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ACTUAL TOPIC

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POPULATION DISABILITY AND SOCIO-ECONOMIC FACTORS

ABSTRACT

The purpose of the research is to study the state of primary disability (PD) in the adult population and determine its relationship with socio-economic indicators.

Materials and methods of research. The PD indicators of the adult population in the Irkutsk region are analyzed for the period of 2000-2017, according to the reporting forms No. 7-sobes The research uses statistical, graphical, and correlation methods (the Pearson coefficients are calculated using 14 socio-economic indicators).

Results and discussion. The PD indicators of the adult population in the Irkutsk region for all the causes, except the malignant tumors, ear diseases and HIV, decreased within the period of 2000-2017. The total PD indicator decreased by 30.4%: from 107.8 per 10 000 people in 2000 to 75.0 per 10 000 people in 2017

The main causes of primary disability of the adult population in the Irkutsk region include: malignant neoplasms, circulatory system diseases, and mental disorders. The PD indicators in the Irkutsk region significantly exceeded the all-Russian indicators (for $p \leq 0.05$) for 9 causes of disability in 2016: HIV (7.0 times), ear diseases (3.3 times), effects of injuries (2.5 times), mental disorders (2.2 times), tuberculosis (1.8 times), etc.

The proportion of adult people with primary disability in the 2nd group decreased both in the Irkutsk region and in the entire Russian Federation, and the proportion of those in the 1st and 3rd groups increased. As compared to the situation in 2000, where more people in the region were in the 2nd group of disability (58.3%), in 2006, the 3rd group (48.3%) started to prevail. The retirement age people continue to predominate in the age structure of the primary disability of the adult population. However, since 2006 the second place has been taken by the middle-aged people, rather than the young.

Conclusion: The research showed that the Irkutsk region is an unfavorable entity due to the primary disability of the adult population caused by HIV, mental disorders, the effects of injuries, eye diseases, etc. Strong correlations were found between 9 individual PD indicators of the adults in the Irkutsk region and socio-economic indicators.

Keywords: primary disability, adult population, socio-economic indicators.

Introduction. According to the WHO estimates, about one billion people live with disability, and this number will increase with the population ageing and the spread of chronic health disorders [3]. Apart from morbidity, the level of disability is affected by a variety of factors [6], including socio-economic ones: the incidence of disability in low-income countries is higher than in high-income countries. As compared to the people who are not disabled, people with disabilities, especially those living in developing countries, have poorer health, suffer from a higher level of poverty, and participate in the education and employment system less [3].

The purpose of the research is to study the state of primary disability (PD) in the adult population of the Irkutsk region and determine its relationship with

socio-economic indicators.

Materials and methods of research. The PD indicators in the adult population (18 years and older) of the Irkutsk region are analyzed for 16 causes for the period of 2000-2017, according to the reporting forms No. 7-sobes, the Federal Bureau of the ITU and Rosstat. The research uses statistical, graphical, and correlation methods. The ranking is carried out in the descending order. The Pearson coefficients are calculated between certain PD indicators and 15 socio-economic indicators.

Results and discussion. For the first time, within the period of 2000-2017, over 351890 people in the Irkutsk region at the age of 18 and older were declared disabled. The PD indicator of the adult population in the Irkutsk region decreased by 30.4%: from 107.8 per 10 000 people in 2000 to 75.0 per 10 000 people in 2017, with an average rate of decline of 2.1%. Thus, the total PD indicator of the adult population in the Irkutsk region tends to decrease, as well as in the other territories of Russia [2, 6]. The average long-term PD indicator of the adult population in the region in 2000-2016 exceeded a similar all-Russian indicator by 13.3% (103.9 and 91.7 per 10 000, respectively).

For most of the individual causes, the PD indicators of the adult population in the Irkutsk region also decreased in 2000-2017 (Table 1). The average annual rate of decline was between 0.4 and 11.3%. The growth of primary disability in the adult population of the Irkutsk region for the studied period was registered only for two causes: malignant neoplasms and ear diseases. Moreover, the indicator of the adult population primary disability in the region due to HIV increased from 0.05 in 2006 to 3.16 per 10 000 in 2017, with an average rate of growth of 46.7%.

