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Higher Pharmaceutical Education in Russia: Economic Assessment of Accessibility and Regional Specifics

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ABSTRACT

The article presents the monitoring of the affordability of higher pharmaceutical education in Russia for 2017-2019. A comparative analysis of the prices set by universities and the standard costs for the provision of public services for the implementation of educational programs of higher education in the specialty 33.05.01 "Pharmacy" is carried out. The amplitude and dynamics of the cost of educational services in the constituent entities of the Russian Federation are determined. A grouping of educational organizations was carried out taking into account the level of the price segment of the educational services offered, which made it possible to identify the percentage ratio of universities in different cost registers. It is shown that pricing strategies of universities are determined by the solvency of the population of the subject of the Russian Federation. The regions of Russia with a high and low level of affordability of educational services for the training of "Pharmacist" qualifications have been identified. The level of market concentration of the educational services market participants in the constituent entities of the Russian Federation, as well as within the constituent entities for higher educational institutions in 2017-2019, was determined, and a conclusion was drawn on the dynamics of the development of this market considering its regional specificity.

Keywords: higher pharmaceutical education, affordability, educational services, tuition, per capita income.

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INTRODUCTION

According to expert forecasts, the Russian pharmaceutical market has significant prospects for internal and external growth and will become one of the largest in Europe in the next decade. The rapid development of the pharmaceutical industry and the pharmaceutical market has led to a sharp increase in the demand for highly qualified personnel in the pharmaceutical field [1]. A study of market conditions shows that currently the labor market is in urgent need of competent specialists [2-6], including in the field of pharmaceutical education. The ongoing changes in the labor market create prerequisites for the study of new development trends [7–9]. In the context of the formation of digital space, there is a need to use information and analytical support for the industry in combination with the necessary level of competence of specialists [11-12]. Thus, the specifics of the development of the global pharmaceutical market dictates the need for new specialists in the field of pharmacy [13]. At the same time, the question arises of the degree of satisfaction of health care needs in the country [10].

According to previous studies, it has been established that 60 state educational organizations are currently training in the specialty 33.05.01 "Pharmacy" in Russia. In all universities, training is carried out both on a budgetary and extra-budgetary form. In connection with the tendency to increase extrabudgetary and reduce budget places, it is of interest to study the possibilities of potential applicants for higher pharmaceutical education in the Russian Federation on an extrabudgetary basis. The main objective of this study was to monitor the affordability of Russian pharmaceutical education and identify the regional specifics of this market.

MATERIALS AND METHODS

The method of scientific abstraction made it possible to identify a number of key trends in the dynamics of the development of the market for higher pharmaceutical education in Russia, considering its regional specificity. Regions of Russia with a high and low level of affordability of educational services for the training of qualifiers "Pharmacist" are identified as a result of a system analysis and application of the method of average values. The level of market concentration of educational services market participants in the constituent entities of the Russian Federation is determined. A comparative analysis was used to study the prices set by universities for higher pharmaceutical education in Russia in 2017-2019 and the standard costs for the provision of public services for the implementation of higher education educational programs in the specialty 33.05.01 "Pharmacy". Statistical analysis is updated in determining the amplitude and dynamics of the cost of educational services in the constituent entities of the Russian Federation. Using the grouping method, educational organizations were ranked taking into account the level of the price segment of the educational services offered, which made it possible to identify the percentage of universities in different cost registers. An assessment of the affordability of pharmaceutical education for the population on an extrabudgetary basis was carried out using a correlation analysis between the average per capita income of the population and the average cost of training in federal districts. When determining the level of market concentration of educational services market participants in the constituent entities of the Russian Federation, as well as within the constituent entities, the Herfindahl-Hirschman index was calculated on the basis of these market shares in value terms. Using content analysis, we studied the information presented on the official websites of educational institutions included in the study, as well as the official website of the Federal State Statistics Service.

In accordance with the goal of the study, the authors determined a sequence of actions *(Fig. 1)*, consisting of systematization of prices for educational services and analysis of per capita incomes of the population, determining the amplitude and dynamics of prices,

grouping prices, conducting a correlation analysis, calculating the market concentration index and output on the affordability of the pharmaceutical education market in Russia.

RESULTS AND DISCUSSION

The economic assessment of the availability of pharmaceutical education was carried out for 2017-2019 at 59 universities located in nine federal districts: Central (CFD), North-Western (NWFD), Southern (SFD), North Caucasian (NCFD), Volga Federal District (VFD), Ural (UFD), Siberian (SFD), Far Eastern (FEFD), Crimean (CFD) and Moscow (*Table 1*).

According to the developed concept, at the first stage of the study, the amplitude of prices for tuition in the country as a whole was determined (*Table 2*). It has been revealed that for three years the maximum cost of preparing pharmacists is offered by Moscow State University (MSU), the minimum Dagestan State Medical University (DSMU) in 2017 and 2019, and the North Ossetian State Medical Academy (NOSMA) in 2018. The price range across the country in the analyzed period ranged from 309.0 thousand rubles in 2018 to 337.7 thousand rubles in 2019.

According to state regulation of the lower border of the price of higher education services in 2018, the standard costs for the provision of public services for the implementation of higher education educational programs amounted to 90.11 thousand rubles, 98.3 thousand rubles in 2019. It was revealed that most educational organizations set prices significantly higher than the basic standards established by the state, which indicates a high demand for paid pharmaceutical educational services. In 2018, no educational organization set a price that complies with the standard, and the cost of education up to 100 thousand rubles was observed only in five universities in the country. In 2019, a similar trend was revealed: the cost of educational services above the basic standard is observed in 98.3% of universities.

