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ASSESSMENT OF THE TEACHING LEVEL AT THE DEPARTMENT OF PHARMACOLOGY BY FUTURE DOCTORS: SATISFACTION OF HIGHER EDUCATION APPLICANTS WITHIN THE ACADEMIC DISCOURSE

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In the conditions of martial law and the challenges of our time, missile and drone strikes on the capital's infrastructure, distance and mixed forms of education, emergency power outages, as well as limited transport links, traditional approaches of the educational process to the study of such a fundamental discipline as pharmacology, where scientific and pedagogical workers act as mentors, and students passively receive information, significantly complicates the implementation of the goal and formation a successful competitive graduate of an institution of higher medical education.

The questionnaire itself is reliable and more objective than routine interaction and exchange of views between teachers and students, a method of receiving feedback on the real unbiased attitude of students to whether their expectations from studying a new discipline have been met, to the quality of the educational process and knowledge control.

The purpose of the study was to analyze the attitude of applicants for higher medical education to pharmacology as a fundamental biomedical discipline and to assess the markers of the effectiveness of the educational and didactic process at the Department of Pharmacology based on the results of the questionnaire.

In the course of the study, the authors used questionnaire methods to obtain answers from respondents, mathematical analysis to calculate survey results, and descriptive statistics to describe their characteristics. General scientific theoretical methods were also involved, such as the bibliographic method for analyzing scientific literature on the topic, methods of information synthesis (for presenting their own ideas) and generalization (for forming research conclusions).

Applicants for higher education were interviewed by distributing Google forms between them from May 27 to June 4, 2025 inclusive. In total, 378 students took part in the survey, among which 324 respondents studied in the specialty 222 «Medicine» (147 representatives of the Medical Faculty No. 1, 135 applicants for higher education of the Medical Faculty No. 2 and 42 students of the Faculty of Doctors' Training for the Armed Forces of Ukraine), 54 of the respondents were future pediatricians (Medical Faculty No. 3).

337 students (89.2%) considered their expectations during the study of pharmacology to be fully met, 36 respondents (9.5%) noted that their expectations were partially met. Among future doctors, in 287 people (88.6% in the group and 75.9% of all) expectations from the study of pharmacology were fully met, in 33 respondents (10.2% in the group and 8.7% of all) were partially met. From the data of a survey of future pediatricians, it follows that in 50 people (92.6% in the group and 13.2% of all) the expectations of studying pharmacology were fully met, in another 3 people (5.6% in the group and 0.8% of all) the expectations were partially met.

According to the results of the questionnaire of students after completing the study of the discipline «Pharmacology» and conducting the final control of knowledge, important indicators of the quality of the educational process were analyzed and trends characterizing modern features of education were identified. The vast majority of applicants for higher medical education confirmed practical fullness and satisfaction with the main educational component «Pharmacology». A total of



373 respondents (98.7%) confirmed the reasonableness of their expectations from the discipline: 320 future doctors and military doctors (98.8% in the group) and 53 future pediatricians (98.2% in the group).

Key words: pharmacology, educational process, applicants for higher medical education, efficiency of the educational process, quality of training, Bogomolets National Medical University.

Зайченко Ганна, Дорошенко Анна, Козак Дмитро. Оцінка майбутніми лікарями рівня викладання на кафедрі фармакології: задоволеність здобувачів вищої освіти в межах академічного дискурсу

В умовах воєнного стану та викликів сучасності, ракетно-дронових ударів інфраструктури столиці, дистанційної та змішаної форм навчання, екстрених відключень електропостачання, а також обмеженого транспортного сполучення традиційні підходи навчального процесу до вивчення такої фундаментальної дисципліни, як фармакологія, де науково-педагогічні працівники виступають у ролі менторів, а здобувачі освіти пасивно отримують інформацію, значно ускладнює реалізацію поставленої мети та становлення успішного конкурентоспроможного випускника закладу вищої медичної освіти.