In 2000, the PD indicators in the Irkutsk region exceeded the all-Russian indicators for all the causes of disability, except the diseases of the circulatory system and malignant neoplasms. In 2016, the PD indicators of the adult population in the Irkutsk region corresponded to the level of the all-Russian indicators (diseases of the endocrine system, occupational diseases), for all the other causes exceeded it. What is more, there was a significant excess of the all-Russian indicators registered (for p ≤ 0.05) for 9 causes of disability: HIV (7.0 times), ear diseases (3.3 times), effects of injuries (2.5 times), mental disorders (2.2 times), tuberculosis (1.8 times), diseases of the nervous system (1.6 times), diseases of the musculoskeletal system (1.5 times), all causes (1.4 times), malignant neoplasms (1, 2 times).

The high level of primary disability of the adult population is explained by the number of primary disability causes in the adult population, according to which the Irkutsk region is annually included in the first ten unfavorable entities of the Russian Federation, from 5 to 9. Thus, in 2016, the Irkutsk region was in the top ten entities-outsiders for the following primary disability causes in the adult population: HIV and ear diseases (1st place); mental disorders and consequences of occupational injuries (2nd), effects of injuries (3rd), diseases of the nervous system (4th), diseases of the musculoskeletal system and all causes (5th), diseases of the digestive system (8th). In some years the region was included in the top ten unfavorable entities for 3 more reasons: endocrine system diseases, respiratory diseases and occupational diseases.

For the period of 2000-2017, the structure of the adult population primary disability in the Irkutsk region changed:

1) in 2000-2014, the first place was taken by the circulatory system diseases; in the last three years (2015-2017), these were the malignant neoplasms, since the share of the circulatory system diseases decreased from 35.0 to 23.7% during the studied period, and the proportion of the malignant neoplasms, on the contrary, increased from 10.6 to 29.7%, as well as in the other regions of Russia [2, 4];

2) first, the injuries took the third place (2000-2004); then the 4th (2005-2015), and the 5th place (2016-2017);

3) mental disorders started to take the third place (2016, 2017); before that, they were in the 5th place practically all the time; moreover, the specific value of this cause in the primary disability structure changed only by tenths of a percent: in 2000 - 6.7%, in 2017 - 6.9%;

4) at the beginning of the studied period, the musculoskeletal system diseases were in the 4th place (2000-2004), then in the last 10 years they occupied the 3rd place (2005-2015), in the recent years they returned to the 4th place (2016-2017).

In 2000, 12.8% of people in the Irkutsk region over the age of 18 were classified

PD indicators of adult population of the Irkutsk region in 2000-2017 (per 10.000, average annual growth rate / decrease, %)

Causes of disability	2000	2017	$\vec{O}_{2000-2017}$
All reasons, incl.	107,8	75,0	-2,1
Tuberculosis	6,3	2,0	-6,5
HIV*	…	3,2	-
Malignant neoplasms	11,4	22,3	+4,0
Diseases of the endocrine system	5,1	1,3	-7,9
Mental disorders	7,2	5,2	-2,0
Diseases of the nervous system	3,4	3,2	-0,4
Eye diseases	3,8	1,6	-4,8
Ear diseases	1,5	3,4	+5,1
Diseases of the circulatory system	37,7	17,7	-4,3
Diseases of the respiratory system	5,0	1,3	-7,5
Diseases of the digestive system	2,0	1,8	-0,7
Diseases of the musculoskeletal system	8,0	5,0	-2,8
Diseases of the genitourinary system*	…	0,8	-
Effects of injuries	11,3	4,7	-5,0
Effects of occupational injuries	1,3	0,2	-10,0
occupational diseases	0,7	0,1	-11,3

* reports since 2006

as the 1st disability group for the first time, 58.3% - as the 2nd group, 28.8% - as the 3rd group, which means that at the beginning of the studied period, there were more people with primary disability from the 2nd group [6]. Since 2006, the third group of disability has prevailed: in 2006 - 10.5; 41.2 and 48.3%; in 2016 - 20.5; 33.2 and 46.3%; in 2017 - 20.3; 33.3 and 46.3%, respectively. In the Russian Federation, the proportion of people with primary disability in the 1st group in 2000 was equal to 12.6%, the 2nd group - 63.3%, the 3rd group - 24.1%; in 2016 - 19.0; 37.1 and 43.9%, respectively. Thus, in the Irkutsk region, as well as in the Russian Federation as a whole, the proportion of adult people with primary disability from the 2nd group decreased, while the proportion of people from the 1st and 3rd groups increased.

