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IMPROVING REHABILITATION EFFICIENCY FOR CITIZENS WITH LIMITED WORK CAPACITY: SOCIO-ECONOMIC ASPECTS

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Abstract

In the current conditions of the demographic crisis, against the background of the migration of skilled personnel abroad and the high influx of low-skilled migrants, it is important to expand employment opportunities for people with disabilities to increase the total income of the country. Rehabilitation medicine plays an integral role in achieving optimal functioning of patients after injuries or illnesses. One of the main areas of rehabilitation and habitation of people with disabilities is vocational rehabilitation (VR). Vocational rehabilitation is aimed at restoring the competitiveness of persons with disabilities in the labour market. The possibility of improvement in the level and quality of human capital for people with disabilities largely depends on the effectiveness of rehabilitation activities. In this regard, it is important to study the effectiveness of rehabilitation measures for individuals recognized as disabled due to occupational disease or an industrial accident, former employees of industries with particularly dangerous working conditions aged 18 years and older, as well as residents of certain territories (CATF). The article addresses the issues of preserving the working capacity of people with high qualifications who suffered from harmful production factors while working in high-tech industries. The authors demonstrate that a comprehensive analysis of the existing problem from the standpoint of rehabilitation medicine, economics, sociology and a number of other scientific disciplines makes it possible to talk about significant opportunities in improving the situation of this category of workers and the existing positive developments in this direction.

Keywords: Disabled, increased disability, rehabilitation medicine.

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1. Introduction

For many millennia, the effectiveness of people's work activity directly depended on their state of health. A person who has lost or partially lost his/her ability to work, regardless of the reasons, lost his/her social position (Imahashi et al., 2016; Nemarnik & Macan, 2018). However, it was social, and then socio-economic development that led to the idea in the public consciousness that the experience and knowledge of an individual can bring significant benefits to all, even if his/her personal professional skills were partially or completely lost (Gómez & Rodriguez-Paz, 2018). Such a person can share their knowledge, or perform other work, which can significantly succeed, benefiting society. At the same time with practical benefits, which for many hundreds of years transformed into economic feasibility, a humanistic principle developed, which contributed to the inclusion of activities to support disabled or partially disabled people in the number of social priorities of both personal and social activities.

Traditionally, it was believed that the more qualified work you perform, the less is your exposure to hazards that may adversely affect your ability to work. Although at the household level this viewpoint dominates even now, the situation has changed with the advent of a number of high technologies. There were areas of activity where workers with very high qualifications and, accordingly, high level of education, were required to work in hazardous conditions. This applies to such industrial areas as nuclear power, chemical industry and a number of others. When using such technologies, professionals are not the only people whose health and safety is in danger. There are regulations that demand to ensure isolation of the work area from the surrounding space with the people there and exclude (reduce to acceptable limits) the harmful effects on living beings and various objects. One of the first examples of such activity is the work of representatives of the profession of radiologist that appeared a little more than a century ago. The further development of scientific and technological progress led to the emergence of dozens of new professions that required an extremely high level of financial investments in the training of qualified personnel for a wide variety of industries with a high degree of danger due to a number of technological factors. That is why the problem has arisen of the most economically efficient use of such valuable “human material” while at the same time adhering to the legal norms related to the work activities of such specialists, which is complicated by moral and ethical aspects and environmental safety every year.

It was assumed that the key to solving the problem and improving the existing situation in the preservation activity of highly skilled workers in high-tech industries (in case of partial loss of their previous qualifications due to occupational risks associated with harmful production factors) might be a comprehensive analysis of the factors of their activities. This made it possible to make recommendations on the rehabilitation of such people and maximizing their involvement in active work (Buys et al., 2017).

This article is devoted to the analysis of the interaction of a complex set of social, economic and humanistic problems that are associated with the physical and social rehabilitation of highly qualified specialists working in the field of high technologies and simultaneously exposed to various harmful production factors.

