



Analysis of Russian pharmaceutical specialists labor market for 2019–2022

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The higher education system is becoming more and more competitive every year. It faces ambitious tasks of training highly qualified personnel and ensuring technological sovereignty. A labor market analysis is an integral component of the early career guidance work with students and their navigation in the profession, which is especially important at the beginning of their employment.

The aim of the work was to conduct a comparative analysis of supply and demand indicators in the labor market of pharmaceutical specialists in nine Russian regions in 2019–2022.

Materials and methods. The research methodology included the collection, quantitative and qualitative analyses of the data on the SuperJob.ru website. The posted offers (vacancies) and CVs were analyzed on the portal SuperJob.ru (a large online service of CVs and vacancies from direct employers, agencies, employment centers) for 2019–2022 in nine regions and federal districts of Russia: Moscow and the Moscow region, St. Petersburg and the Leningrad region, the Central Federal District (without the Moscow region), the Northwestern Federal District (without the Leningrad Region), the Volga Federal District, the Urals Federal District, the Siberian Federal District, the Far Eastern Federal District, the Southern and North Caucasus Federal Districts.

Results. The analysis of the number of posted vacancies and CVs in the recruitment agency database for 2019–2022 shows a stable shortage of pharmacy professionals with both secondary (vacancies / CVs – 42112 / 41037) and higher professional education (vacancies / CVs – 36432 / 25149). The pointed out specialists are among the most required ones by employers, and pharmacy is one of the most popular areas for candidates. Cities with a high level of economy and population experience a greater deficit in specialists with pharmaceutical education. Salary levels of specialists with higher or secondary education are almost comparable on average from 50 to 75 thousand rubles, but employers generally prefer to hire specialists with higher education.

Conclusion. On average in the regions, the demand for specialists with higher education is lower than the demand for specialists with secondary education and the salary expectations of pharmacists coincide with the employers' offers, while the salary expectations of specialists with higher education are higher in the market. Specialists with secondary education are much more numerous, as they are trained by a much larger number of educational institutions. For pharmacy technicians, a pharmacy is often the only place of work in their specialty, while for pharmacists it is usually a starting point.

Keywords: pharmaceutical market; pharmaceutical specialists; labor market; pharmacist; pharmacy technician; vacancies

Abbreviations: MR – Moscow and the Moscow region; SPb – St. Petersburg and the Leningrad region; CFD – the Central Federal District (without the Moscow region); NWFD – the Northwestern Federal District (without the Leningrad Region); VFD – the Volga Federal District; UFD – the Urals Federal District; SFD – the Siberian Federal District; FEFD – the Far Eastern Federal District; SFD+NCFD – the Southern and North Caucasus Federal Districts.

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Анализ российского рынка труда фармацевтических работников за 2019–2022 гг.

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Система высшего образования с каждым годом становится более конкурентной. Перед ней стоят амбициозные задачи подготовки кадров высшей квалификации и обеспечение технологического суверенитета. Анализ рынка труда представляет собой неотъемлемый компонент ранней профориентационной работы со студентами и их навигации в профессии, что особенно актуально в начале трудовой деятельности.

Цель. Провести сравнительный анализ показателей спроса и предложения на рынке труда фармацевтических работников девяти российских регионов за период с 2019 по 2022 гг.

Материалы и методы. Методология исследования включала сбор, количественный и качественный анализ данных на сайте SuperJob.ru. Анализ подвергали размещенные предложения (вакансии) и резюме на портале SuperJob.ru (крупный онлайн-сервис резюме и вакансий от прямых работодателей, агентств, центров занятости) за 2019–2022 гг. в девяти регионах и федеральных округах России – г. Москва и Московская область, г. Санкт-Петербург и Ленинградская область, Центральный федеральный округ (без Московской области), Северо-Западный федеральный округ (без Ленинградской области), Приволжский федеральный округ, Уральский федеральный округ, Сибирский федеральный округ, Дальневосточный федеральный округ, Южный и Северо-Кавказский федеральные округа.

Результаты. Анализ количества размещённых вакансий и резюме в базе рекрутингового агентства в 2019–2022 гг. показывает стабильный дефицит фармацевтических работников как со средним (вакансии / резюме – 42112 / 41037), так и с высшим профессиональным образованием (вакансии / резюме – 36432 / 25149). Обозначенные специалисты входят в число самых востребованных среди работодателей, а фармацевтика – одно из самых популярных направлений у кандидатов. Города с высоким уровнем экономики и численности населения испытывают больший дефицит в специалистах с фармацевтическим образованием. Уровень заработной платы специалистов с высшим или средним образованием были практически сопоставимы – в среднем от 50 до 75 тыс. рублей, но работодатели, как правило, предпочитают нанимать людей с высшим образованием.

Заключение. В среднем по регионам спрос на специалистов с высшим образованием ниже, чем со средним. По заработной плате ожидания фармацевтов совпадают с предложением работодателя, в то время как зарплатные ожидания специалистов с высшим образованием оказываются выше рынка. Специалистов со средним образованием значительно больше поскольку их подготовку осуществляет значительно большее количество учебных заведений. Для фармацевта аптека часто является единственным местом работы по специальности, тогда как для провизора это как правило место для старта.

Ключевые слова: фармацевтический рынок; фармацевтические специалисты; рынок труда; провизор; фармацевт; вакансии

Список сокращений: МО – Москва и Московская область; СПб – Санкт-Петербург; ЛО – Ленинградская область; ЦФО – Центральный федеральный округ (без Московской области); СЗФО – Северо-Западный федеральный округ (без Ленинградской области); ПФО – Приволжский федеральный округ; УФО – Уральский федеральный округ; СФО – Сибирский федеральный округ; ДФО – Дальневосточный федеральный округ; ЮФО+СКФО – Южный и Северо-Кавказский федеральные округа.

INTRODUCTION

From many positions, pharmaceutical industry is of strategic importance to ensure the functioning and development of various state institutions. Maintaining a progressive trend towards increasing life expectancy and quality of life, effectiveness of preventive measures and treatment of diseases is impossible without the development of pharmaceutical industry [1, 2]. As in most socio-economic spheres, human resources are a key element of a progressive development. Personnel training, including a higher qualification, is the most important factor in the development of the society [3]. A highly qualified pharmacy specialist should be able to give competent advice on the issues related to the regimen, peculiarities of the action, side effects, interactions and contraindications of medicines. The population often seeks information from pharmacists and pharmacy technicians at the pharmacy, so they can influence the adherence to treatment. In case of prescription drugs, a pharmacist in counseling should be able, without going beyond their competence, to give full information about the drug, facilitating its safe and correct administration. Therefore, a high level of knowledge among pharmacists and pharmacy technicians is an essential tool in providing competent and effective counseling to the population [4, 5].

Higher pharmaceutical education traditionally occupies high positions in the ranking of specialties in terms of demand among both applicants and employers [6–8].

Meeting the requirements of the modern labor market and the demands of the society¹, including the ones in the field of educational services, the system of higher education is in the state of a constant transformation. An increasing competition between higher education institutions encourages their development; herewith, the quality is the key advantage [9–11]. An obligatory element of the pharmaceutical education development is the expansion of ideas about its labor functions [12], opportunities and directions of a specialist's the self-realization [13], a potential of the digital and technological development of all the areas of pharmaceutical industry [14, 15]. Thus, modern pharmaceutical industry tends to a more and more detailed segmentation [16–18], which forms a demand for training personnel with not only the competencies "classic" for a pharmacist, but also a more universal set of them, which will make them possible to be realized in any direction of labor activities

(science, production, analytics, advertising, marketing, supervision, management, pedagogy) [19–21].

