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**ASPECTS OF PROPER PHARMACY STAFFING: THE INFLUENCE OF THE MYRITAL STATE IN UKRAINE ON THE ADMISSION CAMPAIGN FOR THE SPECIALTY 226 «PHARMACY, INDUSTRIAL PHARMACY»**

*In many countries of the world, the pharmaceutical industry is a leader among the industries of the national economy, which are related to ensuring the livelihood and health of citizens. This is an important component of the health care system, which occupies a special place in the sphere of intellectual and industrial activity of society. Thirty-three institutions of higher education (HEI) are currently training masters for the pharmaceutical industry in Ukraine in the specialty «Pharmacy, Industrial Pharmacy». During the state of war in Ukraine, there is a process of population migration, which affects the number of applicants and students of HEI. Also, the specialty «Pharmacy, industrial pharmacy» has a high fixed passing score, and upon completion of studies, graduates are subject to mobilization.*

*That is why **the purpose** of the study was to establish and correlate the impact of the allocated volume of state order places on the effectiveness of the entrance campaign of applicants to the specialty «Pharmacy, industrial pharmacy» in the conditions of martial law in Ukraine. The accounting and statistical databases of the unified state electronic database system (EDEBO) served as **materials**. The **methods** of office research, analysis, modeling and forecasting were used.*

*The influence of the number of places of the state order for the specialty «Pharmacy, industrial pharmacy» on the effectiveness of the admission campaigns of 2023 and 2024 under the conditions of martial law in Ukraine was analyzed. The data of the EDEBO system on the number of state-ordered places, the number of entrants and students of the second (master's) level of higher education in the two specializations 226.01 «Pharmacy» and 226.02 «Industrial pharmacy» for full-time education were collected and processed.*

*It was established that during the state of war, in the conditions of the shortage of medical (pharmaceutical) personnel, the state order for the training of specialists in the specialty «Pharmacy, industrial pharmacy» in Ukraine is necessary to ensure the stability of the health care system, the needs of the population, and the development of domestic drug production, supporting the economy and ensuring the psychological stability of society.*

**Key words:** pharmacy, industrial pharmacy, admissions campaign, quality of education, state of war.

**Аеліта Кричковська, Ірина Губицька, Наталія Монька, Анастасія Стангріт, Олена Хоменко, Віра Лубенець. АСПЕКТИ НАЛЕЖНОГО КАДРОВОГО ЗАБЕЗПЕЧЕННЯ АПТЕК: ВПЛИВ МІГРАЦІЙНОГО СТАНУ В УКРАЇНІ НА ВСТУПНУ КАМПАНІЮ НА СПЕЦІАЛЬНІСТЬ 226 «ФАРМАЦІЯ, ПРОМИСЛОВА ФАРМАЦІЯ»**

У багатьох країнах світу фармацевтична галузь посідає провідне місце серед галузей народного господарства, які пов'язані із забезпеченням життєдіяльності та здоров'я громадян. Це важлива складова системи охорони здоров'я. Це важлива складова системи охорони здоров'я, яка займає особливе місце у сфері інтелектуальної та виробничої діяльності суспільства. Підготовку магістрів для фармацевтичної галузі в Україні за спеціальністю «Фармація, промислова фармація» наразі здійснюють 33 заклади вищої освіти (ЗВО). В умовах воєнного стану в Україні спостерігається процес міграції населення, що впливає на кількість абітурієнтів та студентів ЗВО. Також спеціальність «Фармація, промислова фармація» має високий фіксований прохідний бал, а по закінченню навчання випускники підлягають мобілізації.

Саме тому **метою** дослідження було встановити та співвіднести вплив виділеного обсягу місць державного замовлення на результативність вступних кампаній абітурієнтів на спеціальність «Фармація, промислова фармація» в умовах воєнного стану в Україні. **Матеріалами** слугували обліково-статистичні бази даних єдиної державної електронної системи з питань освіти (ЄДЕБО). Використано **методи** кабінетних досліджень, аналізу, моделювання та прогнозування.

