abstract. The article deals with the peculiarities of methods of physiology teaching to students of speciality 223 “Nursing”, the systematic approaches to the study of theoretical material, the ways of integrating the basics of physiological processes with the mastery of basic and innovative methods of practical researches are analysed, the important role of the applied principle in the training of future nurses is justified. Various approaches to the organisation of the educational process are analysed, which provides an opportunity for students to fully master the programme competences and professional skills. A comprehensive analysis of methods of discipline teaching is presented, which considers the combination of traditional teaching with modern technological solutions, in particular the use of interactive presentations and online resources, thematic films and videos, which contributes to the consistent formation of knowledge in the study of subject and provides a high level of preparation for future professional activity. The article focuses on the importance of direct personal participation of students in the conduction of experimental and clinical researches to achieve the positive programme learning outcomes according to the working curriculum.

Particular attention is paid to the introduction of problem-based learning through the use of case method, situational tasks and modelling of clinical cases, which brings the acquired knowledge as close as possible to practical activities. Laboratory works about the study of cardiovascular system, respiratory functions, neurophysiological processes and endocrine regulation demonstrate the significant effectiveness. Students master the techniques of electrocardiography, spirometry, blood pressure and pulse measurement, heart sounds auscultation, determining glucose and cholesterol levels, Rh factor and blood groups, examination of clinically important tendon reflexes, visual acuity and field of vision.

An important component of practice-based learning is the ability to analyse the basic indexes of homeostasis that affect the functional state of organism, to identify critically important disorders of physiological functions and to integrate the acquired knowledge into professional skills. The importance of an individual approach to students in determining the complexity of tasks, taking into account the psychological characteristics, level of basic training and adaptive capabilities, which increases motivation and learning effectiveness, is substantiated. An important area of optimising the educational process is the development of methods for student’s self-work with various sources of information, formation of skills for critical thinking, analysis of logical connections and the ability to systematise the received information.

The motivational component, individual approach and adaptive methods in modern conditions significantly increase the effectiveness and quality of education, which ensures comprehensive training of qualified specialists to perform their duties in clinical medicine in accordance with the requirements of educational standards.

Keywords: teaching method, physiology, nursing, competences.

Introduction. Physiology is a basic subject of medical education, which provides the study of the mechanisms of body functioning, coordinated activity of organs and systems, processes of homeostasis regulation and human adaptation to changing conditions of existence. For students of “Nursing” speciality, the teaching of theoretical material is focused on understanding the physiological functions, knowledge of the basic constants for maintaining the stability of internal environment of organism in order to identify their deviations from the norm, and integration of the acquired knowledge with the development of practical skills. The training of nurses is carried out with a predominant emphasis on interaction with clinical practice, which will allow to qualified use the acquired knowledge in the future in the performance of professional duties [3, 13].

The analysis of publications shows an active search for optimal approaches to the teaching of medical

and biological disciplines [6, 11]. National and foreign authors consider the methodological aspects of improving problem-based learning in higher medical education, analyse the role and importance of basic sciences and the effectiveness of innovative approaches in mastering the theoretical and practical material according to the needs of the healthcare system [9, 10].

Modern medical education contains a very large information resource, which is constantly updated and supplemented with new data, which, accordingly, requires systematisation and structuring of the material for use in the educational process [8, 14]. Despite a significant number of researches, the problem of the optimal combination of traditional and innovative methods of teaching the physiology, which would ensure the maximum efficiency in the formation of both theoretical base and practical skills in students remains unresolved [12, 16].

The aim of the study is to substantiate the mastering of the necessary competencies from the “Nursing” speciality by combining the various teaching methods to form a holistic perception of the subject and implantation of theoretical knowledge in the students’ practical skills.