The educational process on specialty 33.05.01 "Pharmacy" takes 5 years, after a successful completion of training a graduate is awarded a "Pharmacist" qualification. After passing the initial accreditation, a specialist can work as a pharmacist with the right to manufacture medicines according to individual prescriptions in the form of intra-pharmacy preparations, as well as concentrates, semi-finished products, and perform a quality control of dosage forms. The "Pharmacist" qualification allows to occupy managerial positions in pharmacies and pharmacy networks, manage a pharmacy and conduct independent pharmaceutical activities. In addition to higher professional education, there is specialty 33.02.01 "Pharmacy" of the secondary professional education with a "Pharmacy technician" qualification [22]. The period of training is from 1 year and 10 months (on the basis of secondary general education) to 2 years and 10 months (on the basis of basic general education). The graduates who have mastered the educational program should be ready to perform the main types of activities: wholesale and retail kinds of trade in medicines and dispensing of medicines; manufacturing of medicines in the conditions of pharmacy organizations. In 2024, 77 educational organizations in 56 cities of Russia are recruiting applicants². Given a high prevalence of educational institutions and the number of graduates, the question arises about a real demand for specialists of these profiles and qualifications because employment opportunities, career and salary expectations are important motivation aspects when choosing a specialty [23–25]. Accordingly, a market research of the vacancy market of pharmacists and pharmacy technicians in Russia in the period from 2019 to 2022 was planned and conducted. The aspect of pharmacy in the veterinary field has not been considered in this article because it is a separate area of a specialty on the scale of science and technology.

THE AIM of the work was to conduct a comparative analysis of supply and demand indicators in the labor market of pharmaceutical specialists in nine Russian regions in 2019–2022.

MATERIALS AND METHODS

As a data source, the posted offers (vacancies) and CVs were analyzed on the portal SuperJob.ru (a large online service of CVs and vacancies from direct

¹ Register of Professional Standards. Pharmacist. Available from: https://profstandart.rosmintrud.ru/obshchiy-informatsionnyy-blok/natsionalnyy-reestr-professionalnykh-standartov/reestr-professionalnykh-standartov/index.php?ELEMENT_ID=47709. Russian

² Pharmacy (cipher 33.05.01): Universities in Russia by specialty, which universities in Russia have Pharmacy. Specialty. Available from: <https://vuzopedia.ru/spec/263/vuzy?page=4>. Russian

employers, agencies, employment centers) for 2019–2022 in nine regions and federal districts of Russia – Moscow and the Moscow region, St. Petersburg and the Leningrad region, the Central Federal District (without the Moscow region), the Northwestern Federal District (without the Leningrad Region), the Volga Federal District, the Urals Federal District, the Siberian Federal District, the Far Eastern Federal District, the Southern and North Caucasus Federal Districts. Absolute values or their shares have been presented. The values for the analysis were taken from the resources of the recruitment agency. The statistical analysis was not performed due to the declarative nature of the data. To assess the dynamics similarity of the annual demand-to-supply ratio of vacancies for pharmacists and pharmacy technicians in different regions of Russia for the period 2019–2022, the Pearson correlation coefficient was calculated using Prism 6 (GraphPad Software Inc., USA). The data visualization was performed using MS Excel 365 (Microsoft, USA). The similar data for 2023 have not been considered in this paper as they do not reflect the trends observed. The main task of this manuscript is to draw attention to the labor market for professionals with pharmacy education and to reflect the absence or presence of staff shortages, as well as some career opportunities for those with higher or specialized secondary education.

The research methodology included the collection, quantitative and qualitative analyses of the data on SuperJob.ru. The data from nine Russian regions have been compared with each other and with the data from other public sources in order to confirm the reliability of the results obtained.

The data obtained in the study were grouped according to supply and demand indicators, each of which has been subsequently analyzed in a region-by-region comparison:

1. A number of vacancies and CVs posted, and a competition for vacancies – a quantitative ratio of open vacancies and CVs posted for pharmacists and pharmacy technicians – compared across the regions, was assessed as an indicator of demand for pharmaceutical specialists.
2. The top of 10 areas popular with candidates – the popularity of pharmacy among other areas of employment – was assessed in a region-by-region comparison.
3. Top cities were assessed by the number of candidates: the popularity of certain cities in the regions when potential employees choose a place of work.

4. The salaries were assessed in Russian rubles in a region-by-region comparison;
5. Additional working conditions offered by employers to pharmaceutical specialists in different regions, were assessed in vacancies.
6. Educational requirements for pharmaceutical specialists – employers' preferences regarding the availability of higher education for potential employees, were also assessed.

RESULTS AND DISCUSSION

The study provided results for nine regions of Russia. They were grouped by supply and demand indicators. Each indicator was analyzed separately; the comparison of the obtained data was also carried out individually for each indicator.

Number of published vacancies and CVs

The quantitative ratio of open vacancies and published CVs of pharmacists and pharmacy technicians is an important indicator of the demand for specialists with secondary and higher pharmaceutical education. The COVID-19 pandemic and world events have changed the balance of power in the pharmacy labor market.

In the period from 2019 to 2021, the pharmaceutical labor market was stable in Moscow and the Moscow region. The number of published vacancies / posted CVs for pharmacy technicians pharmacists were in 6704 / 4609 in 2019, 6305 / 4260 in 2020, 6959 / 4003 in 2021 (Fig. 1). During this period, the demand also exceeded the supply for pharmacists – the number of published vacancies was on average 2.4 times the number of published CVs: 6099 / 2710 in 2019; 5681 / 2487 in 2020; 6159 / 2409 in 2021 (Fig. 2). This significant staff shortage could be caused by various reasons: low salaries; complicated working conditions associated with the common phenomenon of “saving” on staff in pharmacy chains; and the reluctance of Moscow job seekers to work in the profession in general. In 2022, against the backdrop of the world events, many foreign companies left Russia, resulting in an increase in supply, but the number of pharmacist vacancies decreased. The continuation of this trend in the future may presumably entail a number of negative consequences, primarily such as an increase in unemployment among specialists with secondary education. Among pharmacists, the demand for specialists and supply were almost equal, which confirms a high relevance of higher pharmaceutical education and employers' interest in qualified specialists. Overall, in 2022, the number of vacancies for the position of pharmacists decreased to 2453 vacancies and to 3278 vacancies for the position of

pharmacy technicians. Such a drastic reduction in jobs may lead to the unemployment in this niche. In 2021/22, people from other regions were still moving to Moscow and the Moscow region and finding vacancies easily.

In St. Petersburg and the Leningrad Region, in 2021, the need for specialists with secondary education increased compared to 2019 and 2020, from 895 and 716 to 1720, respectively. The active interest of employers in personnel contributed to the reduction of the unemployment and an increase in the labor salaries in the pharmaceutical market. In 2021, the number of vacancies for pharmacists (1587 vacancies) was almost twice as high as the number of submitted CVs (819 CVs). Such a significant shortage of specialists could lead to significant losses for companies up to their bankruptcy. Due to a significant decrease in the share of foreign companies in the Russian business and the introduction of a number of sanctions, the number of submitted CVs again exceeded the number of available vacancies, in particular, the need for pharmacists decreased. But by 2022, the demand for specialists had become equal to the supply, and the employers needed pharmacists to a greater extent (in 2022 vacancies / CVs were 998 / 1341) than pharmacy technicians (there were 689 / 864 vacancies / CVs in 2022). Thus, the situation with human resources in the region can be assessed as complicated with a high level of instability, but it was not critical.

A similar situation with a significant shortage of jobs in 2019-2020 was observed in the Central Federal District: on average, there were two CVs for one pharmacy technician's vacancy (596 / 1335 vacancies / CVs in 2019, 540/1022 – in 2020). The number of CVs posted by pharmacists also exceeded the number of vacancies (552 / 763 vacancies / CVs in 2019, and 464 / 607 in 2020), but by 2021, the situation had changed significantly to an excess of vacancies over the number of professionals needing employment. In 2022, the number of vacancies and CVs were almost equal, and every specialist could find a job. Thus, the demand returned to the framework of the previous values. In terms of the quantity, in 2022, there were 697 posted vacancies for pharmacy technicians' jobs in the Central Federal District, 214 more than for pharmacists.

The demand for pharmaceutical specialists in the Northwestern Federal District was higher than the number of job seekers in all years of the study period. Even the departure of many foreign companies from the Russian labor market did not eliminate the shortage of personnel. By 2022, the number of pharmacy technicians' vacancies had amounted to 409, while the number of published CVs was 224. A similar situation was observed in terms of vacancies of pharmacists (in 2022, there were 321 / 166 vacancies / CVs). Despite a gradually

increasing number of vacancies, there were still almost half as many specialists as vacancies in 2022. A comparative analysis of the number of pharmacists' and pharmacy technicians' vacancies showed only a slight predominance of the need for pharmacists, which was likely due to the overall staff shortage in this region and, as a result, a less "selectivity" of employers when looking for employees. Thus, there is a significant shortage of personnel in the Northwestern Federal District, presumably related to the "leakage" of personnel to the capitals.