Проаналізовано вплив кількості місць державного замовлення на спеціальність «Фармація, промислова фармація» на результативність вступних кампаній 2023 та 2024 років в умовах воєнного стану в Україні. Зібрано та опрацьовано дані системи ЄДЕБО щодо кількості місць державного замовлення, кількості вступників та студентів другого (магістерського) рівня вищої освіти за двома спеціальностями 226.01 «Фармація» та 226.02 «Промислова фармація» на денну форму навчання.

Встановлено, що під час стану війни, в умовах дефіциту медичних (фармацевтичних) кадрів, державне замовлення на підготовку фахівців за спеціальністю «Фармація, промислова фармація» в Україні є необхідним для забезпечення стабільності системи охорони здоров'я, потреб населення, розвитку вітчизняного виробництва ліків, підтримки економіки та забезпечення психологічної стабільності суспільства.

**Ключові слова:** фармація, промислова фармація, вступна кампанія, якість освіти, стан війни.

**Introduction.** Today, the pharmaceutical industry in many countries of the world is a leader among the industries of the national economy, which are related to ensuring the livelihood and health of citizens. This is an important component of the health care system, which occupies a special place in the sphere of intellectual and industrial activity of society. The unique privilege of this industry among other sectors of the economy is explained by its focus on supporting people's lives through the production and timely provision of effective, safe, high-quality and affordable medicines to consumers. Therefore, the pharmaceutical industry is a set of enterprises, organizations and institutions engaged in the process of creation, production and sale of medicinal substances, medicinal products (MPs) and medical products, ensuring their proper quality control, as well as training and retraining of personnel. The pharmaceutical industry includes: pharmaceutical enterprises producing substances and drugs, veterinary drugs, medical cosmetics, dietary supplements, etc.; enterprises that carry out wholesale and retail sales of these products; scientific institutions that carry out scientific research and research and development for the creation of new medicinal products and drugs, technological processes, equipment and quality control methods; educational institutions that train and retrain specialists for the needs of the industry, as well as organizations and institutions that form and implement information and analytical support [5].

Master's training for the pharmaceutical industry in Ukraine in the specialty 226 «Pharmacy, industrial pharmacy» is currently carried out by thirty-three institutions of higher education (HEI), some of which

are subordinated to the Ministry of Education and Culture of Ukraine – 5 HEIs, the rest – 28 HEIs under the Ministry of Health of Ukraine [1].

In 2022, the Standard of higher education of the second (master's) level of higher education of branch 22 «Health care» of specialty 226 «Pharmacy, industrial pharmacy» was approved for specializations: 226.01 «Pharmacy», 226.02 «Industrial pharmacy» [6].

During the state of war in Ukraine, there is a process of migration of the population, in particular young people of high school age, which affects the number of applicants and students of higher education institutions. However, the specialty 226 «Pharmacy, industrial pharmacy» has two aspects that further influence the formation of the applicant pool: the specialty has a high fixed passing score (150 points in the 2024 entry year), and upon completion of studies, graduates of both sexes are subject to mandatory enrolled in the military register and subject to mobilization [3, 4].

**The purpose** of our study was to establish and correlate the influence of the allocated volume of places of the state order on the effectiveness of the admission campaign of entrants to specialty 226 «Pharmacy, industrial pharmacy» in the conditions of state of war in Ukraine.

**Materials and methods.** The materials were the accounting and statistical databases of the unified state electronic database system (EDEBO), which allowed real-time monitoring of the 2024 admission campaign, as well as obtaining statistical data based on the results of the 2023 admission campaign. The methods of office research, analysis, modeling and forecasting were used.