At the next monitoring stage, a grouping of educational organizations was carried out according to the cost of training in the 2019-2020 academic year by federal districts and Moscow. All universities were divided into five groups (*Table 3*):

- ✓ with a high level of prices - from 368.7 to 436.3 thousand rubles;
- ✓ with a price level above the average - from 301.1 to 368.7 thousand rubles;
- ✓ with an average price level - from 233.5 to 301.1 thousand rubles;
- ✓ with a price level below the average - from 165.9 to 233.5 thousand rubles;
- ✓ with a low-price level - from 98.3 to 165.9 thousand rubles.

According to the results of the grouping it was found that 76.3% of educational organizations provide training at lower cost register prices. This group includes universities of eight federal districts, the maximum number of which (12 universities) is presented in the Volga Federal District. 15.2% of universities in five federal districts were categorized below the average cost of training. The highest prices for the training of pharmacists (over 233.5 thousand rubles) are set at four universities in Moscow and the Northeast Federal University of Yakutsk, the Far Eastern Federal District.

Thus, the cost of training in the specialty 33.05.01 "Pharmacy" does not exceed 165.9 thousand rubles in most regions of Russia in the 2019-2020 academic year. At the same time, educational services of higher education are available for the population of the Far Eastern Federal District pharmaceutical at prices below the average and average levels according to the grouping. In Moscow, higher pharmaceutical education of the lower price segment (98.3 - 233.5 thousand rubles) is not available.

In order to analyze the dynamics for 2017-2019, the growth rates of tuition prices in all the universities studied were calculated. The analysis showed that the maximum cost of educational services in two years increased at Novgorod State University from 110.0 to 161.1 thousand rubles (GR = 46.5%) and St. Petersburg University of Chemical Pharmaceuticals (SPFU) from 134.0 to 190.0 thousand rubles (GR = 41.8%) of the North-West Federal District. High growth rates were also demonstrated by: Tyumen State Medical University (GR = 39.1%), Buryat State University (GR = 38.7%) and Ulyanovsk State University (GR = 36.7%). Moreover, according to the grouping by price level, Novgorod, Buryat and Ulyanovsk universities entered the category of universities with low tuition in the 2019-2020 academic year.

The minimum price increase is observed in Voronezh State Medical University from 107.5 to 112.0 thousand rubles (GR = 4.2%), North Caucasus Federal University from 124.8 to 130.0 thousand rubles (GR = 4.2%) and Rostov State Medical University from 133.0 to 138.7 thousand rubles (GR = 4.3%). The cost of training has not increased since 2017 at the Samara State Medical University.

The calculation of the average cost of training in federal districts showed that the maximum cost of training in the country in the 2019-2020 academic year is presented in Moscow universities (325.5 thousand rubles) and the Far Eastern Federal District (216.9 thousand rubles), the minimum - Southern Federal District (114.6 thousand rubles). In general, there is a positive trend in the cost of training in all federal districts (*Fig. 2*), one of the factors of which is the high demand for higher pharmaceutical education.

In order to assess the economic affordability of pharmaceutical education for the population on an extrabudgetary basis, the next stage of the study conducted a correlation analysis between the average per capita income of the population and the average cost of training in federal districts in 2018 (*Table 4*).

According to the results of the analysis, a direct, strong relationship was found between the average per capita incomes of the population of Russia and the prices of pharmaceutical educational services in federal districts (r = 0.847). In other words, the higher the standard of living of the population in the region, the higher the price of paid educational services in the specialty 33.05.01 "Pharmacy". The reliability of the correlation coefficient is confirmed by the calculated value of Student's t-test.

The calculation of the share of the average cost of education from the average per capita cash income showed that the highest share in the population's cash income is spent on higher education in the Far Eastern Federal District and the Siberian Federal District (over

40%). In Moscow, despite the high cost of educational services, the cost of training is 37.6%. The minimum level of costs for higher pharmaceutical education is observed in the Central Federal District. In general, the share of expenses on pharmaceutical educational services in the structure of per capita income of the population in all regions of the country varies from 23.2% to 48.4%.

At the next monitoring stage, the market concentration index of educational organizations in 2017-2020 was calculated for the federal districts of the Russian Federation, and the share of federal districts in the Russian pharmaceutical education market was determined. Sustainable regional development involves the harmonious formation of its main components [14], including education, and in our case, pharmaceutical education. Therefore, the study of the regional structure of the market and market concentration indices will allow to conclude about the regional specifics of its development.

As a result of the analysis of the dynamics of the development of the pharmaceutical education market in Russia for 2017-2020, it was found that this market demonstrates a growth trend in absolute terms in value terms (*Fig. 3*).

As a result of comparing the shares of federal districts in the pharmaceutical education market in the Russian Federation for the 2017-2018 academic year (*Fig. 4*), it was found that the Volga Federal District takes 1st place with a market share of 28.38%, Moscow takes the 2nd place with a market share 20.24%, and the third place is taken by the Siberian Federal District with a market share of 15.07%.