In the Volga Federal District during the study period, there was a significant shortage of jobs. The first place in terms of the number of published CVs belonged to 2019: for every vacancy there were 3.3 people willing to fill it (there were 680 / 2233 vacancies / CVs). The resulting lack of open vacancies in this region led to a lot of pharmacy technicians moving into other "outside the profession" jobs. As a result, in 2022, there were already 1.4 CVs per a pharmacy technician's vacancy (there were 726 / 1018 vacancies / CVs). At the same time, the market for pharmacists was characterized by its instability: a significant shortage of jobs in 2021 was replaced by a staff shortage, and the departure of many foreign companies from Russia in 2022 brought back an intense competition and difficulties with the employment. As a result, in 2022, there were 1.3 CVs per open vacancy of a pharmacist (there were 513 / 688 vacancies / CVs). At the same time, the number of vacancies for pharmacy technicians only slightly exceeded the number of vacancies for pharmacists (213 more vacancies), which indicates the demand for both categories of specialists in this region.

The pharmaceutical labor market in the Urals Federal District is characterized by its instability. In 2019, there was a significant shortage of jobs, as the number of published CVs almost doubled the number of open pharmacy technicians' jobs (there were 339 / 566 vacancies / CVs). However, the number of CVs declined annually due to the demographic pitfall, a political migration and professionals leaving for other industries (mainly a digital technology), while the number of vacancies, on the contrary, increased annually. This has led to an increased competition among the employers for their staff. A similar situation took place in the market of pharmacists (there were 170 / 275 vacancies / CVs). By the beginning of 2022, the number of open vacancies had become twice as high as the number of published CVs among pharmacists (there were 280 / 172 vacancies / CVs). The number of new pharmacy technicians' CVs annually declined, eventually, by the end of the year the number of open positions had exceeded the number of CVs submitted by 108 publications. In the region as a whole, for many years,

the number of open pharmacy technicians' vacancies only slightly exceeded the demand for pharmacists. But in 2022 the demand for pharmacy technicians doubled (there were 425 / 244 vacancies / CVs). The current situation may cause many professionals with higher education to move to other fields of activities, which can be considered an unfavorable trend and means that the role of higher education in the field of pharmacy is decreasing.

Since 2019, the pharmacy labor market in the Siberian Federal District has suffered significant changes. The number of published CVs was annually decreasing more and more, resulting in a shortage of pharmacy specialists with both secondary (there were 204 / 534 vacancies / CVs in 2019 vs. 200 / 380 vacancies / CVs in 2020) and higher education (there were 194 / 403 vacancies / CVs in 2019 vs. 173 / 263 vacancies / CVs in 2020). Based on the 2022 data, the number of pharmacy technicians' vacancies exceeded the number of pharmacists looking for work, by 144 vacancies. Overall, the demand for pharmacy technicians in the Siberian Federal District always exceeded the need for pharmacists, but the preference gap only widened over time. For example, in 2022, there were 385 vacancies and 275 CVs for pharmacy technicians published, while for pharmacists, they were 214 and 217, respectively.

From 2019 to 2020, the pharmaceutical market in the Far Eastern Federal District experienced a shortage of jobs (in 2019, there were 98 / 198 vacancies / CVs for pharmacy technicians and 97 / 132 for pharmacists; in 2020, there were 80 / 136 vacancies / CVs for pharmacy technicians and 67 / 93 for pharmacists). However, in 2021, the situation changed significantly towards an excess of vacancies over the number of specialists in search of jobs (in 2021, there were 309 / 202 vacancies / CVs for pharmacy technicians and 248 / 129 – for pharmacists). This trend did not last long, and in 2022, the number of submitted CVs exceeded the number of existing vacancies (in 2022, there were 82 / 111 vacancies / CVs for pharmacy technicians and 68 / 77 – for pharmacists). It is characteristic for the region that the share of pharmacy specialists with higher education is extremely low. This is probably due to a small number of pharmaceutical companies and an almost complete absence of production pharmacies in the region, and, accordingly, to the initially lower demand for specialists with higher education. Thus, the demand for pharmacists in the Far Eastern Federal District has always exceeded the need for pharmacists.

In the Southern Federal District and the North Caucasus Federal District, the number of submitted CVs exceeded the number of open vacancies throughout the study period. Despite the fact that the number of

specialists in search of the employment decreased more than twice between 2019 and 2022, the demand for pharmacists and pharmacy technicians did not increase (in 2019, 510 / 1217 vacancies / CVs for pharmacy technicians and pharmacists, and in 2020 – 412 / 929 for pharmacy technicians and 386 / 616 for pharmacists; in 2021 – 840 / 904 for pharmacy technicians and 771 / 535 for pharmacists). Based on this, it can be concluded that there is a shortage of jobs for candidates with both higher and secondary pharmacy education in these regions. The demand for pharmacists in the Southern and North Caucasus Federal Districts slightly exceeded the need for pharmacists throughout the study period. Thus, in 2022, 276 vacancies for pharmacists were published which was 86 vacancies fewer than pharmacists.

Thus, in most regions there is a slight predominance of demand for specialists with secondary education and a drop in demand for specialists with pharmacist education. This may lead to a decrease in the role of the latter in recruitment, to a decrease in motivation for higher education among young specialists and, as a result, to a decrease in the quality of pharmaceutical care in general.

When calculating the Pearson correlation coefficient, it was noted that the demand/supply ratio of vacancies for the period 2019–2022 (Fig. 1, 2) changed in a similar way (a high positive correlation, $r > 0.94$ at $p < 0.05$) for both pharmacists and pharmacy technicians in the following regions. They were: St. Petersburg and the Leningrad region, the Central Federal District (without the Moscow region), the Northwestern Federal District (without the Leningrad Region), the Volga Federal District, the Far Eastern Federal District and the Southern and North Caucasus Federal Districts. In these regions, a high degree of correlation can be noted. It indicates similar trends in changes in the labor market over a given period for specialists with both secondary and higher education, which allows the use of general strategies for managing supply and demand. It should be noted that the demand/supply ratio of vacancies in Moscow and the Moscow region for pharmacy technicians and pharmacists shows a relatively low correlation with other regions. This is likely due to a high population density, economic differences and a large number of vacancies, which makes the conditions for the formation of supply and demand in the labor market of the capital region unique. Compared to the other regions, there is also a low correlation coefficient between demand and supply of vacancies in the Ural and the Siberian Federal Districts. This may be due to regional economic and demographic characteristics, the specifics of the pharmaceutical market development in these regions, which requires a further study.

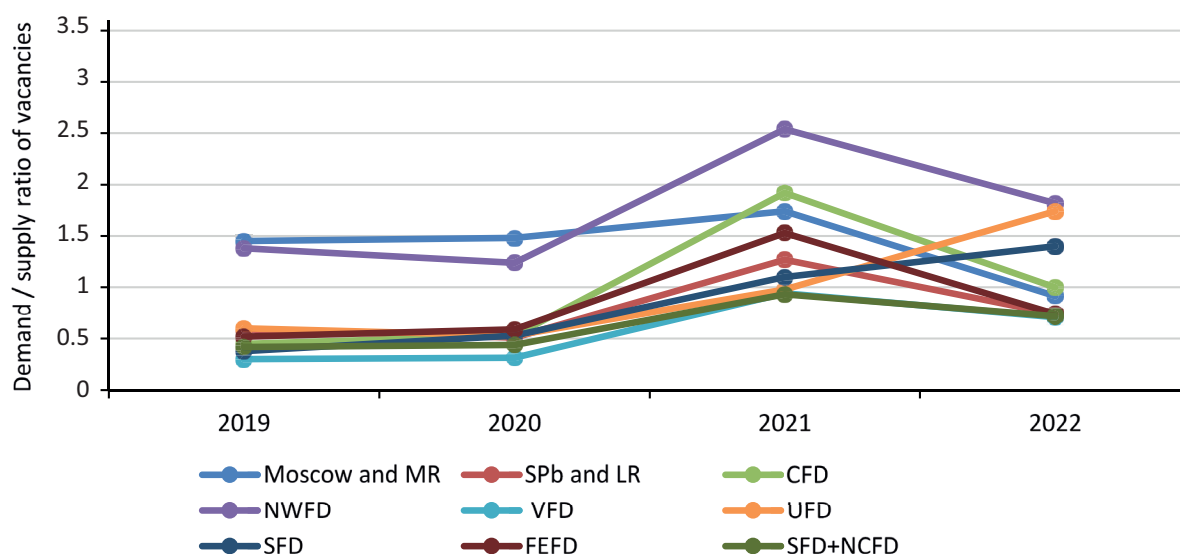


Figure 1 – Demand / supply ratio of pharmacy technicians vacancies in the Russian Federation regions for 2019–2022

Note: Moscow and MR – Moscow the Moscow region; SPb and LR – St. Petersburg and the Leningrad region; CFD – the Central Federal District (without the Moscow region); NWFD – the Northwestern Federal District (without the Leningrad Region); VFD – the Volga Federal District; UFD – the Urals Federal District; SFD – the Siberian Federal District; FEFD – the Far Eastern Federal District; SFD+NCFD – the Southern and North Caucasus Federal Districts.