**The main part.** The higher education standard (SHE) in the specialty 226 «Pharmacy, industrial pharmacy» for the second (master's) level of higher education [6] was implemented in order to improve the quality of education of future pharmacists in the higher education sector of Ukraine. SHE provides for end-to-end training of specialists, without division into first and second levels of higher education, in the amount of 300 ECTS credits (for educational-professional) or 360 ECTS credits (for educational-scientific) programs. This standard covers all aspects of the pharmaceutical industry, including manufacturing, quality control, research and development of new drugs, testing and distribution. One of the main advantages of the introduction of SHE specialty 226 is the improvement of the quality of training of future pharmacists, which leads to a decrease in the number of errors and accidents in the field of pharmacy and health care. It also allows graduates to engage in research, development and production of new medical devices, which contributes to improving the level of medical care for the population. Another advantage of the introduction of SHE specialty 226 is the possibility of increasing the competitiveness of the Ukrainian pharmaceutical industry on the world market. Graduates of this specialty can carry out research and development of new drugs that meet the highest quality and safety standards. This makes it possible to increase the production of high-quality medicines that can be exported to foreign markets, increasing the income of the Ukrainian economy. According to SHE for specialization 226.01. «Pharmacy» provides for additional internship training and acquisition of a secondary pharmaceutical specialization or confirmation of a professional category. However, for the specialization 226.02 «Industrial Pharmacy» such training is not provided in the SHE [7].

It should be noted that in accordance with the SVO, the object of activity for students of specialization 226.01 «Pharmacy» is development, production, quality control, wholesale and retail sale of drugs, pharmaceutical services, pharmaceutical assistance, and for students of specialization 226.02 «Industrial Pharmacy», respectively, the object is the development and industrial production of drugs, production technologies, quality control tests, pharmaceutical quality system. Graduates' academic rights allow them to obtain a doctor of philosophy degree and additional qualifications in the adult education system. For specialization 226.01. «Pharmacy» provides for additional internship training and acquisition of a secondary pharmaceutical specialization or confirmation of a professional category. In general, the organization of the educational process is regulated by the requirements for the licensing of educational programs for regulated professions [2].

Since the purpose of our research was to study the correlation of the impact of the allocated amount of state-ordered places on the effectiveness of the admissions campaign in the conditions of state of war in Ukraine, which continues for the third year in a row, we collected and structured the data of the EDEBO by the number of state-ordered places, the number of applicants and those obtaining education of the second (master's) level of higher education, specialty 226 «Pharmacy, industrial pharmacy» in two specializations (Tables 1, 2). First of all, we worked out the data on higher education institutions that prepare students for the second (master's) level of higher education in the specialization 226.02 «Industrial Pharmacy», namely: Lviv Polytechnic National University (Lviv), Kyiv National University of Technology and Design (Kyiv), National Pharmaceutical University of Ukraine (Kharkiv), Ukrainian State University of Science and Technology (Dnipro), National Technical University «Kharkiv Polytechnic Institute» (Kharkiv) (Table 1). We collected and processed the received data for full-time education as of 28.08.2024.

The table presents the data of the National University «Odesa Polytechnic» (Odesa), however, no competitive offers were found in this higher education institution, and the certificate of accreditation of this higher education institution is valid until July 1, 2027. Also, we established that the general trend regarding the allocation of the number of state contract places during the years of state of war in Ukraine for applicants of specialization 226.02 «Industrial Pharmacy» remains unchanged. The exception is the Ukrainian State University of Science and Technology (Kyiv), which had no order in 2023, and as of 2024 – 5 places of state order. The general trend for all the above-mentioned higher education institutions was the incomplete filling of state budget places, and the presence of commercial students with unfilled state budget places also became a dilemma.

At the second stage, we collected and structured the statistical data of the EDEBO regarding higher education institutions that train students of the second (master's) level of higher education in the specialization 226.01 «Pharmacy», namely: National Pharmaceutical University of Ukraine (Kharkiv), Danylo Halytsky Lviv National Medical University (Lviv), Communal Institution of Higher Education of Lviv Regional Council "Andrei Krupynskyi Lviv Medical Academy" (Lviv), Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies Lviv (Lviv), Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine (Ternopil), Ivano-Frankivsk National Medical University (Ivano-Frankivsk), Zaporizhzhia State Medical and Pharmaceutical University (Zaporizhzhia), National Pirogov Memorial Medical University (Vinnytsia),