As a result of comparing the shares of federal districts in the pharmaceutical education market in the Russian Federation for the academic year 2018-2019 (*Fig. 5*), it was found that the Volga Federal District has strengthened its position and takes 1st place with a market share of 33.91%, 2nd place is held by Moscow with a loss of share to 17.43%, and the third place is taken by the Siberian Federal District also with a loss of market share - 12.35%.

As a result of comparing the shares of federal districts in the pharmaceutical education market in the Russian Federation for the 2019-2020 academic year (*Fig. 6*), it was found that the Volga Federal District takes 1st place with a market share of 31.96%, Moscow takes the 2nd place with a market share 17.5%, and the third place - Siberian Federal District with a market share of 11.95%.

Table 5 shows the market capacity of pharmaceutical education in the Russian Federation by federal districts in 2017-2020 in absolute and relative terms. It should be noted that the market capacity in absolute terms is increasing in all federal districts, but at the same time, the redistribution of market shares occurs from larger to smaller.

Leading universities have significantly reduced their market share for the period 2017-2020 simultaneously with the annually growing market of pharmaceutical education in the Russian Federation (*Table 6*). For example, the leader in Moscow - RUDN reduced its share to 34.18% in the 2019-2020 academic year from 54.09% in the 2017-2018 academic year. Volgograd State Medical University, the leader in the Southern Federal District, reduced the share from 46.6% in the 2017-2018 academic year to 25.24% in the 2019-2020 academic year. The identified trend indicates a redistribution of market shares from leaders to their competitors in these federal districts.

It should be noted that St. Petersburg State Medical University in the Northwestern Federal District has significantly strengthened its position from 78% in the 2017-2018 academic year to 83.73% in the 2019-2020 academic year, and the Pacific State Medical University in the Far Eastern Federal District has also increased its market share from 14.59% in the 2017-2018 academic year to 34.36% in the 2019-2020 academic year.

Analyzing the results of the calculation of the Herfindahl-Hirschman Index (HHI) (*Table 6)* within the federal districts, it was found that the highest level of market concentration of pharmaceutical education market participants in the Russian Federation is observed in the North-West Federal District (from 6274 in the 2017-2018 academic year, up to 6508 in the 2019-2020 academic year). Ural Federal District is in second place in terms of concentration (from 3563 in the 2017-2018 academic year, to 4824 in the 2019-2020 academic year), North-West Federal District in third place (from 2725 in the 2017-2018 academic year, to 4,643 in the 2019-2020 academic year), Moscow in fourth place (from 3901 in the 2017-2018 academic year, to 3120 in the 2019-2020 academic year). However, it should be noted that the level of concentration of pharmaceutical education market participants in the federal districts shows the dynamics in relative terms in value terms. Absolute indicators in value terms on the market share of pharmaceutical education in the Russian Federation for the 2019-2020 academic year allow ranking federal districts in the following order: 1. Volga Federal District (31.96%); 2. Moscow (17.5%); 3. Siberian Federal District (11.95%); 4. Central Federal District (11.25%); 5. North-Caucasian Federal District (9.02%); 6. North-West Federal District (7.08%), 7. Ural Federal District (4.34%); 8. Southern Federal District (4.19%); 9. Crimean Federal District (1.44%); 10. Far Eastern Federal District (1.26%).

CONCLUSIONS

Currently, educational services of higher pharmaceutical education are offered in all federal districts of Russia on a budgetary and extra-budgetary basis. Paid educational services are in demand by the country's population, which is determined by the promise of the profession of pharmacist in the modern labor market. This allows educational organizations to set prices above the basic regulatory costs for the provision of public services for the implementation of educational programs in the specialty 33.05.01 "Pharmacy".

It should be noted that most universities in Russia sell pharmaceutical educational services at lower cost segment prices. However, the cost of paid educational services is more than 20% in the structure of per capita income of the population, depending on the subject of the country. The results of the correlation analysis showed that the amplitude of affordability is determined by the average per capita income of the population, depending on the level of economic development of the constituent entities of the Russian Federation.

Based on the results of identifying the economic affordability of educational services in the pharmaceutical education market in the Russian Federation, it was concluded that it would be differentiated depending on the federal district. For example, the maximum level of accessibility is observed for residents of the Central

Federal District, Southern Federal District and the North-Western Federal District. The population of other federal districts receives educational services at higher prices. The lowest affordability of higher pharmaceutical education in the Far Eastern Federal District. In general, the average cost of training has a pronounced upward trend in all subjects of the Russian Federation. At the same time, applicants have the opportunity to choose pharmaceutical educational services depending on the price category.

As a result of identifying the regional specifics of the development of the pharmaceutical education market in the Russian Federation, it was found that the market structure formed in the period 2017-2020 showed relative stability, and among the federal districts the leading position remains in the Volga Federal District, Moscow and the Siberian Federal District. It should be noted that federal districts with a smaller market share are gradually strengthening their positions. In addition, there are educational institutions in the pharmaceutical education market in the Russian Federation that occupy a dominant position (RUDN, St. Petersburg State Medical University, Pyatigorsk Medical and Pharmaceutical Institute, Volga Research Medical University).