In 2000, the adult population with primary disability in the Irkutsk region comprised the following age groups: the first place was taken by the retirement age people (42.1%), the 2nd place - by the young (36.5%), the 3rd - by the middle-aged people (21.4 %). The age structure of the primary disability of the adult population changed in 2006 as well - the second place was taken by the middle-aged people, rather than the young, as in 2000-2005. In 2017, the retirement age people accounted for 53.4%; the middle-aged people - 24.1% and the young, working people up to 44 years old - 22.5%. Consequently, the retirement age people continue to predominate in the age structure of the primary disability of the adult population.

An important element to improve

the medical care and make managerial decisions is the identification of risk areas for primary disability of the adult population [2]. In 2016, 10 municipalities were ranked as the risk territories of the Irkutsk region, where the indicators exceeded the regional level more than 1.2 times: Katangsky district (117.4 per 10 000), Bayandayevsky district (113.7) , Nukut district (113.2), and others. In 2017, 10 risk areas were recorded as well: Mamsko-Chui (104.3 per 10 000), Ust-Ilim (99.9), Ehirit-Bulagatsky (97.2) districts, etc.

The primary disability reduction in the adult population can be influenced by many factors, including socio-economic factors. Studying the influence of a number of factors on disability, A.M. Allenov found out that the demographic indicators accounted for about 10% in the total information content of all indicators, while socio-economic indicators accounted for 53%, and health system resources - for 37% [1].

According to the rating agency "RIA Rating" of the media group MIA "Russia Today," in the last 5 years, the Irkutsk region has traditionally taken low places in terms of the life quality of the population in the ranking of the Russian Federation entities from the best to the worst – the 69th, in 2015 – the 67th [5]. The rating considers a set of 72 indicators, divided into 11 groups which characterize the main aspects of the life quality in the region: the level of income of the population, employment and labor market, housing conditions, safety of living, demographic situation, environmental and climatic conditions, health of the population, the level of economic development, etc.

In 2016, among 85 entities of the Russian Federation, the Irkutsk region occupied the 20th place (17839 rubles) in terms of the average pensions; the 21st place in terms of investments in fixed assets (87807 rubles / person) and the average nominal monthly accrued salary (35510 rubles); the 22nd place in terms of the gross regional product per capita (443298 rubles); the 31st place according to the subsistence minimum of the able-bodied population (10642 rubles); the 47th place according to the Gini coefficient (0.372); the 58th place in terms of the total area of residential premises for 1 person (24.2 m²); and the 64th place in terms of the monetary incomes per capita (22268 rubles). Judging by the resource health indicators, the rating positions of the Irkutsk region were as follows: the number of beds - the 7th place (105.4 for 10 000 people), the number of doctors – the 39th place (46.9); the number of nurses – the 43rd place (110.8). The

available data say that the Irkutsk region lost some of its rating positions in 2017: the investments in fixed assets – the 22nd place (96471 rubles); the size of the subsistence minimum of the able-bodied population - the 37th place (10648 rubles), the average income per capita - the 66th place (22412 rubles); the Gini coefficient - the 45th place (0.371).

It should be noted that despite the improvement of one of the poverty indicators in the Irkutsk region, the percentage of people whose income is below the subsistence minimum decreased from 35.5% in 2000 to 20.0% in 2017. According to this indicator, the region occupied the 11th place among the unfavorable entities of the Russian Federation in 2017. According to the unemployment rate, the region took the 14th place among the disadvantaged entities, both in 2016 (8.8%, the Russian Federation - 5.5%), and in 2017 (8.7%,
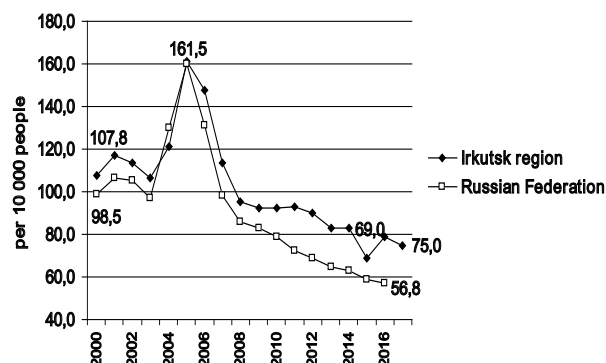
Dynamics of PD indicators of the adult population of the Irkutsk region and the Russian Federation over the period of 2000-2017 (per 10 000 people)

Russian Federation – 5.2%).