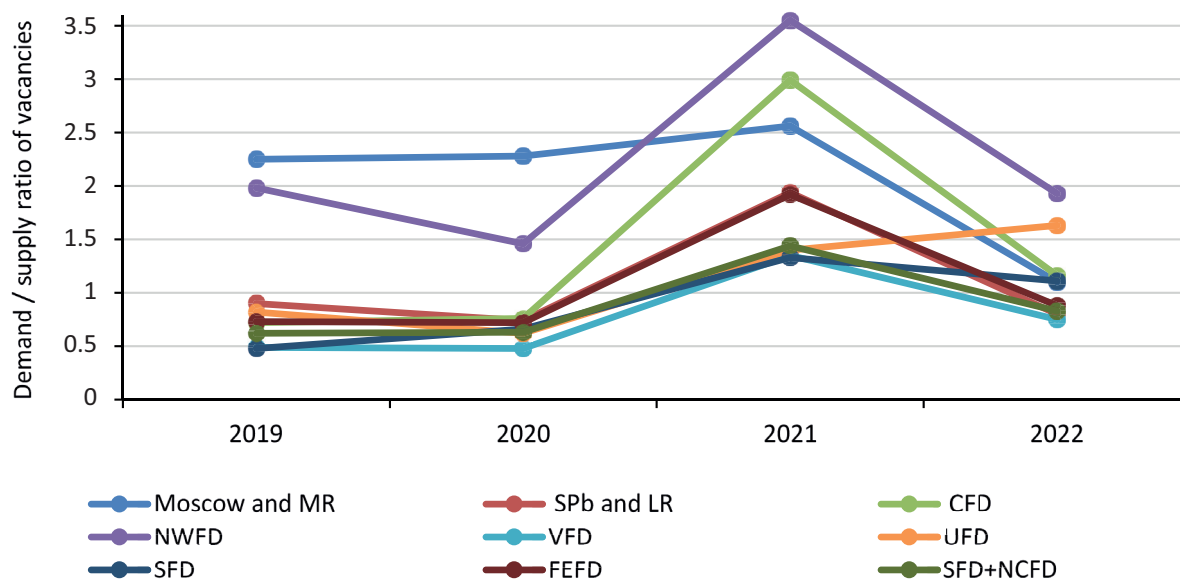


Figure 2 – Demand / supply ratio of pharmacists' vacancies in the Russian Federation regions for 2019–2022

Note: Moscow and MR – Moscow the Moscow region; SPb and LR – St. Petersburg and the Leningrad region; CFD – the Central Federal District (without the Moscow region); NWFD – the Northwestern Federal District (without the Leningrad Region); VFD – the Volga Federal District; UFD – the Urals Federal District; SFD – the Siberian Federal District; FEFD – the Far Eastern Federal District; SFD+NCFD – the Southern and North Caucasus Federal Districts.

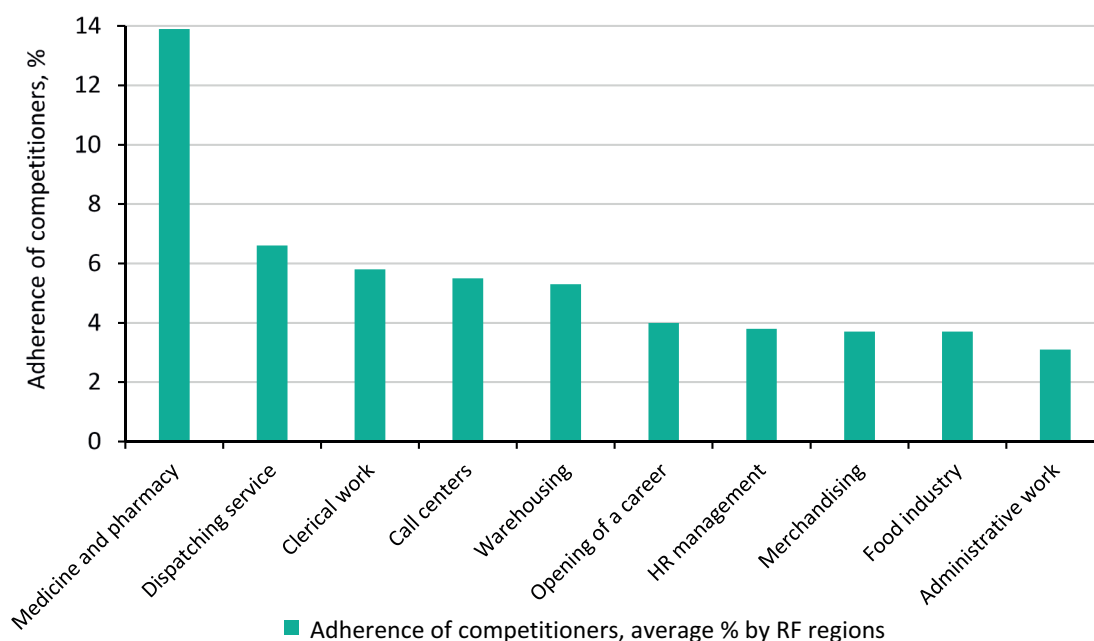


Figure 3 – Top popular pharmacy occupation areas among job seekers in 2019–2022 (on average across analyzed regions and districts)

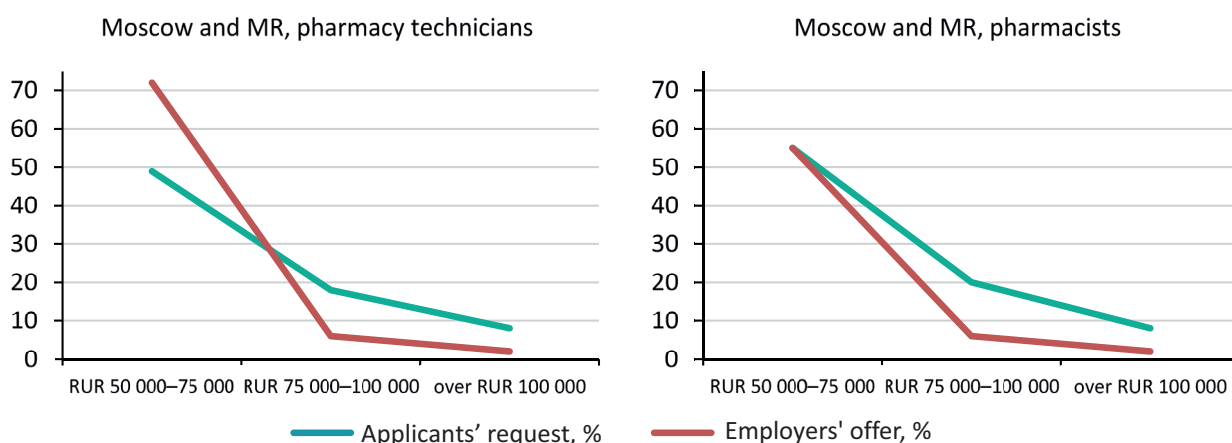


Figure 4 – Candidates' salary expectations / employers' offers ratio in Moscow and Moscow region (MR)

Top 10 popular areas among candidates

At this stage of the study, the popularity and demand for the profession of pharmacists and pharmacy technicians among other areas of work in the field of pharmacy were assessed in a region-by-region comparison. Professions related to health have been in demand at all times, so this industry, compared to others, is always in demand and can guarantee a stable employment. It seemed interesting to assess what other areas of work in the field of pharmacy are of interest to pharmaceutical specialists besides working in a pharmacy. The Top 10 areas popular with candidates included medicine and pharmacy (meaning

working in pharmacies and medical institutions); warehousing (pharmaceutical warehouses); clerical work (working with documentation in pharmaceutical organizations); administrative work (secretariat, reception and office management in pharmaceutical and medical organizations); a dispatching service; food industry; work in call centers and a number of others. The data are presented from the total number of professions in demand at the request of "a pharmacists" and "a pharmacy technician" for the entire period as a percentage of the total number of vacancies offered (Fig. 3).