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TABLES AND FIGURES

Table 1. Tuition fees in state educational institutions of Russia for the specialty 33.05.01 «Pharmacy»

FD[1]	Educational organization	Tuition by years of recruitment, thousand rubles		
		2017	2018	2019
Moscow	Moscow State University M.V. Lomonosov	400	400	436
	I.M. Sechenov First Moscow State Medical University	291	317	331
	Russian National Research Medical University	225	260	300
	Peoples' Friendship University of Russia	198	220	235
CFD	Voronezh State Medical University * named after N.N. Burdenko	107,5	107,5	112
	Kursk State Medical University	97,99	103,9	103,9
	Ryazan State Medical University named after I.P. Pavlov	136,5	144	148
	Smolensk State Medical University	110	114,4	121,3
	Tver State Medical University	117,5	126,9	132,36
	Yaroslavl State Medical University	116,078	139,6	146,65
	Voronezh State University	112	112	119,5
	Oryol State University named after I.S. Turgenev	98,73	112,24	120,96
	Ul State Pedagogical University named after L.N. Tolstoy	107,53	113,1	133,56

FD[1]	Educational organization	Tuition by years of recruitment, thousand rubles		
		2017	2018	2019
	Belgorod State University	103,39	119,83	128,45
NWFD	St. Petersburg State Medical University	134	134	190
	Northern State Medical University	129	166	166
	Novgorod State University named after Yaroslav the Wise	110	145	161,1
	Petrozavodsk State University	139	140	152,7
SFD	Astrakhan State Medical University	93,6	106	110
	Volgograd State Medical University	102,5	105	110
	Kuban State Medical University	104	114	129
	Maykop State Technological University	95	105	109,55
NCFD	Dagestan State Medical University (DSMU)	76,8	91,5	98,3
	Pyatigorsk Medical and Pharmaceutical Institute	92,1	99	115
	Rostov State Medical University	133	133	138,7
	North Ossetian State Medical Academy (NOSMA)	80	91	107
	Kabardino-Balkarian State University named after H.M. Berbekov	110	121,7	132
	North Ossetian State University named after K.L. Khetagurov	93,2	100	110
	North Caucasus Federal University	124,8	130	130
VFD	Bashkir State Medical University	120,36	125,172	134,712
	Kazan State Medical University	132	135,33	141,109
	Volga Research Medical University	130	135,2	171
	Orenburg State Medical University	130	135,2	150
	Perm State Medical University	110	129	140
	Samara State Medical University	143	143	143
	Saratov State Medical University named after V.I. Razumovsky	108,6	135	140,8
	Kazan Federal University	133,8	139,14	145,5
	Mari State University	95	99,7	115,1
	Mordovian State Research University named after N.P. Ogaryov	92,18	109,6	114,9
	Penza State University	89,4	97,8	107,82
	Perm State University	126	133,2	142,6
	Ulyanovsk State University	82,5	114,51	112,84
	Chuvash State University named after I.N. Ulyanov	135,745	159,834	175,817
UFD	Tyumen State Medical University	129,605	165	180,2
	Ural State Medical University	112,63	136,95	143
	South Ural State Medical University	120	140	150
SFD (Siberian)	Altai State Medical University	119	146	126
	Irkutsk State Medical University	130,42	135,6	159,1
	Kemerovo State Medical University	122	137	150
	Krasnoyarsk State Medical University named after Professor V.F. Voino-Vasenetsky	140,6	165,5	171,7
	Novosibirsk State Medical University	120	141,12	152,92
	Omsk State Medical University	108,78	122,22	130,2
	Siberian State Medical University	129,030	143,3	160,92
	Buryat State University	103,050	131,9	143
FEFD	Far Eastern State Medical University	145,17	168,412	180,867
	Pacific State Medical University	165	175	180
	Northeast Federal University named after M.K. Ammosova	233	275,5	297
	Far Eastern Federal University	190	200	210

FD[1]	Educational organization	Tuition by years of recruitment, thousand rubles		
		2017	2018	2019
CFD	Crimean Federal University named after V.I. Vernadsky	110	115	119,9

[1]FD - federal districts

Table 2. Educational organizations with a maximum and minimum cost of training for the specialty 33.05.01 «Pharmacy»

The maximum and minimum cost of training, thousand rubles	Years of student enrollment					
	2017		2018		2019	
	min	max	min	max	min	max
	76800	400000	91000	400000	98300	436000
Universities	DSMU	MSU	NOSMA	MSU	DSMU	MSU
Amplitude of prices, rubles	323,2		309,0		337,7	

Table 3. Grouping of educational organizations by the cost of training for the specialty 33.05.01 «Pharmacy» in the 2019-2020 academic year

Federal districts and Moscow	The number of universities in groups depending on the cost of training, thousand rubles				
	98,3 – 165,9	165,9 – 233,5	233,5 – 301,1	301,1 – 368,7	368,7 – 436,3
Moscow	-	-	2	1	1
CFD (except Moscow)	10	-	-	-	-
NWFD	2	2	-	-	-
SFD	4	-	-	-	-
NCFD	7	-	-	-	-
VFD	12	2	-	-	-
UFD	2	1	-	-	-
SFD (Siberian)	7	1	-	-	-
FEFD	-	3	1	-	-
CFD (Crimean)	1	-	-	-	-
Total	45	9	3	1	1
Share%	76,3	15,2	5,1	1,7	1,7

Table 4. Per capita cash income and average prices for higher pharmaceutical education services by constituent entities of the Russian Federation in 2018