Table 1

**Statistical data of the admission campaigns of 2023 and 2024 in HEI in the specialty 226 «Pharmacy, industrial pharmacy» specialization 226.02 «Industrial pharmacy» (full-time education)\***

Name of the HEI / subordination / Name of the OP	Year of entry/ LOC**	The number of places of state order	Number of applicants	Number of students		Code of the higher education institution EDEBO/ Status of the OP Certificate of accreditation	Electronic link
				Budget form	Commercial basis		
National University of Pharmacy/ Ministry of Health MINISTRY OF HEALTH OF UKRAINE OPP Pharmaceuticals Technology	2023/ 13	10	29	7	2	201 Certificate of accreditation of educational program 6911, valid until 01.07.2029	<a href="https://registry.edbo.gov.ua/university/201/study-programs/?q=2&amp;sp=226">https://registry.edbo.gov.ua/university/201/study-programs/?q=2&amp;sp=226</a>
	2024/ 20	10	17	8	0		
National Technical University "Kharkiv Polytechnic Institute" / MES / Industrial pharmacy	2023/ 10	5	15	2	1	104 There is no certificate of accreditation of the educational program	<a href="https://registry.edbo.gov.ua/university/104/study-programs/?q=2&amp;sp=226">https://registry.edbo.gov.ua/university/104/study-programs/?q=2&amp;sp=226</a>
	2024/ 35	5	9	0	1		
Kyiv National University of Technology and Design / MES / OPP Industrial Pharmacy	2023/ 9	5	45	3	6	307 Certificate of accreditation of the educational program 7426, valid until 01.07.2029	<a href="https://registry.edbo.gov.ua/university/307/study-programs/?q=2&amp;sp=226">https://registry.edbo.gov.ua/university/307/study-programs/?q=2&amp;sp=226</a>
	2024/ 11	5	11	0	0		
Lviv Polytechnic National University / MES/ OPP, ONP Pharmacy, industrial pharmacy	2023/ 90	23	123	18	8	97/ Certificate of accreditation specialty 1495099, valid until 01.07.2025	<a href="https://registry.edbo.gov.ua/university/97/study-programs/?q=2&amp;sp=226">https://registry.edbo.gov.ua/university/97/study-programs/?q=2&amp;sp=226</a>
	2024/ 90	24	54	9	0		
Ukrainian State University of Science and Technology / MES / OPP Industrial Pharmacy	2023/ 45	0	26	0	7	6507/ There is no certificate of accreditation of the educational program	<a href="https://registry.edbo.gov.ua/university/6507/study-programs/?q=2&amp;sp=226">https://registry.edbo.gov.ua/university/6507/study-programs/?q=2&amp;sp=226</a>
	2024/ 50	5	7	2	0		
National University "Odesa Polytechnic" / MES/ OPP Pharmaceuticals Technology	2023	No bids were found				5754/ Certificate of accreditation of the specialty 16017576, valid until 01.07.2027	<a href="https://registry.edbo.gov.ua/university/5754/study-programs/">https://registry.edbo.gov.ua/university/5754/study-programs/</a>
	2024	No bids were found					

\* Statistical data of the EDEBO database as of 28.08.2024.

\*\*Licensed volume of higher education graduates.

Bogomolets National Medical University (Kyiv), Shupyk National Healthcare University of Ukraine (Kyiv) and others (Table 2).

We did not consider private HEI, since they were not allocated a state contract. The statistical data of the admission campaigns of 2023 and 2024 in higher education institutions in the specialty 226 «Pharmacy, industrial pharmacy» specialization 226.01 «Pharmacy» (full-time education), shown in Table 2, indicate a tendency towards a constant

correlation and change in the places of state orders in higher education institutions, which is excellent compared to specialization 02 «Industrial Pharmacy». Also, unfortunately, the places of the state order are filled for a third or half of the volume of the order, which is understandable and related to the migration processes that are taking place in Ukraine due to the state of war. However, the commercial places are full, and applicants of all forms of education (state-budget and privately funded) are required to have at least 150

Table 2

**Statistical data of the admission campaigns of 2023 and 2024 in HEI in the specialty 226 «Pharmacy, industrial pharmacy» specialization 226.01 «Pharmacy» (full-time education)\***