In terms of demand for candidates with secondary pharmaceutical education in Moscow and the Moscow

region, medicine and pharmacy (working in pharmacies, medical organizations) occupy the first place in terms of popularity among other areas of occupation committed to 12% of respondents from the total number of vacancies. Warehousing is 7% and the office management is 6%; they are also popular because they can provide a stable job with a guaranteed salary and a career advancement. Thus, pharmacy technicians in the region can develop in different directions: in addition to a career in medical institutions and pharmacies, working in pharmaceutical warehouses is popular, where a specialist can grow to the position of a director, work with documents, carry out administrative work in medical centers. In addition to specialty work in medicine and pharmacy, among 19% of pharmacists in the region, 7% of them adhere to working in warehousing, 5% to the clerical work, 4% adhere to the dispatching services and 3% – to the administrative support of business.

In St. Petersburg and the Leningrad region, such areas of occupation as medicine and pharmacy are demanded by pharmacy technicians first of all, which amounts to 8% of respondents, because the absence of employment problems in this region allows candidates to work directly in their specialty. The area of the clerical work, which accounts for 8%, is also in demand due to the high level of employment and a wide range of applications in this region. Warehousing is chosen by 7% of specialists; it is in demand due to the favorable geographical location of the Leningrad region (the proximity to the European borders); it is also of great interest to candidates, as it guarantees stable earnings and career advancement opportunities. Thus, in this region, it is quite easy for pharmacists to find employment in their specialty due to the lack of a job shortage and a small competition in the pharmaceutical market of the region. However, the situation is aggravated by the unwillingness of pharmacy technicians to work directly in their specialty, and their preference for related industries are administrators in medical centers (5%) of respondents, procurement specialists (4%). Pharmacists in the region, in addition to working in their specialty, which is 11%, often consider working as clerks (7%), in warehousing (5%), dispatching services (2%), government procurement (2%), administrative departments and food and consumer goods trade – 3% of professionals.

In the Central Federal District, applicants are traditionally more progressive and flexible, so they have a more pronounced interest in other industries. Nevertheless, the majority of candidates with secondary pharmaceutical education want to develop primarily

in the field of pharmacy, and they are 10%. Many specialists (especially young people), are interested in other areas of activities, involving quick and high earnings, such as work in call centers (9%), dispatching services (7%), clerical work (4%), courier delivery (2%). Specialists with higher education are most in demand for working in their specialty and make up 14%, because they already have certain skills that allow them to receive a stable and guaranteed income. In addition to working in their specialty, candidates are interested in call centers consulting (10%), working in the dispatching services (7%), as well as in the area of warehousing – 6% of specialists.

In the Northwestern Federal District, despite a high demand for pharmacy technicians, candidates with high school education primarily consider the area occupations not directly related to their primary occupation, such as: human resources (10%), dispatching services (10%), and food industry (8%). There are not so many companies hiring pharmacists in this district as in other regions, so, there is a wide range of candidate preferences across industries. In the region, pharmacists also primarily favor more modern digital areas that guarantee stable earnings and a career advancement. These include working in call centers (11%), food services (11%), human resources (11%) and dispatching services (9%). Only 6% of candidates with higher education and 3% with secondary education are interested in the areas of medicine and pharmacy, which indicates its low relevance among specialists in the region. This trend indicates the need to improve labor conditions in the pharmaceutical market of the region, otherwise the outflow of specialists from the areas of medicine and pharmacy will be even higher.

In the Volga Federal District, due to the difficulty of employment in their specialty, candidates with secondary education consider the area of medicine and pharmacy only in the third place (6% of specialists), preferring a variety of different areas that guarantee both the job itself and its stability to the main type of activity. These include dispatching services (8%), working in call centers (8%), clerical work (5%), warehousing (4%) and a number of other areas of activities. Herewith, medical and pharmacy areas are most in demand among pharmacists (11%). Due to the difficulties with employment in their main specialty in the Volga Federal District, pharmacists also consider looking for work in other areas, such as dispatching services (8%), working in call centers (6%) and clerical work (4%).

Given a wide range of employment opportunities

in the Urals Federal District, 11% of candidates with secondary education consider medicine and pharmacy as their first choice, but many specialists prefer other industries such as dispatching services (7%), clerical work (6%), working in call centers (5%), and warehousing (4%) as their main areas of activities. The shortage of specialists with higher education in the region allows a vast majority of pharmacists to develop in their core business. There are few pharmacists in the region, and the majority work in their specialty (75% of specialists with higher education). Only 8% of candidates consider sales, which guarantees a less stable but higher income.

The data for the Siberian Federal District show pharmacy technicians' interest in other spheres of activities, because specialists first of all consider vacancies in the following areas: dispatching services and clerical work, 9 and 8%, respectively. The areas of medicine and pharmacy are on the same level with agriculture – 5%. Pharmacists in the region are also more interested in other areas of work, and primarily consider vacancies in the fields of dispatching services (12%) and clerical work (10%). The areas of medicine and pharmacy only rank third (8%). This trend may lead to an increase in the shortage of personnel in the region due to the transition of qualified specialists to other areas of activities.

A peculiarity of the Far Eastern Federal District is that candidates with secondary and higher education are interested in the development in the military and contract service (5% among pharmacy technicians and 7% among pharmacists). Otherwise, specialists are looking for work in very popular areas such as medicine and pharmacy (7%), warehousing (6%) and dispatching services (6%). A low level of interest in the area directly related to the core business indicates the availability of alternative, more convenient and better-paid options. In contrast, pharmacists are looking for jobs in highly popular areas such as medicine, pharmacy (18%) and warehousing (9%).

In the Southern Federal District and the North Caucasus Federal District, the areas of medicine and pharmacy are in the highest demand among 9% of candidates due to a direct correlation with their main occupations. However, employment difficulties force specialists with secondary education to consider other areas of activities that imply the availability of jobs and stable earnings, for example, 8% of pharmacy technicians choose to work in call centers and dispatching services. Among pharmacists, the areas of medicine and pharmacy

are also in the highest demand, 17% of specialists choose to work in their specialty. Due to difficulties in finding employment in their main specialty, pharmacists also consider looking for work in other areas, such as clerical work (6%), dispatching services (5%), and working in call centers (5%).

Thus, in a number of regions, the majority of specialists choose related professions, and where it is difficult to work in pharmacy due to the shortage of vacancies, there is a tendency to the so-called “washout” of pharmaceutical personnel from the profession, which consists in the employment of specialists in related fields of activities. This leads to non-use of previously mastered professional competencies by pharmacists and pharmacy technicians in their daily work activities. In the future, such a specialist will not be able to provide a high quality pharmaceutical care when working in specialty. It is characteristic that pharmaceutical specialists with secondary education are more inclined to migrate to other spheres of activities. At the same time, specialists with higher education more often choose to work in their specialty as an opportunity to realize their skills and abilities to the fullest extent possible.

Top cities by the number of candidates

In Moscow and the Moscow Region, traditionally leading in terms of the population density and average earnings, 73% of job seekers with secondary education and 74% with higher education are looking for work. The cities of the Moscow Region also have vacancies, but many candidates (especially young people) counting primarily not on personal comfort, but on high earnings and career advancement opportunities, prefer to work in the capital, while living in the Moscow Region.

In St. Petersburg and the Leningrad Region, St. Petersburg is the undisputed leader in terms of the number of candidates (93% of pharmacy technicians and 94% of pharmacists). Being a center of federal importance, the city offers great opportunities for employment and development. Only 6–7% of specialists are interested in working in the city of residence due to its convenient location and minimal competition. A significant shortage of personnel in smaller cities indicates the reluctance of specialists to work there due to low salaries and lack of career prospects.