Federal districts and Moscow	Per capita cash income, thousand rubles	The average cost of training, thousand rubles	The proportion of the average cost of training from the average per capita income, %
Moscow	796,525	299,25	37,6
CFD (except Moscow)	514,716	119,3	23,2
NWFD	418,803	146,3	34,9
SFD	337,926	107,5	31,8
NCFD	280,437	109,5	39,0
VFD	318,859	127,9	40,1
UFD	414,145	147,3	35,6
SFD (Siberian)	299,264	140,3	46,9
FEFD	422,836	204,7	48,4
Correlation coefficient	*r = 0,847*		-
t-Student test	*t = 4,235*		-
Reliability of the correlation coefficient	*99%*		-

Table 5. Market capacity of pharmaceutical education in the Russian Federation by federal districts in 2017-2020

	2017-2018 academic year		2018-2019 academic year		2019-2020 academic year	
	thousand roubles	market share, %	thousand roubles	market share, %	thousand roubles	market share, %
Moscow	47 585,00	20,24%	59 840,00	17,43%	72 878,00	17,50%
CFD	25 191,58	10,71%	31 321,28	9,12%	46 873,80	11,26%
NWFD	16 664,00	7,09%	21 948,00	6,39%	29 498,00	7,08%
SFD	9 237,80	3,93%	14 012,00	4,08%	17 432,00	4,19%
NCFD	16 492,90	7,01%	29 531,50	8,60%	37 545,50	9,02%
VFD	66 728,51	28,38%	116 400,20	33,91%	133 089,97	31,96%
UFD	9 876,51	4,20%	17 056,25	4,97%	18 079,00	4,34%
SFD (Siberian)	35 438,00	15,07%	42 405,42	12,35%	49 781,00	11,95%
FEFD	3 393,19	1,44%	6 378,18	1,86%	5 239,34	1,26%
CFD (Crimean)	4 510,00	1,92%	4 370,00	1,27%	5 995,00	1,44%

Table 6. The capacity of the pharmaceutical education market in the Russian Federation by universities and federal districts with the calculation of the market concentration index in 2017-2020

	Educational organization	2017-2018 academic year			2018-2019 academic year			2019-2020 academic year		
		thousand roubles	market share	HHI	thousand roubles	market share	HHI	thousand roubles	market share	HHI
Moscow	Moscow State University M.V. Lomonosov	2 000	4,20%	17,64	1 200	2,01%	4,00	3 488	4,79%	22,85
	I.M. Sechenov First Moscow State Medical University	13 095	27,52%	756,80	25 360	42,38%	1 795,22	26 480	36,33%	1 319,87
	Russian National Research Medical University	6 750	14,19%	201,07	10 400	17,38%	301,72	18 000	24,70%	609,60
	Peoples' Friendship University of Russia	25 740	54,09%	2 925,73	22 880	38,24%	1 461,53	24 910	34,18%	1 168,27
	total for Moscow (in parentheses the share for the Russian Federation,%):	47 585	100 (20,24)	3 901,24	59 840	100 (17,43)	3 562,47	72 878	100 (17,50)	3 120,59
CFD	Voronezh State Medical University * named after N.N. Burdenko	2 257	8,96%	96,83	3 763	12,01%	182,79	3 920	8,36%	95,25
	Kursk State Medical University	1 763	7,00%	59,14	3 117	9,95%	125,44	3 117	6,65%	60,21
	Ryazan State Medical University named after I.P. Pavlova	2 730	10,84%	141,61	3 600	11,49%	167,44	3 700	7,89%	84,82
	Smolensk State Medical University	2 750	10,92%	143,76	2 288	7,30%	67,57	3 033	6,47%	57,01
	Tver State Medical University	2 350	9,33%	104,86	1 903	6,08%	46,79	1 985	4,24%	24,41
	Yaroslavl State Medical University	2 321	9,22%	102,41	2 932	9,36%	110,88	4 400	9,39%	83,36
	Voronezh State University	1 680	6,67%	53,58	3 696,00	11,80%	176,36	8 963	19,12%	498,62
	Oryol State University named after I.S. Turgenev	1 480	5,88%	41,60	2 469	7,88%	78,68	3 629	7,74%	81,72
	Ul State Pedagogical University named after L.N. Tolstoy	2 688	10,67%	3,50	3 959	12,64%	2,62	6 678	14,25%	2,75
	Belgorod State University	5 169	20,52%	508,05	3 594	11,48%	166,93	7 450	15,89%	344,47
	total CFD (in parentheses the share is in the Russian Federation,%):	25 191	100 (10,71)	1 255,34	31 321	100 (9,12)	1 125,50	46 873	100 (11,26)	1 332,64
NWFD	St. Petersburg State Medical University	12 998	78,00%	6 084,00	17 688	80,59%	6 494,75	24 700	83,73%	6372,83
	Northern State Medical University	516	3,10%	9,00	830	3,78%	14,29	1 660	5,63%	48,58
	Novgorod State University named after Yaroslav the Wise	1 760	10,56%	111,51	2 030	9,25%	85,38	1 611	5,46%	45,69
	Petrozavodsk State University	1 390	8,34%	69,56	1 400	6,38%	40,58	1 527	5,18%	41,08
	total for NWFD (in parentheses the share is for the Russian Federation,%):	16 664	100 (7,09)	6 274,07	21 948	100 (6,39)	6 634,99	29 498	100 (7,08)	6 508,20
SFD	Astrakhan State Medical University	749	8,11%	65,61	1 166	8,32%	69,22	2 200	12,62%	159,26
	Volgograd State Medical University	4 305	46,60%	2 171,56	4 200	29,97%	898,20	4 400	25,24%	637,05
	Kuban State Medical University	1 144	12,38%	153,26	4 446	31,73%	1 006,16	6 450	37,00%	1 369