Object and methods of research. The object of the study is the educational process of physiology teaching to students of speciality 223 “Nursing” at Ivano-Frankivsk National Medical University. The study was conducted with the participation of 54 first- and second-year students of “Nursing” speciality, which were divided into groups: 1st (28 people) – traditional teaching; 2nd (26 people) – comprehensive, with innovative elements. The study used a comparative analysis of students’ academic achievements during the using of different teaching methods, evaluation of the results of questionnaire to identify factors that affect the level of the perception of educational material, and pedagogical observation with an expert assessment of the quality of training the students by teachers of the department. The study was conducted in compliance with ethical principles and with the informed consent of all participants. All experiments with using the laboratory animals were conducted in accordance with the principles of bioethics.

Research results and their discussion. The analysis of the study results has shown that the effectiveness of physiology teaching is significantly increased with the complex use of various methodological approaches. Theoretical material in various forms is considered by students during lectures and practical classes, some topics are presented for self-study. Lectures elucidate the most complex physiological mechanisms and functional relationships, so the online presentations provide the opportunity to use them for preparation to the corresponding topic during the study of the subject. The practical classes are conducted in accordance with the educational and methodological requirements, include answers to control questions, performance of practical works, writing of protocol in accordance with the requirements, the ability to analyse research results and justify conclusions. At the final stage of the class, the teacher puts the score of points in the register according to the evaluation criteria for all types of tasks.

For effective processing of a thematic material in a limited time, it is advisable to use testing of the initial and final level of knowledge, which affects the development of ability to identify key positions in a significant amount of information. In order to improve the perception of regulatory schemes, physiological processes and cause-and-effect relationships, which are quite complex for students, it is necessary to combine oral questioning with visualising the main theses in an interactive form.

An illustrative teaching method with the use of thematic videos, and presentations independently prepared by students has a positive effect on the assimilation of important components of regulatory systems of physiological parameters and at the same time reduces the psychological load, which allows them to concentrate attention throughout all class.

An individual approach is important when the teacher determines the complexity of the task, which increases motivation and learning effectiveness. The use

of case method allows to engage all participants in an active discussion of important questions of the topic, who form separate groups and jointly prepare the variant of a correct answer, justify it and mutually control all the presented results. This methodological approach promotes the development of communication skills and information exchange in teamwork, and also motivates students to study the material in a competitive condition in more depth and detail in preparation for the class.

In nursing, it is important to constantly maintain the direction of problem-based learning, which allows to bring the acquired knowledge as close as possible to practical activity [7]. For this purpose, use the modelling of experimental and clinical cases in the form of situational tasks, in which theoretical material is presented as a clinical and physiological task. Selection and analysis of ways to restore the functional state of the organism affects the development of logical thinking and the ability to identify critically important indexes of homeostasis, which is a necessary factor in the mastery of professional competencies [1, 2, 5].

Comprehensive training of nurses is impossible without acquiring the practical skills, which are the basic foundation of this speciality [4]. During the classes, students are introduced to experimental research methods, which are the initial stage in the study of complex mechanisms of physiological processes. To improve perception, we use laboratory animals to participate in researches that does not require invasive intervention. In particular, we combine the study of functions of central nervous system with the study of static and kinetic reflexes in guinea pigs, which emotionally motivates all students to active participation in a practical work. The demonstration of an acute experiments is performed with the use of video films that provide the necessary information about the progress and results of the work in a detailed and accessible form.

It is important to conduct studies of the functions of organs and systems of the human body with the direct participation of students, who, under the supervision of the teacher, can independently perform all stages of the correspondent manipulation. Students develop practical skills in interaction with colleagues, which increases the level of preparation for clinical practice. The determination of objective indexes is carried out in the training and practical centre, which is equipped with appropriate devices and equipment, the use of which is available after familiarisation with the safety rules. With increased responsibility, students work on mastering clinically important research methods, which include measuring of arterial blood pressure, pulse, registration of electrocardiogram, spiogram, examining of visual acuity and field of vision, determining the blood glucose level, oxygenation, and haemoglobin levels, blood groups and Rh factor. In order to monitor the assimilation of all stages of the study of physiological indexes, it is advisable to use the “Research Algorithm” prepared by the teachers of department. The use of simulation technologies, such as computerised mannequins, phantoms and models, which allow to reproduce physiological processes and repeatedly determine the functional parameters of the body in order to improve the quality of mastering the skill, increases the level of nurses’ preparation for clinical requirements [15, 17]. It is important to be able to correctly analyse the