Name of the HEI / subordination / Name of the OP	Year of entry / LOC***	The number of places of state order	Number of applicants	Number of students		Code of the higher education institution EDEBO/ Status of the OP Certificate of accreditation	Electronic link																																																																																								
				Budget form	Commercial basis																																																																																										
1	2	3	4	5	6	7	8																																																																																								
Bogomolets National Medical University / Ministry of Health	2023/ 451	34	558	33	119	149/ Certificate of accreditation of the specialty UD 11011880, valid until 01.07.2025	<a href="https://registry.edbo.gov.ua/university/149/study-programs/">https://registry.edbo.gov.ua/university/149/study-programs/</a>																																																																																								
	2024/ 250	50	162	20	4			Shupyk National Healthcare University of Ukraine	2023/ 25	0	43	0	0	2833/ Certificate of accreditation OP 7174, valid until 27.02.2025	<a href="https://registry.edbo.gov.ua/university/2833/study-programs/">https://registry.edbo.gov.ua/university/2833/study-programs/</a>	2024/ 25	25	27	1	0	National Pirogov Memorial Medical University	2023/ 100	5	425	5	67	20/ Certificate of accreditation OP 5583, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/20/study-programs/">https://registry.edbo.gov.ua/university/20/study-programs/</a>	2024/ 100	10	118	9	0	Lesya Ukrainka Volyn National University	2023/ 26	10	82	10	16	44/ Certificate of accreditation OP 4149, valid until 01.07.2028	<a href="https://registry.edbo.gov.ua/university/44/study-programs/">https://registry.edbo.gov.ua/university/44/study-programs/</a>	2024/ 40	11	33	9	0	Dnipro State Medical University	2023/ 80	10	115	8	10	210/ Certificate of accreditation OP 1493, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/210/study-programs/">https://registry.edbo.gov.ua/university/210/study-programs/</a>	2024/ 160	15	37	3	0	Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>	2024/ 25	13	43	4	0	Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15
Shupyk National Healthcare University of Ukraine	2023/ 25	0	43	0	0	2833/ Certificate of accreditation OP 7174, valid until 27.02.2025	<a href="https://registry.edbo.gov.ua/university/2833/study-programs/">https://registry.edbo.gov.ua/university/2833/study-programs/</a>																																																																																								
	2024/ 25	25	27	1	0			National Pirogov Memorial Medical University	2023/ 100	5	425	5	67	20/ Certificate of accreditation OP 5583, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/20/study-programs/">https://registry.edbo.gov.ua/university/20/study-programs/</a>	2024/ 100	10	118	9	0	Lesya Ukrainka Volyn National University	2023/ 26	10	82	10	16	44/ Certificate of accreditation OP 4149, valid until 01.07.2028	<a href="https://registry.edbo.gov.ua/university/44/study-programs/">https://registry.edbo.gov.ua/university/44/study-programs/</a>	2024/ 40	11	33	9	0	Dnipro State Medical University	2023/ 80	10	115	8	10	210/ Certificate of accreditation OP 1493, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/210/study-programs/">https://registry.edbo.gov.ua/university/210/study-programs/</a>	2024/ 160	15	37	3	0	Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>	2024/ 25	13	43	4	0	Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0										
National Pirogov Memorial Medical University	2023/ 100	5	425	5	67	20/ Certificate of accreditation OP 5583, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/20/study-programs/">https://registry.edbo.gov.ua/university/20/study-programs/</a>																																																																																								
	2024/ 100	10	118	9	0			Lesya Ukrainka Volyn National University	2023/ 26	10	82	10	16	44/ Certificate of accreditation OP 4149, valid until 01.07.2028	<a href="https://registry.edbo.gov.ua/university/44/study-programs/">https://registry.edbo.gov.ua/university/44/study-programs/</a>	2024/ 40	11	33	9	0	Dnipro State Medical University	2023/ 80	10	115	8	10	210/ Certificate of accreditation OP 1493, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/210/study-programs/">https://registry.edbo.gov.ua/university/210/study-programs/</a>	2024/ 160	15	37	3	0	Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>	2024/ 25	13	43	4	0	Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0																							
Lesya Ukrainka Volyn National University	2023/ 26	10	82	10	16	44/ Certificate of accreditation OP 4149, valid until 01.07.2028	<a href="https://registry.edbo.gov.ua/university/44/study-programs/">https://registry.edbo.gov.ua/university/44/study-programs/</a>																																																																																								
	2024/ 40	11	33	9	0			Dnipro State Medical University	2023/ 80	10	115	8	10	210/ Certificate of accreditation OP 1493, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/210/study-programs/">https://registry.edbo.gov.ua/university/210/study-programs/</a>	2024/ 160	15	37	3	0	Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>	2024/ 25	13	43	4	0	Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0																																				
Dnipro State Medical University	2023/ 80	10	115	8	10	210/ Certificate of accreditation OP 1493, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/210/study-programs/">https://registry.edbo.gov.ua/university/210/study-programs/</a>																																																																																								
	2024/ 160	15	37	3	0			Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>	2024/ 25	13	43	4	0	Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0																																																	
Uzhhorod National University	2023/ 53	13	170	10	41	207/ Certificate of accreditation of educational program 5375, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/207/study-programs/">https://registry.edbo.gov.ua/university/207/study-programs/</a>																																																																																								
	2024/ 25	13	43	4	0			Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>	2024/ 150	50	42	10	1	The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0																																																														
Zaporizhzhia State Medical and Pharmaceutical University	2023/ 150	50	124	32	15	6716/ Certificate of accreditation of the specialty UD 08017495, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/6716/study-programs/">https://registry.edbo.gov.ua/university/6716/study-programs/</a>																																																																																								
	2024/ 150	50	42	10	1			The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>	2024/ 195	15	95	7	0																																																																											
The Ivano-Frankivsk National Medical University	2023/ 198	0	293	0	50	285/ Certificate of accreditation OP 1143, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/285/study-programs/">https://registry.edbo.gov.ua/university/285/study-programs/</a>																																																																																								
	2024/ 195	15	95	7	0																																																																																										