Саме анкетування є достовірним і більш об'єктивним, аніж рутинна взаємодія та обмін думками між викладачами і здобувачами освіти, методом отримання зворотного зв'язку про реальне незаангажоване ставлення студентів до того, чи виправдалися їхні очікування від вивчення нової дисципліни, до якості освітнього процесу та контролю знань.

Метою дослідження був аналіз ставлення здобувачів вищої медичної освіти до фармакології як фундаментальної біомедичної дисципліни та оцінка маркерів ефективності навчально-дидактичного процесу на кафедрі фармакології за результатами анкетування.

У ході дослідження авторами було застосовано методи анкетування для отримання відповідей від респондентів, математичного аналізу для розрахунку результатів опитування та описової статистики для викладення їх характеристики. Також було залучено загальнонаукові теоретичні методи, такі як бібліографічний метод (для аналізу наукової літератури за темою), інформаційного синтезу (для винесення власних ідей) та узагальнення (для формування висновків дослідження).

Здобувачів вищої освіти було опитано шляхом поширення між ними Google-форми з 27 травня до 04 червня 2025 р. включно. Загалом в анкетуванні взяли участь 378 студентів, серед яких 324 респонденти навчалися на спеціальності 222 «Медицина» (147 представників медичного факультету № 1, 135 здобувачів вищої освіти медичного факультету № 2 та 42 студенти факультету підготовки лікарів для Збройних сил України), 54 особи з числа опитаних були майбутніми педіатрами (медичний факультет № 3).

337 здобувачів освіти (89,2%) вважали свої очікування під час вивчення фармакології виправданими у повному обсязі, 36 респондентів (9,5%) зазначили, що їхні очікування виправдалися частково. Серед майбутніх лікарів у 287 осіб (88,6% у групі та 75,9% від усіх) очікування від вивчення фармакології повністю виправдалися, у 33 респондентів (10,2% у групі та 8,7% від усіх) виправдалися частково. Із даних опитування майбутніх педіатрів випливає, що у 50 осіб (92,6% у групі та 13,2% від усіх) очікування від вивчення фармакології повністю виправдалися, ще у трьох осіб (5,6% у групі та 0,8 від усіх) очікування виправдалися частково.

За результатами проведеного анкетування студентів після завершення вивчення дисципліни «Фармакологія» та проведення підсумкового контролю знань було проаналізовано важливі індикатори якості освітнього процесу та виявлено тренди, що характеризують сучасні особливості навчання. Абсолютна більшість здобувачів вищої медичної освіти підтвердила практичну наповненість та задоволеність від основної освітньої компоненти «Фармакологія». Загалом 373 респонденти (98,7%) підтвердили виправданість своїх очікувань від дисципліни: 320 майбутніх лікарів та військових лікарів (98,8% у групі) та 53 майбутні педіатри (98,2% у групі).

Ключові слова: фармакологія, освітній процес, здобувачі вищої медичної освіти, ефективність освітнього процесу, якість підготовки, Національний медичний університет імені О.О. Богомольця.

Introduction. In the conditions of martial law and the challenges of our time, missile and drone strikes on the capital's infrastructure, distance and mixed forms of education, emergency power outages, as well as limited transport links, traditional approaches of the educational process to the study of such a fundamental discipline as pharmacology, where scientific and pedagogical workers act as mentors, and students passively receive information, significantly complicates the implementation of the goal and formation a successful competitive graduate of an institution of higher medical education. Pharmacology, as a discipline that integrates basic knowledge of theoretical mandatory components and prac-

tical competencies of clinical disciplines, requires the active involvement of the student in the educational process, which in the future will allow graduates not only to gain a high level of knowledge in the discipline, but also a deep level of understanding and conscious application of the acquired skills and abilities in further professional activities [1; 2]. The role of the teacher as a key link in the educational and didactic process is undergoing qualitative changes – the mentor encourages future doctors to professional development, inspires, helps, supports and directs them to find the right answers, teaches them to analyze and think critically. These changes in the competencies of scientific and pedagogical staff of higher

medical education institutions require close constant interaction and clearly defined constructive feedback both among colleagues and from higher education students [3–5].