obtained research results and draw a reasonable conclusion about their compliance with the physiological norm, which is assessed by the teacher at the final stage of the class when preparing and defending the protocols of laboratory work. The correspondent practical skills are controlled during the content and final module control, which allows

to ensure the optimal ratio of theoretical and practical material in the process of studying the subject.

A comparative analysis of learning outcomes showed an increase of the average grade point after the final module assessment using a comprehensive approach compared to traditional teaching methods (Table 1).

Table 1

Distribution of scores and average values in two groups

Score	Number of people (1 st group)	% in 1 st group – base teaching	Number of people (2 nd group)	% in 2 nd group – comprehensive
Excellent (5)	1	3.6 %	6	23.1 %
Very good (4,5)	7	25.0 %	10	38.5 %
Good (4)	12	42.9 %	7	26.9 %
Satisfactory (3)	8	28.6 %	3	11.5 %
Total	28	100 %	26	100 %
Average score	3.9	–	4.3	–
Difference	–	–	+11.17 %	–

Students who studied mainly according to classical models (1st group) received an average grade by 11.17 % lower due to fewer excellent results and more satisfactory grades in the assessment structure. In the 2nd group, excellent grades prevail by 19.5 %, “very good” – by 13.5 %, “good” and “satisfactory” grades are lower by 16 % and 17.1 %, respectively (Table 2).

During the questionnaire, 78 % of students reported an improvement the quality of learning the material thanks to the introduction of modern teaching approaches into the educational process, and 15 % provided their suggestions for improving the study of the discipline (Fig. 1).

Table 2

Comparative analysis of student success results by grade categories

Grade	% in 1 st group	% in 2 nd group	Difference (2 nd group – 1 st group)
Excellent (5)	3.6 %	23.1 %	+19.5 %
Very good (4,5)	25.0 %	38.5 %	+13.5 %
Good (4)	42.9 %	26.9 %	-16.0 %
Satisfactory (3)	28.6 %	11.5 %	-17.1 %
Average score	3.9	4.3	+11.17 %