Continuation table 2

1	2	3	4	5	6	7	8
Danylo Halytsky Lviv National Medical University	2023/ 230	50	492	49	48	121/ Certificate of accreditation of the specialty ND 1497028, valid until 01.07.2025	<a href="https://registry.edbo.gov.ua/university/121/study-programs/">https://registry.edbo.gov.ua/university/121/study-programs/</a>
	2024/ 155	55	176	32	2		
Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies Lviv	2023/ 80	21	96	13	5	126/ Certificate of accreditation of educational program 4385, valid until 01.07.2028	<a href="https://registry.edbo.gov.ua/university/126/study-programs/">https://registry.edbo.gov.ua/university/126/study-programs/</a>
	2024/ 125	30	34	4	0		
Petro Mohyla Black Sea National University	2023/ 0	there were no competitive bids				265/ No certificate of accreditation of the OP is available	<a href="https://registry.edbo.gov.ua/university/265/study-programs/">https://registry.edbo.gov.ua/university/265/study-programs/</a>
	2024/ 25	0	6	0	0		
Poltava State Medical University	2023/ 10	0	82	0	7	6415/ There is no certificate of accreditation of the OP	<a href="https://registry.edbo.gov.ua/university/6415/study-programs/">https://registry.edbo.gov.ua/university/6415/study-programs/</a>
	2024/ 15	0	33	0	0		
Luhansk State Medical University	2023/ 86	6	101	6	19	13/ Certificate of accreditation OP 3445, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/13/study-programs/">https://registry.edbo.gov.ua/university/13/study-programs/</a>
	2024/ 45	10	34	5	0		
Municipal Institution of Higher Education "Rivne Medical Academy" of Rivne Region Council	2023/ 10	0	32	0	5	729/ There is no certificate of accreditation of the educational program	<a href="https://registry.edbo.gov.ua/university/729/study-programs/">https://registry.edbo.gov.ua/university/729/study-programs/</a>
	2024/ 30	25	27	8	0		
Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine	2023/ 108	15	390	13	42	102/ Certificate of accreditation of educational program 3175, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/102/study-programs/">https://registry.edbo.gov.ua/university/102/study-programs/</a>
	2024/ 70	20	91	14	0		
National University of Pharmacy	2023/ 200	80	179	45	12	201/ Certificate of accreditation OP 6910, valid until 01.07.2029	<a href="https://registry.edbo.gov.ua/university/201/study-programs/">https://registry.edbo.gov.ua/university/201/study-programs/</a>
	2024/ 200	60	67	23	7		
Cherkasy Medical Academy	2023/ 22	3	37	2	2	834/ There is no certificate of accreditation of the OP	<a href="https://registry.edbo.gov.ua/university/834/study-programs/">https://registry.edbo.gov.ua/university/834/study-programs/</a>
	2024/ 24	3	17	2	2		