The questionnaire itself is reliable and more objective than routine interaction and exchange of views between teachers and students, a method of receiving feedback on the real unbiased attitude of students to whether their expectations from studying a new discipline have been met, to the quality of the educational process and knowledge control. The questionnaire allows you to analyze the effectiveness of the selected teaching methods, students' satisfaction with the process and the results of work with teachers of the Department of Pharmacology [6–8].

In order to highlight the modern development strategy of the Department of Pharmacology and understand the attitude of students, 3rd year students of the Bogomolets National Medical University, who studied in the field of knowledge 22 «Healthcare» of specialties 222 «Medicine» (in particular, at the Faculty of Doctors' Training for the Armed Forces of Ukraine) and 228 «Pediatrics», were interviewed. Students completed the questionnaire after passing the exam in the discipline «Pharmacology» in May 2025.

The purpose of the study was to analyze the attitude of applicants for higher medical education to pharmacology as a fundamental biomedical discipline and to assess the markers of the effectiveness of the educational and didactic process at the Department of Pharmacology based on the results of the questionnaire.

Materials and methods of research. In the course of the study, the authors used questionnaire methods to obtain answers from respondents, mathematical analysis to calculate survey results, and descriptive statistics to describe their characteristics. General scientific theoretical methods were also involved, such as the bibliographic method for analyzing scientific literature on the topic, methods of information synthesis (for presenting their own ideas) and generalization (for forming research conclusions).

Applicants for higher education were interviewed by distributing Google forms between them from May 27 to June 4, 2025 inclusive. In total, 378 students took part in the survey, among which 324 respondents studied in the specialty 222 «Medicine» (147 representatives of the Medical Faculty No. 1, 135 applicants for higher education of the Medical Faculty No. 2 and 42 students of the Faculty of Doctors' Training for the Armed Forces of Ukraine), 54 of the respondents were future pediatricians (Medical Faculty No. 3).

The content and form of the questionnaire were discussed by the scientific and pedagogical staff of the Department of Pharmacology of the Bogomolets National Medical University and approved at the methodological meeting of this unit of the higher education institution. The interviewed higher education applicants were provided with anonymity, in addition, any external factors that could significantly change the results of the questionnaire were excluded.

The study was carried out within the framework of the research work of the Department of Pharmacology «Improvement of the methodological foundations of teaching pharmacology in the context of new requirements for the quality of medical and pharmaceutical education», state registration number No. 0126U003879. The results were processed in Microsoft 365 Excel software.

Results of the study and their discussion. During the survey, students were asked to answer the questions of the questionnaire given in Table 1.

The next question was an assessment of the organization of the exam in conditions close to passing the Unified State Qualification Exam (USQE) «STEP-1» (Figure 2a). The vast majority of respondents, namely 365 people (96.6%), positively assessed the organization of the exam, while 13 respondents (3.4%) gave it a negative assessment. In the context of specialties, 313 students, future doctors and military doctors (96.6% in the group and 82.8% of all) positively assessed the organization of the exam, 11 respondents (3.4% in the group and 2.9% of all) indicated a negative assessment. 52 future pediatricians (96.3% in the group and 13.8% of all) considered the exam to be properly organized, 2 people (3.7% in the group and 0.5% of all) gave the exam organization a negative rating.

Next, students were asked to evaluate the regulations and criteria for evaluating the pharmacology exam (Figure 2b). 343 people (90.7%) highly appreciated the rules and criteria for evaluating the exam, and only 35 respondents (9.3%) indicated a negative assessment. 295 future doctors and military doctors (91.1% in the group and 78% of all) evaluated the regulations and evaluation criteria properly, 29 respondents (8.9% in the group and 7.7% of all) gave them a negative assessment. 48 prospective pediatricians (88.9% in the group and 12.7% of all) positively evaluated the rules and evaluation criteria of the exam, 6 respondents (11.1% in the group and 1.6% of all) did not evaluate them properly.