	Educational organization	2017-2018 academic year			2018-2019 academic year			2019-2020 academic year		
		thousand roubles	market share	HHI	thousand roubles	market share	HHI	thousand roubles	market share	HHI
	Maykop State Technological University	3 040	32,91%	1 082,41	4 200	29,97%	898,20	4 382	25,14%	631,51
	total for SFD (in parentheses the share for the Russian Federation,%):	9 238	100 (3,93)	3 472,84	14 012	100 (4,08)	2 871,78	17 432	100 (4,19%)	2 796,84
NCFD	Dagestan State Medical University (DSMU)	614	3,73%	13,84	1 190	4,03%	16,16	1 966	5,24%	24,20
	Pyatigorsk Medical and Pharmaceutical Institute	7 092	43,00%	1 848,14	18 810	63,69%	4 056,42	23 000	61,26%	4394,36
	Rostov State Medical University	3 990	24,19%	585,16	4 655	15,76%	248,38	4 855	12,93%	147,86
	North Ossetian State Medical Academy (NOSMA)	800	4,85%	23,52	910	3,08%	9,49	1 605	4,27%	16,16
	Kabardino-Balkarian State University named after H.M. Berbekov	880	5,34%	28,41	1 217	4,12%	16,97	1 320	3,52%	10,89
	North Ossetian State University named after K.L. Khetagurov	746	4,52%	20,43	800	2,71%	7,29	2 200	5,86%	7,56
	North Caucasus Federal University	2 371	14,38%	206,50	1 950	6,60%	43,56	2 600	6,92%	42,38
	total according to NCFD (in parentheses the share is in the Russian Federation,%):	16 493	100 (7,01)	2 725,99	29 531	100 (8,60)	4 398,26	37 546	100 (9,02)	4 643,43
VFD	Bashkir State Medical University	9 629	14,43%	207,94	11 265	9,68%	93,51	12 124	9,11%	91,20
	Kazan State Medical University	792	1,19%	1,39	4 737	4,07%	16,48	4 939	3,71%	3,57
	Volga Research Medical University	6 500	9,74%	94,87	21 632	18,58%	345,22	27 360	20,56%	408,44
	Orenburg State Medical University	7 150	10,72%	114,70	7 436	6,39%	40,70	8 250	6,20%	42,25
	Perm State Medical University	27 500	41,21%	1 698,26	38 700	33,25%	104,90	42 000	31,56%	1094,94
	Samara State Medical University	2 431	3,64%	13,25	10 010	8,60%	73,79	10 010	7,52%	62,09
	Saratov State Medical University named after V.I. Razumovsky	1 846	2,77%	7,62	6 750	5,80%	33,52	7 040	5,29%	11,02
	Kazan Federal University	3 211	4,81%	23,14	2 087	1,79%	3,20	2 182	1,64%	2,92
	Mari State University	855	1,28%	1,64	4 985	4,28%	18,32	6 906	5,19%	40,19
	Mordovian State Research University named after N.P. Ogaryov	922	1,38%	1,90	1 096	0,94%	0,88	1 149	0,86%	0,81
	Penza State University	1 699	2,55%	6,45	2 934	2,52%	6,35	5 391	4,05%	17,97
	Perm State University	1 008	1,51%	2,28	1 864	1,60%	2,56	2 852	2,14%	4,08
	Ulyanovsk State University	743	1,11%	1,23	1 145	0,98%	0,96	1 128	0,85%	0,77
	Chuvash State University named after I.N. Ulyanova	2 443	3,66%	13,40	1 758	1,51%	2,28	1 758	1,32%	1,90
	total for VFD (in parentheses the share is for the Russian Federation,%):	66 729	100 (28,38)	2 188,07	116 400	100 (33,91)	1 742,68	133 089	100 (31,96)	1 782,20