Continuation table 2

1	2	3	4	5	6	7	8
Bukovinian State Medical University	2023/ 75	10	310	9	46	85/ Certificate of accreditation OP 1968, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/85/study-programs/">https://registry.edbo.gov.ua/university/85/study-programs/</a>
	2024/ 95	15	80	10	1		
Donetsk National Medical University	2023/ 70	5	51	4	4	4/ Certificate of accreditation OP 7068, valid until 06.02.2025	<a href="https://registry.edbo.gov.ua/university/4/study-programs/">https://registry.edbo.gov.ua/university/4/study-programs/</a>
	2024/ 70	10	10	1	0		
Nizhyn Mykola Gogol State University	2023/ 20	6	15	4	0	155/ Certificate of accreditation OP 7184, valid until 27.02.2025	<a href="https://registry.edbo.gov.ua/university/155/study-programs/">https://registry.edbo.gov.ua/university/155/study-programs/</a>
	2024/ 20	6	2	1	0		
Odessa National Medical University	2023/ 26	5	168	4	21	188/ Certificate of accreditation OP 1548, valid until 01.07.2026	<a href="https://registry.edbo.gov.ua/university/188/study-programs/">https://registry.edbo.gov.ua/university/188/study-programs/</a>
	2024/ 16	15	78	9	1		
Odesa I.I. Mechnikov National University	2023/ 74	8	45	5	7	28/ Certificate of accreditation OP 8240, valid until 01.07.2029	<a href="https://registry.edbo.gov.ua/university/28/study-programs/">https://registry.edbo.gov.ua/university/28/study-programs/</a>

\* Statistical data of the EDEBO database as of 28.08.2024.

\*\* Licensed volume of higher education graduates.

points according to the results of the national multi-subject test (NMT). In particular, the passing score of the NMT in 2024 for the contract and for the budget for entry based on the PZSO and NRK5 for the field of knowledge 22 Health care was at least 150 points. Applicants who did not indicate the specialty 226 «Pharmacy, industrial pharmacy» as the first or second priority when submitting documents for admission to the higher education institution, unfortunately, could not be admitted to the places of the state order.

Our analysis also allowed us to see how political and socio-economic factors affect the number of entrants and students of education in a particular country.

It should be noted that the state order for the specialty «Pharmacy, industrial pharmacy» is important and necessary for several reasons: ensuring the health of the population, developing the national pharmaceutical industry, providing medicines in times of crisis, improving the quality of pharmaceutical education, social stability, supporting medical (pharmaceutical) needs of the military and civilian population, ensuring the sustainability of the health

care system, innovation and development of new drugs, supporting the economy and reducing dependence on imports.

As for ensuring the health of the population, pharmacy is one of the key areas that directly affects the health and quality of life of the population. Medicines and medical devices produced by pharmaceutical companies are critically important for the treatment and prevention of diseases. Accordingly, ensuring a sufficient number of qualified specialists in this field is vital to guarantee public access to quality medicines. Since the development of the national pharmaceutical industry is a priority for Ukraine, the state order for specialty 226. «Pharmacy, industrial pharmacy», specialization 226.02 «Industrial pharmacy» is extremely important. Industrial pharmacy is responsible for the production of drugs and the development of new drugs. The development of this area can significantly strengthen the country's economy and reduce dependence on imported drugs. The state order makes it possible to train a sufficient number of highly qualified specialists who are able to work effectively in pharmaceutical

companies and research centers, contributing to the development of the national pharmaceutical industry.