The next aspect of the survey took into account whether students were satisfied with the elective disciplines conducted at the Department of Pharmacology as an opportunity to prepare for STEP-1

Table 1

Questionnaire questions that were offered to applicants for higher medical education to determine their attitude to the study of pharmacology

Questions	Answer options			
Have your expectations from studying the discipline «Pharmacology» been met?	Yes	No	Partially	
Were the practical classes in the discipline «Pharmacology» filled with practically oriented content?	Yes	No	Partially	Difficult to answer
Is the volume of study hours enough to study the discipline «Pharmacology»?	Yes	No	Difficult to answer	
If there was an opportunity to increase the number of hours in the discipline «Pharmacology», what would you like to increase?	Lectures	Practical classes	Independent work of students	Total number of hours in the discipline
How do you assess the organization of the exam in the discipline «Pharmacology» in conditions close to passing «STEP-1»?	Positively		Negatively	
How do you assess the regulations and criteria for evaluating the exam in the discipline «Pharmacology»?	Positively		Negatively	
Are you satisfied with the elective disciplines held at the Department of Pharmacology as an opportunity to prepare for «STEP-1»?	Yes	More likely yes than no	No	
Did the preSTEP in the discipline «Pharmacology» in the computer class of the library help you to assess your level of knowledge at the end of the academic year?	Yes	More likely yes than no	No	

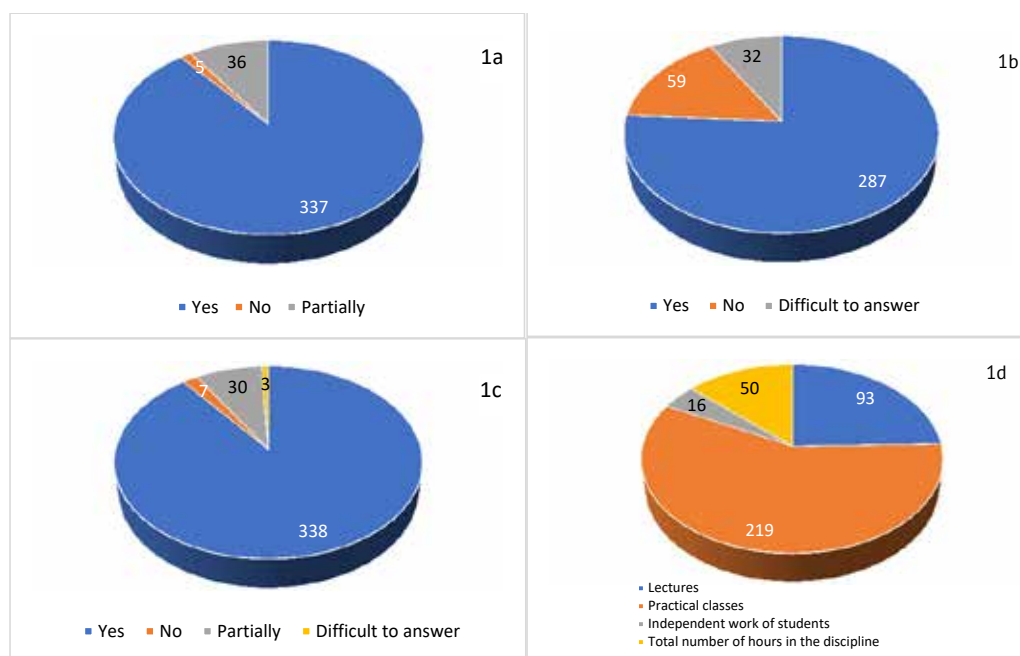


Fig. 1. The results of the survey of future doctors regarding the key aspects of the department's activities: 1a – meeting the expectations of students from studying the discipline “Pharmacology”; 1b – filling with practically oriented content of practical classes in the discipline “Pharmacology”; 1c – attitude of students regarding whether the volume of study hours is enough to study the discipline “Pharmacology”; 1d – attitude of students to the opportunity to increase the number of hours in the discipline “Pharmacology”