	Educational organization	2017-2018 academic year			2018-2019 academic year			2019-2020 academic year		
		thousand roubles	market share	HHI	thousand roubles	market share	HHI	thousand roubles	market share	HHI
UFD	Tyumen State Medical University	2 85	28,87%	832,90	4 125	24,18%	584,67	3 604	19,93%	296,18
	Ural State Medical University	4 505	45,62%	2 080,27	10 271	60,22%	3 625,24	10 725	59,32%	4208,11
	South Ural State Medical University	2 520	25,52%	650,76	2 660	15,60%	243,05	3 750	20,74%	320,41
	total for UFD (in parentheses the share for the Russian Federation,%):	9 876	100 (4,20)	3 563,93	17 056	100 (4,97)	4 452,96	18 079	100 (4,34)	4 824,71
SFD (Siberian)	Altai State Medical University	7 140	20,15%	405,62	3 504	8,26%	68,23	4 914	9,87%	39,81
	Irkutsk State Medical University	1 956	5,52%	30,47	4 068	9,59%	91,97	4 773	9,59%	99,21
	Kemerovo State Medical University	732	2,07%	4,24	548	1,29%	1,66	6 000	12,05%	156,75
	Krasnoyarsk State Medical University named after Professor V.F. Voino-Vasenetsky	8 998	25,39%	644,65	5 131	12,10%	146,17	10 302	20,69%	462,68
	Novosibirsk State Medical University	2 400	6,77%	45,83	3 669	8,65%	74,82	4 587	9,22%	91,58
	Omsk State Medical University	5 439	15,35%	235,32	6 111	14,41%	207,65	6 510	13,08%	184,69
	Siberian State Medical University	7 742	21,85%	476,99	18 055	42,58%	1 812,20	11 264	22,63%	553,19
	Buryat State University	1 031	2,91%	8,41	1 319	3,11%	9,67	1 430	2,87%	8,88
	total for SFD (in parentheses the share for the Russian Federation,%):	35 439	100 (15,07)	851,53	42 405	100 (12,35)	2 412,38	49 781	100 (11,95)	1 596,79
FEFD	Far Eastern State Medical University	1 016	29,95%	896,40	2 526	39,61%	1 568,16	904	17,26%	297,91
	Pacific State Medical University	495	14,59%	212,58	1 750	27,44%	752,40	1 800	34,36%	1179,92
	Northeast Federal University named after M.K. Ammosova	932	27,47%	754,05	1 102	17,28%	298,25	1 485	28,34%	803,16
	Far Eastern Federal University	950	28,00%	783,44	1 000	15,68%	245,55	1 050	20,04%	401,61
	total according to FEFD (in parentheses the share is in the Russian Federation,%):	3 393	100 (1,44)	2 646,47	6 378	100 (1,86)	2 864,37	5 239	100 (1,26)	2 682,59
CFD	Crimean Federal University named after V.I. Vernadsky	4 510	100 (1,92)		4 370	100 (1,27)		5 995	100 (1,44)	
Total for the Russian Federation:		235 117				343 262			416 411	