During the correlation analysis, the strongest correlations were found between the socio-economic indicators and the PD indicators of the adult population in the Irkutsk region as a result of 9 causes: malignant neoplasms, the effects of occupational injuries, HIV, tuberculosis, endocrine system diseases, circulatory system diseases, respiratory diseases, the effects of injuries, occupational diseases (Table 2).

Table 2

Absolute number of the Pearson correlation coefficients between PD indicators of the adult population of the Irkutsk region and socio-economic indicators

Causes of disability	correlations		
	strong	medium	weak
Malignant neoplasms	12	2	1
Effects of occupational injuries	12	2	1
Hiv	11	2	2
Tuberculosis	10	5	0
Diseases of the endocrine system	10	4	1
Diseases of the circulatory system	10	4	1
Respiratory diseases	10	4	1
Effects of injuries	10	4	1
Occupational diseases	10	3	2
Eye diseases	0	13	2
Ear diseases	2	11	2
Diseases of the digestive system	0	11	4
Diseases of the genitourinary system	0	11	4
Diseases of the nervous system	0	10	5
Mental disorders	5	9	1
Diseases of the musculoskeletal system	0	7	8
Socio-economic indicators	correlations		
	strong	medium	weak
Cost of a minimum food package, rub.	10	6	0
Investment in fixed assets, rub. / Person	10	5	1
Income per capita, rub. / Person	10	5	1
Average monthly accrued salary, rub.	9	7	0
Subsistence min. For the whole population, rub.	9	7	0
Subsistence min. For the able-bodied population, rub.	9	7	0
Gross regional product, rub. / Person	9	6	1
Average pensions, rub.	9	6	1
Total floor area, sq.M. / Person	9	6	1
Number of beds per 10 000 people	8	7	1
Number of people with incomes below the subsistence min,%	4	8	4
Unemployment rate,%	3	8	5
Gini coefficient	2	9	5
Number of nurses per 10 000 people	1	10	5
Number of doctors per 10 000 people	0	5	11

Most medium correlations are found between the analyzed socio-economic indicators and the PD indicators of the adult population in the Irkutsk Region as a result of 6 causes: eye diseases, ear diseases, digestive system diseases, genitourinary system diseases, nervous system diseases, mental disorders. Seven medium correlations and eight weak correlations are found between the indicators of primary disability due to the musculoskeletal system diseases and the socio-economic indicators (i.e. the weak correlations prevail).

It should be noted that strong correlations were not found between certain PD indicators of the adult population in the Irkutsk region and the number of doctors. A few strong correlations (from 1 to 4) can be seen with such socio-economic indicators as the number of nurses, the Gini coefficient, the unemployment rate, and the number of people with incomes below the subsistence level (Table 2).

Conclusion. The period of 2000-2017 showed a decrease in the total primary disability indicators of the adult population in the Irkutsk region and in the indicators for the majority of causes. However, an increase is registered in primary disability due to HIV, malignant neoplasms, and ear diseases. In 2016, the region was among the first ten unfavorable entities of the Russian Federation in terms of primary disability of the adult population as a result of 8 causes (HIV, ear and mastoid disease, mental disorders, consequences of injuries, including occupational injuries, nervous system diseases, musculoskeletal system diseases, diseases of the digestive system) and all causes together.

The proportion of people in the Irkutsk region with the 2nd group of disability decreased and the proportion of people with the 1st and the 3rd disability groups increased (the latter prevails). In the age structure, the proportion of young people under 44 decreased. Currently, the first place in the structure of the causes of primary disability in the adult population is taken by the malignant neoplasms, which shifted the circulatory system diseases to the second place; the mental disorders are in the third place.

Strong correlations are found between the socio-economic indicators and primary disability indicators of the adult population in the Irkutsk region due to such causes as the malignant neoplasms, effects of occupational injuries, HIV, tuberculosis, endocrine system diseases, diseases of the circulatory system, respiratory diseases, effects of injuries, occupational diseases.

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