In the Central Federal District, a number of applicants has a direct correlation with the city's population and proximity to the capital. Voronezh, due to its high

population and proximity to Moscow, is the absolute leader in terms of the number of candidates (15% of pharmacy technicians and 18% of pharmacists); here the deficit of specialists is the least. Yaroslavl, Ryazan and Kursk are regional centers, so they collectively possess 23% of all candidates for the position of a pharmacist and 17% of pharmacy technicians. In the remaining cities (Orel, Tambov, Vladimir, Ivanovo) there is an acute shortage of personnel.

Big cities of the Northwestern Federal District do not have an obvious leader in terms of the number of candidates with pharmacist education. This indicates their equal distribution across the cities of the district (Kaliningrad – 13%, Veliky Novgorod – 11% and Arkhangelsk – 9%). In terms of the number of specialists with higher education, Veliky Novgorod is the leader (18% of all candidates), largely due to Yaroslav the Wise Novgorod University which turns out young diploma holders every year. Kaliningrad ranks second in this indicator due to its favorable geographical location (2% of pharmacists), while the biggest shortage of personnel is recorded in Vorkuta, Kotlas and Severomorsk (a total of only 3%).

In the Volga Federal District, the cities of Ufa (10%), Nizhny Novgorod (9.7%) and Saratov (9%) are leaders in the number of candidates for the position of pharmacy technicians and pharmacists due to their large population and developed infrastructure. The biggest shortage of pharmacy technicians and pharmacists is in Saransk, Kirov and Izhevsk.

In the Urals Federal District, the greatest number of candidates for the position of pharmacist is concentrated in Yekaterinburg, Tyumen, and Chelyabinsk. A significant shortage of specialists is observed in Khanty-Mansiysk, Kamensk-Uralsky, and Nefteyugansk. The capital city of Yekaterinburg concentrates 24% of all candidates. Despite the harsh climate, the large population and abundance of jobs make it possible for 15% of candidates to look for vacancies in Tyumen, 12% in Chelyabinsk and 7% in Surgut. Yekaterinburg and Tyumen, thanks to their high standard of living, concentrate 41% of all candidates for the position of a pharmacist, but smaller cities such as Miass, Kamensk-Uralski and Noyabrsk have a significant shortage of staff, as no more than 1% of the total number of specialists with higher education live there.

Pharmacy technicians in the Siberian Federal District are equally distributed across major cities. Novosibirsk is home to 18% of candidates, Omsk – 13%, Irkutsk

and Krasnoyarsk – to 11% each. This even distribution is due to the vital needs for specialists throughout the district. The biggest shortage of pharmacy technicians takes place in the cities of Abakan, Usolie-Sibirskoye, Anzhero-Sudzhensk, Angarsk and Bratsk. Pharmacists in the district are evenly distributed in the five largest cities: Novosibirsk (14%), Irkutsk (14%), Barnaul (12%), Omsk (11%), Krasnoyarsk (10%). The biggest shortage of pharmacists is observed in the cities of Usolye-Sibirskoye, Prokopyevsk, Abakan, Bratsk, Gorno-Altaysk.

In the Far Eastern Federal District, Khabarovsk has the highest concentration of specialists (47% of pharmacy technicians and 51% of pharmacists) due to its favorable geographical location, developed infrastructure and significant population. Ulan-Ude is in the second place (11%). There is an acute shortage of pharmacy technicians and pharmacists in Amursk, Birobidzhan, Belogorsk, Nakhodka, Magadan (in total, no more than 5% of specialists work in these cities. Thus, there is an acute shortage of pharmacy technicians and pharmacists in most cities in the district.

In the Southern Federal District and the North Caucasus Federal District, more than half of all candidates (54% of pharmacy technicians and 55% of pharmacists) are concentrated in the largest cities (Krasnodar, Rostov-on-Don, and Volgograd). In the remaining cities of the regions, there is an acute shortage of specialists.

Thus, according to the indicator of the number of candidates for the positions of pharmacist and pharmacy technician in most regions, there is a tendency for applicants (especially young professionals) to prefer working in capitals and large densely populated cities with a developed infrastructure. In this regard, there is an acute shortage of staff in small towns everywhere.

Salaries

Salaries were assessed in Russian rubles in a region-by-region comparison. The highest salaries for specialists are traditionally offered by Moscow and the Moscow region. The vast majority of employers (72%) are ready to offer pharmacists a salary of 50 to 75 thousand rubles, which is within the average salary range in Moscow and the Moscow region (Fig. 4). Half of the candidates (49%) expect to receive this amount. However, when it comes to higher salaries, candidates' expectations are much higher than employers' offers: 18% of candidates want to receive from 75 to 100 thousand rubles for their work, but there are 3 times fewer vacancies, and there are 4 times more candidates who want to receive a salary

of 100 thousand rubles. As for pharmacists, 55% of employers are ready to offer a salary of 50 to 75 thousand rubles, and this coincides with the expectations of half of the candidates. However, when it comes to higher salaries, the expectations of candidates are much higher than the employers' offers: 20% of candidates want to receive from 75 to 100 thousand rubles for their work. In the region as a whole, pharmacy technicians have a 17% higher salary than pharmacists do. Thus, the salary requests of candidates have grown significantly over the last couple of years and exceeded the salary offer. It is expected that in the next couple of years employers will increase salaries in order to attract specialists.

In St. Petersburg and the Leningrad Region, most employers are ready to offer specialists with secondary education a salary of 35 to 50 thousand rubles, while candidates expect a monthly salary of 50 to 75 thousand rubles. Problems with the employment, which have arisen in the pharmaceutical market due to the excess of supply over demand, limit not only the amount of salary, but also the opportunities for a career advancement. Employers are ready to pay specialists the amount of 75 thousand rubles and above only in 6% of cases, and the salary expectation of candidates for the same amount is 22%. The pharmacist market in St. Petersburg and the Leningrad Region is very similar to the pharmacy market. In most cases, specialists wish to receive from 50 to 75 thousand rubles for their work, but in more than half of cases, employers offer a salary of 35 to 50 thousand rubles. However, 37% of companies are ready to offer specialists a larger salary. The average salary of a pharmacy technician is 18% higher than that of a pharmacist. At the same time, 18% of pharmacists have to work for 20–35 thousand rubles a month, and pharmacy technicians who agree to work for the same amount of money, are only 5%. That suggests that specialists with secondary education have higher salaries. Thus, in the Leningrad Region, there is a serious imbalance between the salary expectations of candidates and the salary offer of companies. The candidates compare salaries with other industries and go there. Against the background of a tightening competition for personnel, it is expected that in the next couple of years the salaries of pharmaceutical specialists will become higher.

A large number of pharmaceutical plants and factories are localized in the Central Federal District, which gives opportunities for a career advancement and earn high wages to candidates with secondary education. Only 11% of companies are ready to offer

salaries from 100 thousand rubles, but 40% of small firms offer candidates a fairly high monthly salary from 50 to 75 thousand rubles, and 34% – from 35 to 50 thousand rubles. In general, salary offers are close to the expectations; in addition, there are new attractive conditions to keep specialists in the profession: bonuses, a flexible schedule, opportunities for training and development. When hiring pharmacists, 55% of employers are interested in an employee who agrees to work for 50–75 thousand rubles per month, but these conditions are considered by only 44% of candidates. At the same time, 30% of specialists are looking for a job with a monthly salary from 75 thousand rubles. Only 8% of companies are ready to offer such high earnings. This trend may lead to the departure of many candidates to other, more highly paid, spheres of labor. In general, pharmacists' and pharmacy technicians' salaries differ insignificantly, but pharmacy technicians have a higher share of those who are willing to pay them a salary of more than 100 thousand rubles. That may be a consequence of the migration of high-potential specialists with higher education to other regions; as a result, high-paying vacancies are occupied by specialists with secondary professional education.

In the Northwestern Federal District, 42% of specialists with secondary education aim to find a job with a monthly salary of 50 to 75 thousand rubles, but only 36% of salary offers correspond to this request. 55% of companies in the district are also ready to provide pharmacists with a salary of 50 to 75 thousand rubles, 18% of companies offer a salary of 20 to 35 thousand rubles, while only 6% of candidates are willing to consider such a salary. However, every twelfth vacancy indicates a salary over 75 thousand rubles. It is often easier for candidates to immediately find a better-paid job in other areas, than find opportunities for a career advancement. In this region, the salaries of pharmacy technicians and pharmacists differ significantly. More than half of pharmacists (55%) can claim an average salary of 50 to 75 thousand rubles per month, while only 36% of pharmacy technicians can claim for the same amount of salary.