Regarding the provision of medicines and medical products in crisis situations, during epidemics, pandemics or other emergencies where access to medicines is critical, having sufficient qualified pharmacists and capacity to produce medicines at the national level becomes a key factor in ensuring public health. The state order for specialists in the field of pharmacy ensures the training of personnel for such emergency situations. The state order also contributes to the development of higher education in the field of pharmacy, as it stimulates universities and educational institutions to improve educational programs, modernize the material and technical base, introduce the latest technologies and improve the qualifications of teachers. This, in turn, ensures high quality training of future specialists.

Thus, the state order for the specialty «Pharmacy, industrial pharmacy» is necessary to ensure the health of the population, the development of the national pharmaceutical industry, ensuring preparedness for emergency situations, improving the quality of education and ensuring social stability.

The issue of the need for a state order for specialty 226 «Pharmacy, industrial pharmacy» in the conditions of prolonged state of war in Ukraine deserves special attention. It becomes even more obvious and critical in view of the specific needs that arise in such a period. Below are some key arguments that justify the importance of public procurement in these circumstances:

1. Support of the medical needs of the military and the civilian population. In the conditions of state of war, the need for medical supplies, such as painkillers, antibiotics, antiseptics, means for the treatment of injuries, anti-shock and anti-burn drugs and other medicines necessary for providing first aid and further treatment of the injured, increases significantly. The state order for the training of specialists in pharmacy and industrial pharmacy allows to ensure qualified support of the medical system, which is critically important for the preservation of life and health of both the military and the civilian population.

2. Ensuring the sustainability of the health care system. Military action can lead to the destruction of infrastructure, logistics chains and the disruption of the supply of medicines from abroad. Having a sufficient number of qualified pharmacists and industrial pharmacists helps to maintain the sustainability of the health care system by ensuring the local production of vital medicines. This allows the country to be less

dependent on imports and respond to needs promptly.

3. Creation of strategic stocks of drugs and medical products. During state of war, it is important to have sufficient stocks of strategically important medicines. The state order for the training of specialists contributes to the development and optimization of the production of medicines, which makes it possible to effectively manage the national stocks of medicines and ensure their replenishment if necessary.

4. Innovations and development of new drugs. In wartime, there may be a need to develop new LPs that will meet specific challenges, for example, combating infectious diseases in combat conditions or treating specific types of wounds. The training of highly qualified specialists in the field of industrial pharmacy ensures the availability of personnel for scientific research and innovation in the production of new drugs.

5. Supporting the economy and reducing dependence on imports. Under state of war, the economic situation can become unstable, and government procurement of places to train pharmacists helps support the economy through the development of local production. This reduces dependence on imported medicines, which can be limited due to logistical problems or sanctions, providing the country with necessary resources. State of war in Ukraine leads to significant psychological stress among the population. Access to medication, including medications for stress and depression, is an important component of supporting mental health. Pharmacists can provide appropriate counseling and access to needed medications, which supports the morale of the population.

**Conclusions.** The creation of state-ordered places for specialty 226 «Pharmacy, industrial pharmacy» contributes to the employment of young people and provides them with prospects for career growth. This is important for social stability, as young people get the opportunity to realize themselves in a promising field, which is one of the foundations of stable development of society.

Pharmacists play an important role in providing first aid, public education and preventive measures. In times of state of war, their knowledge and skills become even more valuable for public health care, especially in conditions of shortage of medical (pharmaceutical) personnel. Thus, the state order for the training of specialists in specialty 226 «Pharmacy, industrial pharmacy» in the conditions of state of war in Ukraine is necessary to ensure the needs of the population, the stability of the health care system, the development of the national production of drugs, the support of the economy and the psychological stability of society.



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