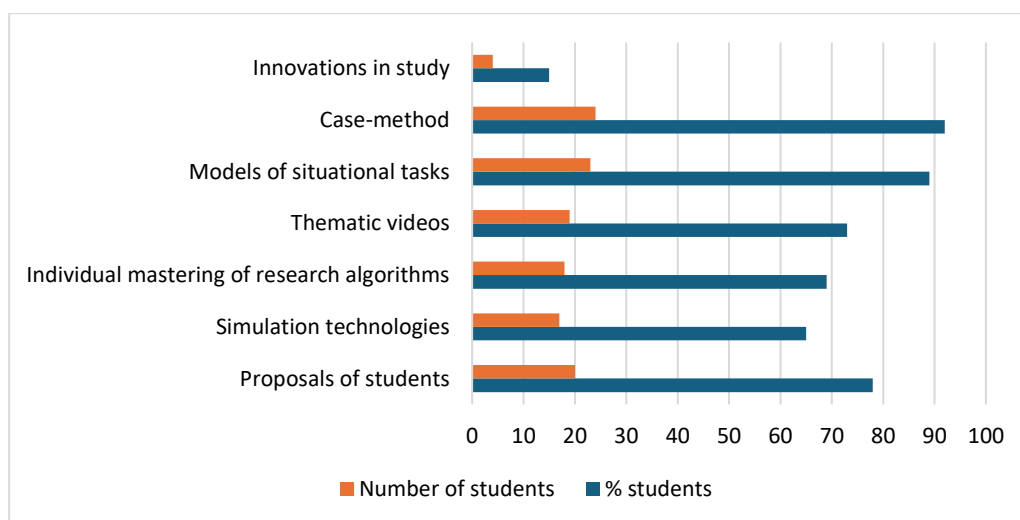


Fig. 1. Correlation of questionnaire results regarding innovative methods

Analysis of the completed questionnaires revealed, in particular, 65 % of positive feedback on the use of the case method, 69 % – on the modelling of situational tasks, 73 % – on the demonstration of thematic videos and interactive presentations, 89 % – on the individual approach to mastering basic clinical research methods, 92 % – on the use of simulation technologies.

Conclusions. The conducted study allowed to form a comprehensive characteristic of the effectiveness of integration of basic and innovative methods of physiology teaching to students of “Nursing” speciality. The need to systematise educational material in order to form a theoretical basis in combination with practical components of the educational and professional

programme has been established. The obtained results indicate the advisability of combining the traditional and modern methods during the study of algorithms for experimental and clinical research. A practically oriented approach using interactive and simulation technologies contributes to the formation of skills for independent analysis and interpretation of physiological indicators, which is an important criterion for the subsequent stages of professional training. A necessary element of improving the educational process is systematic feedback with students, which involves analysing and taking into account their comments and suggestions in the process of studying the discipline.

Prospects for further researches are to find the optimal combination of aspects of innovative and basic methods of teaching the subject to obtain the high-quality learning outcomes, and the development of a system for objective evaluation of the effectiveness of various pedagogical technologies in medical education.

Conflict of interest: absent.

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ІНТЕГРАЦІЯ БАЗОВИХ ТА ІННОВАЦІЙНИХ МЕТОДІВ ВИКЛАДАННЯ ФІЗІОЛОГІЇ СТУДЕНТАМ СПЕЦІАЛЬНОСТІ 223 «МЕДСЕСТРИНСТВО»

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Резюме. У статті розглядаються особливості методів викладання фізіології студентам спеціальності 223 «Медсестринство». Проаналізовано системність підходів до вивчення теоретичного матеріалу, шляхи інтегрування основ фізіологічних процесів з оволодінням базовими й інноваційними методиками практичних досліджень, обґрунтовується важлива роль прикладного принципу в підготовці майбутніх медсестер. Аналізуються різноманітні підходи до організації навчального процесу, що забезпечує

можливість здобувачам у повному обсязі оволодіти програмними компетентностями та професійними навичками. Представлено комплексний аналіз методик викладання предмета, у якому розглядаються поєднання традиційного навчання із сучасними технологічними рішеннями, зокрема використання інтерактивних презентацій, онлайн-ресурсів, що сприяє послідовному формуванню знань під час вивчення предмета та забезпеченню високого рівня підготовки до майбутньої професійної діяльності. У статті акцентовано увагу на важливості безпосередньої особистої участі студентів під час проведення експериментальних і клінічних досліджень для досягнення позитивних результатів навчання згідно робочої навчальної програми. Важливим компонентом практично орієнтованого навчання є вміння аналізувати базові показники гомеостазу, виділяти критично важливі порушення фізіологічних функцій та інтегрувати набуті знання у професійні навички.

Обґрунтовано значення індивідуального підходу до студентів під час визначення складності завдань, враховуючи психологічні особливості та рівень базової підготовки, що підвищує результативність навчання. Актуальним напрямком оптимізації навчального процесу є розвиток методів самостійної роботи студентів із різними джерелами інформації, формування навичок критичного мислення, аналізу логічних зв'язків і здатності до систематизації отриманої інформації.

Мотиваційна складова, індивідуальний підхід та адаптивні методики в сучасних умовах забезпечують комплексну підготовку кваліфікованих спеціалістів із відповідними професійними компетентностями.

Ключові слова: методика викладання, фізіологія, медсестринство, компетентності.

Конфлікт інтересів: відсутній.

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