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**COMPLIANCE WITH THE PRINCIPLE OF CONTINUITY
AND INTERDEPENDENCE BETWEEN GENERAL
AND PROFESSIONAL MEDICAL EDUCATION AS A CONDITION
FOR EFFECTIVE TRAINING OF FUTURE DOCTORS**

***Abstract.** The quality and integrity of training of future specialists of any specialty are ensured by the integration of fundamental and professional knowledge. In medical education, it is of vital importance. With the help of questionnaires, surveys of first-year medical students, to determine their subjective attitude to basic school training in physics, chemistry, biology, mathematics after the first semester of study at the university, as well as to analyze the formation of understanding the integration link "school - fundamental university disciplines - clinical disciplines of the university".*

***Keywords:** medical education; general and professional medical education; training; quality of training; professional education.*

Introduction. The quality and integrity of training of future specialists of any specialty are ensured by the integration of fundamental and professional knowledge. In medical education, it is of vital importance. "Quality professional education involves the formation of not only highly specialized knowledge that will allow entering the labor market directly, but also effective long-term knowledge that can be provided only if it is fundamental" [1]. Understanding the basic educational context plays a leading role in successful learning in clinical departments, and later

in practice. If earlier the idea of studying the basic sciences in medical education emphasized the acquisition of knowledge, now their practical use is the first educational priority [1-5]. The importance of mastering the basic concepts is necessary for understanding the normal biological processes and pathology, so the educational process should ensure the continuous use of basic knowledge throughout medical school and their integration with clinical applications [3,4,6].

Among the disciplines that form its foundation in the system of medical education, medical and biological physics play an important role. In general, physical and mathematical disciplines are the theoretical basis of professional knowledge and competencies of future doctors, and also form a type of thinking that allows to quickly master the essence of the problem, make the best decision in any field of knowledge [1, 5, 8]. The study of all disciplines of the natural block is closely related to mathematics. The use of a system of knowledge and skills in mathematics, physics, chemistry, and biology forms in students a holistic, scientific worldview. Mathematics is also needed to obtain quantitative conclusions from the results of experiments. Understanding of functional dependencies, the ability to provide quantitative information about physical, biological, chemical processes, future students should receive at school.

The purpose of the article. With the help of questionnaires, surveys of first-year medical students, to determine their subjective attitude to basic school training in physics, chemistry, biology, mathematics after the first semester of study at the university, as well as to analyze the formation of understanding the integration link "school - fundamental university disciplines - clinical disciplines of the university".

Research and discussion results. 138 first-year medical students took part in the survey. The questions, which were voluntarily answered by future physicians, were divided into the following blocks: training in the fundamental disciplines of the natural science cycle (physics, chemistry, biology) at school; students' understanding of the integration relations between other disciplines of theoretical and clinical profile with the discipline "Medical and Biological Physics" upon completion of its study.

Almost 50% of the surveyed students studied in a secondary school, 16% studied science in depth. Other first-year students had specialized pieces of trainings

in the following disciplines: foreign languages, mathematics, history, economics. The majority of students (60%) admitted that they worked with tutors to successfully pass the external examination. Others noted that they did additional work on their own, using materials that are sufficiently presented on the Internet, and checked their knowledge through online testing. Only 5% of students confirmed that the knowledge they received in school was enough for them to pass the external examination.

The surveyed students believe that the best training they received in school was in biology (95% of respondents). According to 98% of respondents, they received the weakest knowledge in physics. Students who participated in the survey confirmed a very weak integration link between the fundamental disciplines in schooling. 78% admitted that the school did not link subjects such as physics and biology and considered "physics a purely technical science" and "biology exclusively a science about living". 17% of students who participated in the survey mentioned that on course topics of the mentioned subjects the attention was paid to the relationship between natural sciences, but they could not name the topics of classes. Only 5% of respondents named the topics of biology or physics lessons where knowledge of these subjects was interdependent.

Among the reasons that may hinder successful study at the university, first of all, students mentioned the lack of basic knowledge from school (64%). Other first-year students recognized the importance of knowledge in the fundamental disciplines that should be acquired at the school stage but did not consider their lack as an obstacle to successful learning.

According to the results of the questionnaire, it was determined that students have some mathematic knowledge, but can not always apply it in practice. For example, 58% of the students surveyed, admitted that tasks, where the values were related by logarithmic dependence, were difficult for them. In particular, determining the level of intensity for sounds of a certain intensity. Difficulties also arose when physical quantities were linked by exponential dependence. For example, the change in radiation intensity when passing through a substance.

Teachers of our department carefully analyzed the curricula in biology, physics, chemistry for secondary schools for grades 8-11 and highlighted the issues,

skills, abilities that students received in school. For each topic of the course "Medical and Biological Physics", there are links to the relevant textbooks, with which first-year students can update their knowledge on a particular issue.

To establish an integrative relationship between fundamental and professional knowledge, each topic of the course is determined by its relevance. For example, studying the topic "Radioactivity. The effect of ionizing radiation on the human body" provides basic, fundamental knowledge in the field of radiation medicine, which includes several treatments; traditional radiotherapy and more modern methods of treatment, in particular the linear accelerator, as a method that has significantly increased the effectiveness of treatment in oncology. Radionuclides are also widely used in diagnostics to study the condition of various internal organs, to determine metabolic disorders, including using the latest research method - positron emission tomography.

Along with information on the use of radionuclides and ionizing radiation in medicine, students should have an idea of the harmful effects of ionizing radiation, the biophysical basis of radiation sickness, the basics of dosimetry of ionizing radiation.

To discuss and understand such important professional issues, students must have the physical foundations of this topic, so the lesson begins with the actualization of the school course of chemistry and physics. To understand the content of the law of radioactive decay it is necessary to know the exponential function from the school course of mathematics. Basic, school knowledge in the classroom is deepened, expanded according to the requirements of the course program "Medical and Biological Physics". Students must analyze the absorbed and ionizing ability of different types of radiation, characterize their interaction with matter and the consequences of such interaction.

Conclusions. 1. Fundamental disciplines, which are part of the natural science block of the educational program of doctor training, provide basic skills that form the basis for further mastering specialized training courses by students.

2. The presented results of the questionnaire show that one of the factors that cause difficulties in teaching biophysics may be insufficient basic school training, which must be taken into account when selecting the content of educational material and compiling educational literature of the discipline at the university.

3. The teaching of "Medical and Biological Physics" should take place within the framework of integration primarily with human physiology, as well as disciplines that form the professional knowledge and competencies of future physicians. Such integration requires teachers with high qualification, which provides their appropriate basic education and continuing education through self-education, organization of departmental and interdepartmental seminars in higher educational medical institutions.

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