Despite the obvious shortage of vacancies, in the Volga Federal District, the salary of pharmacy technicians exceeds the salary expectations of candidates. The shortage of staff has led to the fact that since 2020, when employers sought to find specialists quickly, the salary offers have increased significantly, and now employers are willing to pay even more than candidates expect. This

is especially evident in the salary offer of 100 thousand rubles per month, which only 8% of candidates aim for, but 21% of companies can offer. Among pharmacists, the salary expectations of beginners are similar to the offers, but experienced candidates have higher salary expectations than the offered salary. 27% of candidates aim for a monthly salary of 75 thousand rubles or more, which is more than one fourth of all specialists, but only 8% of companies can offer such a high salary. 26% of pharmacy technicians and only 8% of pharmacists can claim a salary of 75 thousand rubles or more. The salary expectations of novice specialists are similar to the offers, but experienced candidates have higher salary expectations than the companies offer them.

In the Urals Federal District, employers offer candidates a salary between 35 and 75 thousand rubles. 27% of candidates expect a salary over 75 thousand rubles, but only 10% of employers offer such a salary. Higher earnings require higher education, as well as mastering certain skills and knowledge. In general, there is no significant gap in salary expectations and offers in the district. 55% of employers offer candidates earnings from 50 to 75 thousand rubles monthly, and 45% of specialists are satisfied with this. Pharmacists rarely consider higher salaries, from 75 thousand rubles and above, so the expected earnings with the proposed one diverge only by 10%. In general, the salaries of pharmacy technicians and pharmacists in the district differ insignificantly. This is explained by the shortage of specialized and experienced candidates and employers' focus on newcomers, but the average salary of pharmacists is between 50 and 75 thousand rubles, which is 17% higher than that of pharmacy technicians.

The Siberian Federal District is characterized by similar salary expectations and offers in terms of average salaries: 42% of pharmacy technicians are looking for a job that implies monthly earnings of 50 to 75 thousand rubles, and 43% of companies offer the same conditions. However, it is difficult for specialists to claim for higher earnings; 26% of candidates are aiming for a salary of 75 thousand rubles and above, but only 7% of employers are ready to offer such amounts. A similar situation is observed in the pharmacists' market: 47% of specialists are looking for a job with a monthly salary from 50 to 75 thousand rubles, and 55% of companies offer the same conditions; 26% of candidates aim for a salary from 75 thousand rubles and above, but only 8% of employers are ready to offer such amounts. A significant shortage of pharmacists is observed in low-paying jobs. Thus,

for earnings from 25 to 35 thousand rubles, only 5% of candidates claim, and there are 18% of organizations offering these conditions (there is an abundance of low paying positions). In general, in the region, the salaries are lower than in other regions. Earnings of pharmacy technicians and pharmacists are almost the same. Most specialists are able to reach average earnings, but only a few are able to find opportunities for a career advancement.

In the Far Eastern Federal District, the possibility of high earnings for pharmacy technicians, from 75 thousand rubles per month, is extremely small – only 4% of all offers. Although 93% of employers are ready to pay from 30 to 75 thousand rubles, only 59% of candidates consider these conditions. In general, the size of pharmacy technicians' salaries in the region starts from 35 thousand rubles, while almost half of the employers offer payment to pharmacists below this amount. The lack of sufficient number of high-paying vacancies may lead to a loss of personnel with higher education to other areas of labor. For pharmacists in the region, there is a significant resonance in salary expectations and offers, especially in the segment involving a salary of 75 thousand rubles or more per month, which is the target for 40% of candidates. Employers are ready to offer this size of salary only in 8% of cases. Candidates compare salary with other industries, where offers are often higher. Due to that, companies are forced to raise salaries to attract specialists with specialized education.

The Southern Federal District and the North Caucasus Federal District are characterized by a significant imbalance between the salary offers of companies and the salary expectations of candidates. Mostly, employers are ready to offer specialists with secondary education a salary of 25 to 50 thousand rubles, while candidates, in turn, expect a monthly salary of 50 to 75 thousand rubles. The employment problems that have arisen in the pharmaceutical market of the region due to the excess of supply over demand, limit not only the size of salaries of employees, but also the opportunities for a career advancement. Employers are ready to pay specialists the amount of 75 thousand rubles and above only in 6% of cases and the salary expectations of candidates for the same amount is 23%. Such dissonance risks entailing a shift of candidates to other higher-paying labor markets. Among pharmacists in these regions, salary expectations converge with employers' salary offers for salaries up to 75 thousand

rubles. In the region, there is a wide variation of salaries depending on specialist qualifications. In vacancies where higher education is required, salaries start from 50 thousand rubles.

Thus, in most regions, salary expectations of pharmacy technicians are more in line with the offered salary than those of pharmacists. It is characteristic that in some regions employers pay pharmacy technicians and pharmacists equally, although candidates with higher education quite reasonably expect to be paid more (which corresponds to a broader set of skills mix inherent in a pharmacist). As a result, this reduces the value of higher pharmacy education as such and, in particular, leads to a low motivation among young people to obtain it. Such a "devaluation" may lead to the loss of importance of the profession of a pharmacist in the future, to a complete shift of a pharmaceutical specialist's functions towards a salesperson's ones, and, consequently, to the deterioration of the quality of pharmaceutical care in general.

Additional labor conditions offered in vacancies

At this stage of the study, working conditions (in addition to salaries) offered to pharmaceutical specialist by employers in different regions, were analyzed. These conditions included the possibility of free training at the company's expense; opportunities for career advancement within the company; the possibility of receiving bonuses; health insurance and meals at the employer's expense; flexible working hours.

In Moscow and the Moscow region, free training at the company's expense is the most widely offered condition of employment (39% for pharmacy technicians and 25% for pharmacists) due to the specifics of pharmaceutical activities. Career development opportunities (25% for pharmacy technicians and 19% for pharmacists) and bonuses (13 and 16%, respectively) are a significant motivation for specialists. Health insurance (8 and 5%, respectively) and free meals (8 and 7%, respectively) are rarely included in the terms and conditions of employment as they incur additional costs for the employer. Due to some peculiarities of a pharmacy technician's work, a flexible schedule is almost impossible (4%). Flexible working hours are more common among pharmacists due to a wider range of positions (14%).

In St. Petersburg and the Leningrad region, in 43% cases, employers are ready to offer pharmacists a flexible schedule (shifts). A high prevalence of this benefit is due

to the regional peculiarities of the Leningrad region, which includes a small number of 24-hour pharmacies. Free training (21% for pharmacy technicians and 26% for pharmacists) is provided in order to ensure that candidates have all the necessary skills by the time they start working at their main workplace. Employers also often provide career development opportunities for specialists (16% for pharmacy technicians and 20% for pharmacists). Additional health insurance for pharmacy technicians (5%) and meals at the expense of the employer (3%) are quite rare.

In the Central Federal District, employers offer fairly standard but favorable working conditions for specialists. The most frequently offered conditions are opportunities for a career advancement (28% for pharmacy technicians and 25% for pharmacists) and free training (25% and 30%, respectively). Many companies are targeted not only at attracting candidates, but also at retaining them. Training of specialists by the employer and their financial incentives significantly inhibit their departure to other spheres. A number of organizations offer various cash bonuses and bonuses as an additional incentive (15% for pharmacy technicians and 17% for pharmacists).

In the Northwestern Federal District, organizations provide employees with opportunities for a career development in 24% of cases for pharmacy technicians and 23% for pharmacists, which is due to the need to retain highly qualified specialists in companies for many years. A number of enterprises are ready to train new specialists in the required skills free of charge (18 and 16% respectively). Bonuses and other monetary incentives along with flexible schedules are found in 13% of cases. Flexible working hours that allow specialists to work in conditions that are comfortable for them, are also offered quite often (13% for pharmacy technicians and 20% for pharmacists). Few employers are willing to provide meals at the employer's expense (3%) and additional health insurance (4%) due to additional costs.

In the Volga Federal District, employers use widespread ways to attract specialists with favorable working conditions in order to retain them. In general, conditions in the region are oriented towards young specialists. These include free training (27% for pharmacy technicians and 25% for pharmacists), opportunities for a career and professional advancement (25 and 20%, respectively), and bonuses (17 and 14%, respectively). Quite often, flexible working hours are offered, allowing to combine study and work (15%).