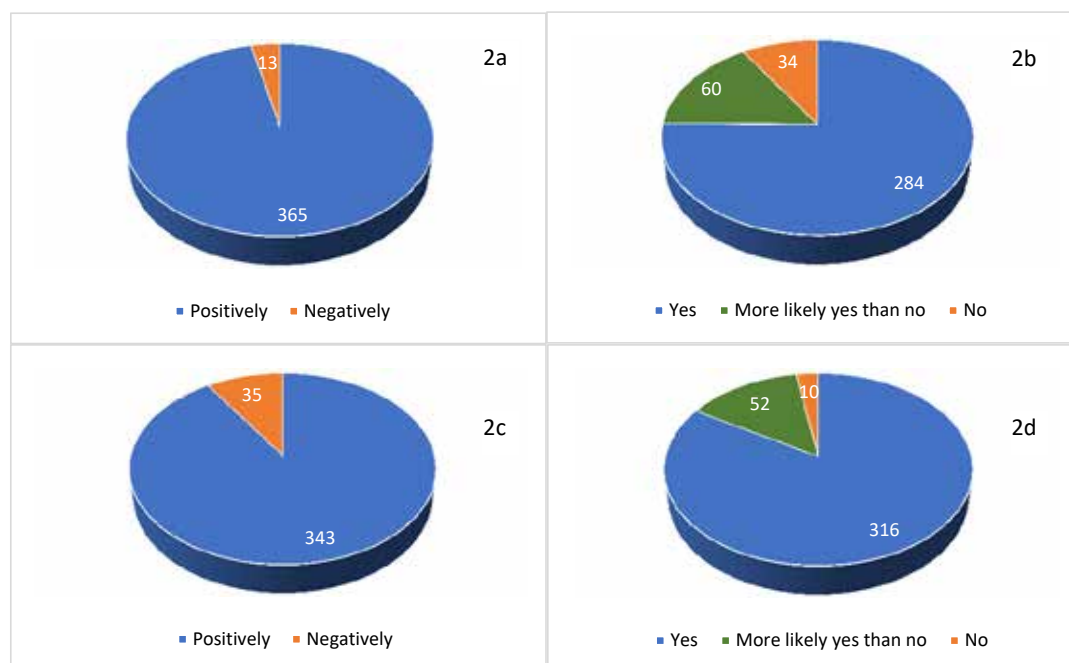


Fig. 2. Results of the survey of future doctors regarding the key aspects of the department's activities: 2a – assessment by students of the organization of the exam in the discipline «Pharmacology» in conditions close to passing the USQE «STEP-1»; 2b – assessment by students of the regulations and criteria for evaluating the exam in the discipline «Pharmacology»; 2c – satisfaction of students with elective disciplines conducted at the Department of Pharmacology; 2d – attitude of students to whether they were helped to assess their level of knowledge at the end of the academic year by preSTEP in the discipline «Pharmacology»

(Figure 2c). 316 students (83.6%) were completely satisfied, 52 people (13.8%) were rather satisfied with elective disciplines, another 10 respondents (2.6%) were not satisfied with elective disciplines. 271 future doctors and military doctors (83.6% in the group and 71.7% of all) were satisfied with the elective disciplines at the Department of Pharmacology, 43 respondents (13.3% in the group and 11.4% of all) were rather satisfied and another 10 respondents (3.1% in the group and 2.6% of all) were not satisfied with the elective disciplines. 45 future pediatricians (83.3% in the group and 11.9% of all) were completely satisfied with the elective disciplines, another 9 respondents (16.7% in the group and 2.4% of all) were rather satisfied with the conduct of elective disciplines at the Department of Pharmacology.