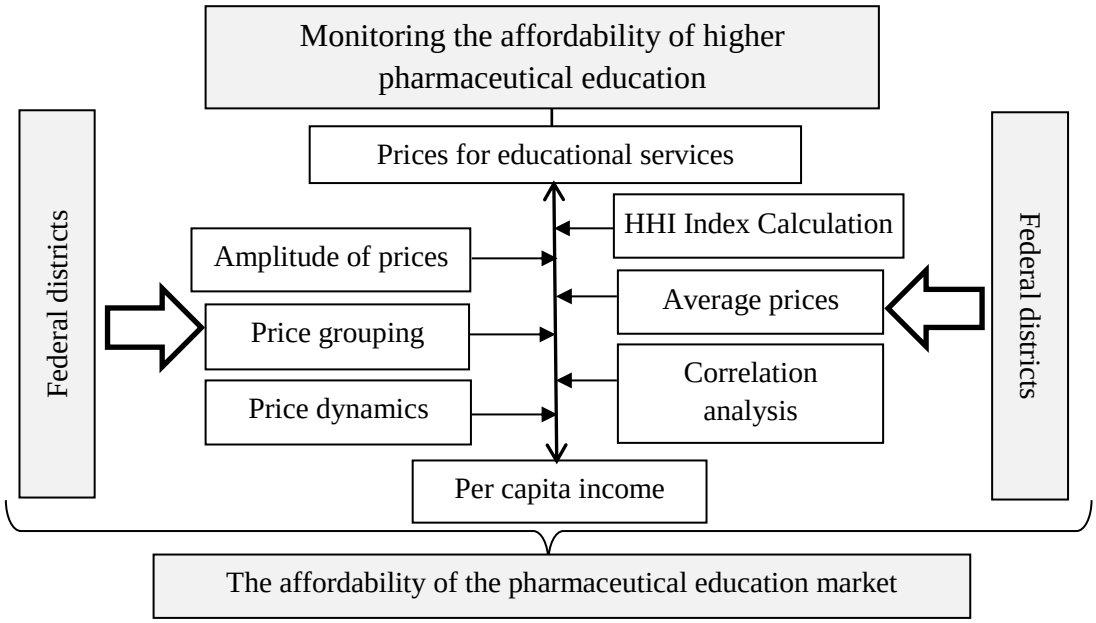

Figure 1. Research concept

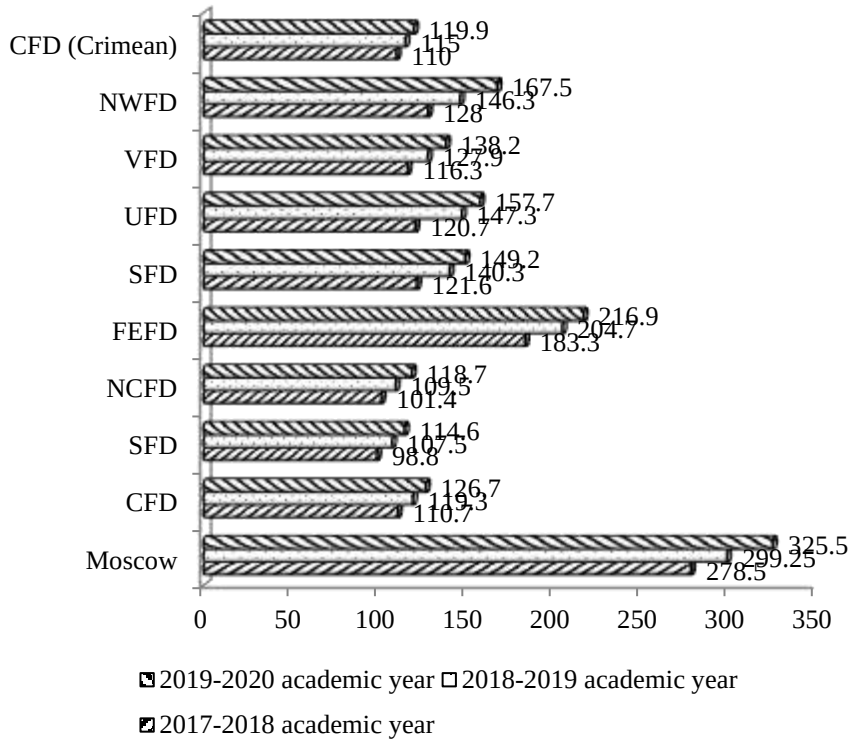

Figure 2. The average cost of training in the specialty 33.05.01 «Pharmacy» in the federal districts and Moscow in the dynamics for 2017-2019, in thousands of rubles

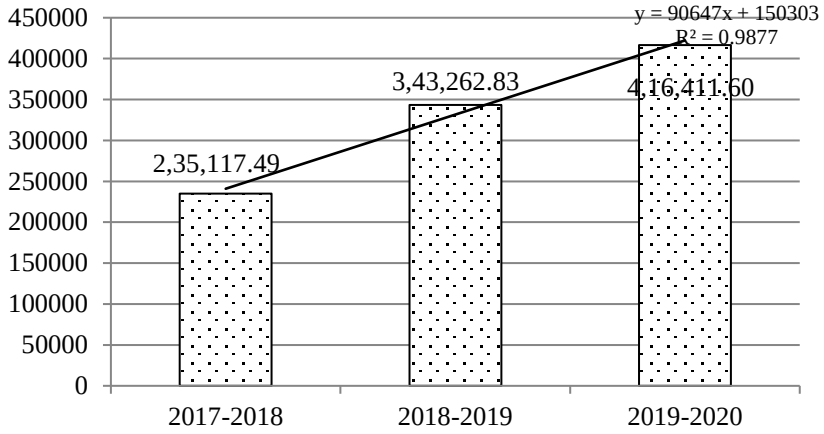

Figure 3. Dynamics of pharmaceutical education market capacity in the Russian Federation in 2017-2020, in thousands of rubles

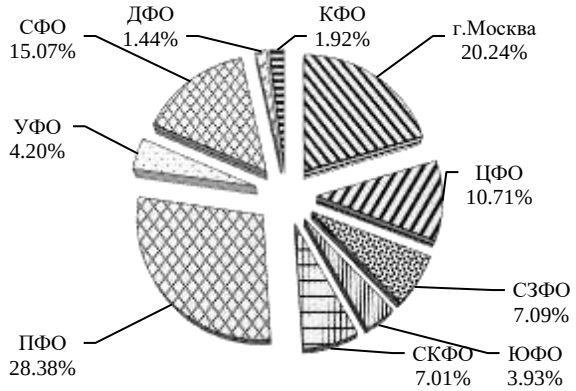

Figure 4. Pharmaceutical Education Market Structure in the Russian Federation in the 2017-2018 academic year

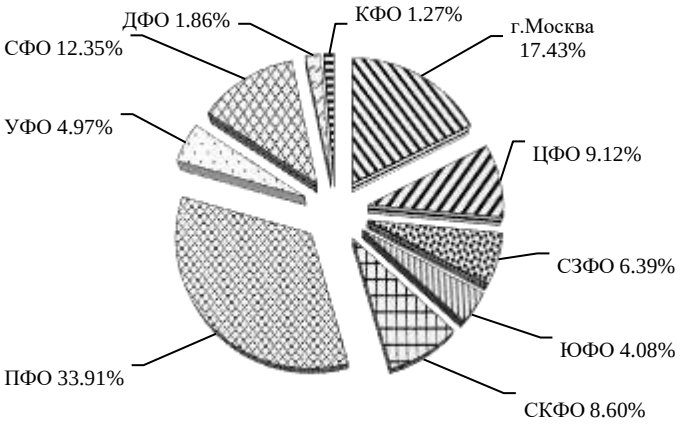

Figure 5. Pharmaceutical Education Market Structure in the Russian Federation in the 2018-2019 academic year

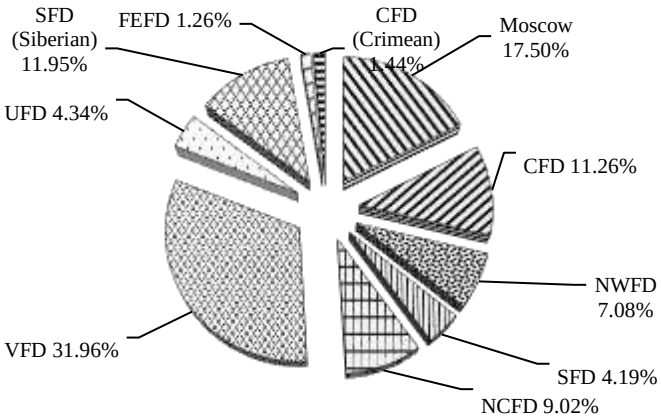

Figure 6. Pharmaceutical Education Market Structure in the Russian Federation in the 2019-2020 academic year