The organizations interested in finding candidates in the Urals Federal District, use widespread ways of attracting specialists in order to retain them in the company. The region's labor market is also oriented towards young specialists. The conditions offered include free training opportunities (23% for pharmacy technicians and 21% for pharmacists), opportunities for a career and professional advancement within the company (19 and 22% respectively), bonuses (14 and 11% respectively). Flexible schedules that allow combining studies with work are also offered quite often (20% of vacancies).

In the Siberian Federal District, free training for new employees is a fairly widespread offer in vacancies (22% for pharmacy technicians and 23% for pharmacists). Employers also often provide specialists with great opportunities to develop their career potential (23 and 22%, respectively), as well as offer a system of bonuses (12 and 11%, respectively). Flexible working hours are also often offered in the region (16% for pharmacy technicians and 17% for pharmacists), allowing specialists to combine work with other areas of their lives.

The most common labor conditions offered to specialists in the Far Eastern Federal District are opportunities for a career advancement (21% for pharmacy technicians and 20% for pharmacists) and free training (21 and 22%, respectively). Many companies target not only at attracting candidates, but also at retaining them, so they also offer bonuses (12 and 10%, respectively). In this region, free meals (10%) and flexible hours (11% for pharmacy technicians and 18% for pharmacists) are offered to employees more often than in other regions. This may be due to the peculiarities of the geographical location and climate of the region, and may also indicate the desire of companies to attract employees in additional non-standard ways.

Organizations of the Southern and the North Caucasus Federal Districts most often offer vacancies with the possibility of free training (26% for pharmacy technicians and 24% for pharmacists); opportunities for a career advancement (22 and 23%, respectively). Flexible working hours (18 and 19%, respectively), as well as various bonuses (17 and 15%, respectively) are widespread in vacancies. This significantly improves the working conditions of the region's employees.

Thus, all the surveyed regions, to a greater or lesser extent, provide specialists with free training at the expense of the companies, as well as the opportunity

for a career development within the organization. In addition, most employers are interested in attracting and retaining young specialists in the profession by providing them with flexible work schedules to enable them to combine their university studies with employment. This allows companies to ease the staff turnover and maintain a high quality of care and pharmaceutical aid in general.

Education requirements for pharmaceutical specialists

The final stage of the study assessed the education requirements for pharmaceutical workers, i.e. employers' preferences regarding the presence or absence of higher education in potential employees.

In Moscow and the Moscow region, in 39% of vacancies, employers are interested in candidates with higher education, 44% – in specialists with secondary education, and in 27% of vacancies, the requirements for education are not specified.

In St. Petersburg and the Leningrad Region, in almost half of cases (47%), employers do not specify the need for higher education in job vacancies, which increases the number of specialists willing to take up a vacant position and creates some confusion at interviews. In 17% of cases, companies are looking for specialists with secondary vocational education, and in 36%, they are interested in personnel with relevant higher education.

In the Central Federal District, many organizations are targeted at attracting specialists with certain skills and competencies. In 41% of cases, employers are looking for specialists with higher education, while 34% of companies need candidates with secondary vocational education.

In the Northwestern Federal District, employers are focused on finding highly qualified personnel; therefore, companies are very interested in specialists with higher education (42%). Pharmacy technicians are of less interest to employers (32%).

In the Volga Federal District, there is an almost equal demand for specialists with secondary and higher education: 36% of organizations need pharmacist, 30% of employers are interested in hiring pharmacy technicians, and 34% do not specify educational requirements in published vacancies, focusing solely on the candidates' personal qualities, knowledge and experience.

In the Urals Federal District, organizations need candidates with higher education (51%). Pharmacy technicians are less in demand (9%). This is probably due to the specifics of the pharmaceutical industry in

the region and its geography. In large cities of the region, organizations are interested in employees with higher education, who are ready to constantly improve their skills. In general, there is an extreme shortage of both pharmacists and pharmacy technicians in the region.

In the Siberian Federal District, organizations also need candidates with higher education to a greater extent (51%). Pharmacy technicians are required to a lesser extent (25%).

In the Far Eastern Federal District, many organizations are targeted at attracting specialists with higher education and certain knowledge and skills (41% of employers). At the same time, 21% of companies need pharmacists, 38% of vacancies do not contain information about the preferred higher or secondary education.

In the Southern and North Caucasus Federal Districts, employers are most often focused on finding highly qualified staff, so in 53% of cases, they are interested in candidates with higher education. In case of vacancies requiring secondary education (29%), it can be assumed that such employers offer very low salaries but uncomplicated and monotonous work.

Thus, in most regions, organizations are interested in finding a variety of employees. Higher education is not in the least demand among candidates (43% of the regional average), but it provides for higher salaries and broader career opportunities. In general, the larger the city, the more pharmacists live there, which is most likely due to the localization of regional medical and pharmaceutical universities. Many organizations that do not impose strict educational requirements on specialists and offer free training at the start of a career, are aimed at finding young specialists who do not expect high earnings.

Study limitations

This study has a number of limitations that should be taken into account when interpreting the results:

1. The research covered only 9 regions of Russia, which does not allow extrapolating the findings to the whole country without an additional analysis;
2. The analysis was based on the data from one recruiting agency (superjob.ru), which may not fully reflect the situation on all job search platforms;
3. The study did not cover veterinary pharmacy, which is a separate and evolving segment of the pharmaceutical market with its own particularities in terms of training and employment;
4. The time period of the study (2019–2022) includes

the period of the COVID-19 pandemic and related economic turmoil, which may have affected the dynamics of supply and demand in the labor market;

5. The data for 2023 were not included in the sample because the full data for 2023 were not yet available at the time of the study, making it impossible to include them in the analysis without risking distorting the overall picture.

CONCLUSION

On average, in the regions, the demand for specialists with higher education is lower than that for specialists with secondary education, and in terms of a salary level, the expectations of pharmacy technicians coincide with the employers' offers, while the salary expectations of specialists with higher education are higher than the market. The selection of vacancies / CVs includes mainly the data from pharmacy chains, which have established certain work standards and salary systems to be taken into account. Specialists with secondary education are much more numerous, as they are trained by a much larger number of educational institutions, both specialized, subordinate to the Ministry of Health of the Russian Federation, and not. It is important to take into account that for a pharmacy technician, pharmacy is often the only place of work in the specialty, while for a pharmacist; it is usually a place to start. The potential and opportunities of specialists with higher education are usually greater and broader than those of the people who have completed only a secondary vocational education program. If we consider employment opportunities in the field of production or promotion of medicines, then for specialists with secondary education, only starting positions are available; their functionality is rather monotonous and does not imply career building. For pharmacists, practically all directions of labor activities are open, both horizontally (changes of positions within a similar functionality) and vertically (changes of positions with changes of functionality).

Under the current circumstances, it is important to conduct educational and career guidance work at higher education institutions, which often graduate not only pharmacists, but also pharmacy technicians, since it is becoming more and more difficult for a specialist with secondary education to obtain higher education. On the other hand, specialists experienced as pharmacists, tend to be better prepared, more motivated and disciplined after entering higher education, and their learning

outcomes are higher than those who enter immediately after general education.

Despite an impressive number of graduates of secondary and higher education institutions, the expansion of the range of labor functions and the

rapid expansion of all segments of the pharmaceutical market, the number of required specialists and the competencies they must possess, continue to increase, which indicates the advisability of opening new pharmaceutical institutes and updating training programs.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORS' CONTRIBUTION

Denis V. Kurkin – idea and planning of the structure of the work, design of graphic material, editing the final version of the manuscript; Yulia S. Knyazeva, Olga V. Ivanova, Yuri A. Kolosov, Yulia V. Gorbunova, Dmitry A. Bakulin, Ivan S. Krysanov, Darya L. Klabukova, Marina A. Javakhyan, Valentina I. Zvereva, Natalia A. Lycheva, Victoria N. Shoich, Veronika V. Neyolova, Evgeniy I. Morkovin, Elizaveta V. Pavlova, Elena A. Kalashnikova, Alexander B. Bosenko, Djamila Z. Zyazikova, Ruslan E. Musaev, Abakar G. Gadzhiev, Boris M. Gabrielyan, Anna A. Agamirova – collection of material and writing the draft manuscript, editing the final version of the manuscript; Vladimir I. Petrov – consultations on highly specialized issues, editing and approval of the final version of the article.

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