After that, the students were asked whether preSTEP (training tests with the participation of a teacher of the department, in conditions close to a real exam) in pharmacology in the computer class of the library of Bogomolets National Medical University helped them to assess their level of knowledge at the end of the academic year (Figure 2d). 284 students (75.1%) indicated that preSTEP in pharmacology contributed to the assessment of their level of knowledge, 60 people (15.9%) noted that it rather helped, 34 respondents (9%) answered that

preSTEP did not help them to assess their level of knowledge in pharmacology. 243 future doctors and military doctors (75% in the group and 64.3% of all) believed that preSTEP in pharmacology helped them to assess their level of knowledge, 50 people (15.4% in the group and 13.2% of all) indicated that it rather helped, 31 survey participants (9.6% in the group and 8.2% of all) did not contribute to the assessment of their own level of knowledge in pharmacology. 41 prospective pediatricians (75.9% in the group and 10.9% of all) claimed that preSTEP in pharmacology contributed to the assessment of their level of knowledge, 10 people (18.5% in the group and 2.7% of all) indicated that preSTEP was more helpful, another 3 people (5.6% in the group and 0.8% of all) reported that preSTEP did not help them to assess their own level of knowledge in pharmacology.

Analysis of the results of passing the state exam USQE «STEP-1» in 2025, testifies to the high efficiency of interaction between the participants of the educational process, the possibility of overcoming temporary challenges arising as a result of external circumstances, since the students of these specialties of Bogomolets National Medical University demonstrated a fairly high level of knowledge in the discipline «Pharmacology», which ranged from 80 to 84% depending on the specialty, in particular, this indica-

tor for future military doctors was 80.2%. Identifying a positive correlation between the objective data of passing the state exam and the results of the survey of students is important for the formation of a strategy for educational activities, in accordance with the new concept of passing the USQE «STEP-1» in 2026.

Conclusions

1. According to the results of the questionnaire of students after completing the study of the discipline «Pharmacology» and conducting the final control of knowledge, important indicators of the quality of the educational process were analyzed and trends characterizing modern features of education were identified. The vast majority of applicants for higher medical education confirmed practical fullness and satisfaction with the main educational component «Pharmacology». A total of 373 respondents (98.7%) confirmed the reasonableness of their expectations from the discipline: 320 future doctors and military doctors (98.8% in the group) and 53 future pediatricians (98.2% in the group).

2. In case of a possible increase in the number of teaching hours in pharmacology, 219 students (57.9%) would prefer to increase the volume of practical classes, 93 respondents (24.6%) – lectures, 50 respondents (13.2%) – the total number of hours in the discipline, and the remaining 16 respondents (4.2%) – independent work of students, which

indicates that applicants for higher medical education strive to acquire knowledge, skills and abilities that will be useful to them in their professional activities.

3. The availability of methodological materials (a specially developed manual «STEPping TOGETHER» with explanations), conducting a cross-section of knowledge through training tests close to real ones, helped to assess the readiness of future doctors, including military doctors, to pass the state exam USQE «STEP-1», as noted by the vast majority of applicants for higher education in the specialties 222 «Medicine» (293 students, which was 90.4% in the group), in particular at the Faculty of Doctors' Training for the Armed Forces of Ukraine, and 228 «Pediatrics» (51 students, which was 94.4% in the group), namely 344 respondents (91% of all respondents).

4. The proper quality of management of the educational process on the part of the administration in extremely difficult conditions of martial law, the professionalism of the scientific and pedagogical staff of teachers and the motivation of students allow to form a sufficiently high level of knowledge (as evidenced by the results of passing the state exam of the USQE «STEP-1»), to achieve the satisfaction of all participants in the educational process, which corresponds to modern realities and challenges of medical education.

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