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2. Problem Statement

The social and professional integration of people with disabilities and those who do not need assistance is an effective tool capable of speeding up the processes of human capital development (Scaratti et al., 2018). Against the background of declining birth rates and an increase in the number of people with disabilities of working age, it is important to focus on improving the effectiveness of vocational rehabilitation activities and monitoring the results obtained. Unfortunately, there is currently no fully developed rehabilitation infrastructure in Russia, although there is a consistently high demand for various types of rehabilitation (Plotnikova & Mavlikayeva, 2016). Despite the fact that measures for the social protection of people with disabilities are enshrined in the Federal Law of the Russian Federation, the level of disabled employees in Russia remains low. Psychological, physical and social barriers impede employment promotion policies for persons with disabilities: there is no physical access to the workplace and adequate equipment, accessible transport, there are no programs that support entrepreneurs with disabilities, and there are many stereotypes among employers towards disabled people.

Is it possible to change the situation for the better? We believe that this is possible. The Federal Medical and Biological Agency (FMBA of Russia), as an executive body, provides medical and sanitary services for personnel of hazardous and highly hazardous industries, as well as for the population living in the zone of influence of these facilities. A number of unfavourable production factors affects the employees of these enterprises: ionizing and non-ionizing radiation, radioactive and chemical substances, welding aerosols, noise, vibration, dust, physical overload and so on. In this regard, it is logical to expect a high level of industrial injuries, a large number of cases of occupational diseases. Among the strategically important activities of the Federal Medical and Biological Agency of Russia are the development of measures to preserve the health of employees in the nuclear industry, and to restore the ability to work of those injured due to radiation accidents and professionally caused diseases. Currently, doctors of various profiles in more than 100 medical organizations of the Federal Medical and Biological Agency of Russia carry out dispensary observation of those working in contact with harmful factors of production.

3. Research Questions

Rehabilitation medicine plays an integral role in achieving optimal functioning of patients after injuries or diseases (Mji, Rhoda, Statham, & Joseph, 2017), and the professional integration of citizens with limited working ability in the labour market is one of the factors for their personal success (Gil, De Oña, & Picola, 2016). Recovery activities, the effectiveness of which determines the possibility of increasing the human capital of people with disabilities, include vocational rehabilitation (VR). The creation of an environment of equal rights and opportunities (Paggetti, Muller, & Mairiaux, 2016) is the most important condition for social and especially labour adaptation for people who have impaired health with a disorder of body functions.

In this regard, the effectiveness of rehabilitation programs for citizens with limited ability to work due to occupational disease or an industrial accident was considered, using the example of former employees of industries with particularly hazardous working conditions aged 18 years and older, as well

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as residents of closed administrative-territorial formations (CATF). Elimination or the fullest possible compensation for disability, restoration of the working ability of an individual and his further employment, taking into account the existing disorders of the body functions, was carried out according to an individual program of rehabilitation / habitation (IPR / H). This program was developed taking into account the individual health status of a person with disabilities and reflects the content, scope, timing and level of consecutive rehabilitation measures.

4. Purpose of the Study

The purpose of the study is to analyse materials reflecting the effectiveness of rehabilitation measures in relation to employees working in the field of high technologies, and to give an opinion on the possibility of their social and industrial rehabilitation and the feasibility of such activities from humanistic, technological and economic positions.

5. Research Methods

We carried out a retrospective analysis of the data provided by the report of the Main Bureau of Medical and Social Expertise by the FMBA of Russia. The data referred to the period from 2016 to 2017, including materials of the federal state statistical observation: form (7 - social security) "Information about the medical and social expertise of persons 18 years and older." The research group included employees of organizations of certain industries with especially dangerous working and population conditions in CATF. They were sent to the Main Bureau of Medical and Social Expertise in order to determine the degree of loss of professional working ability and need for rehabilitation measures, as well as to determine the disability group.

Statistical processing of the results of this study allowed us to determine the indicators of arithmetic averages (M), standard errors taking into account the deviation of sample values from arithmetic averages (± m). The normal distribution was checked using the Kolmogorov-Smirnov test. Assuming the distribution of the normality correspondence, the reliability of the obtained differences of compared values was evaluated using the Student's t-test. The results indicate the odds ratio (OR) and 95% confidence interval (CI). The data were considered statistically significant when the value of $p \leq 0.05$.

6. Findings

Analysis of the documents showed that for the first time in 2016, 10,279 people were examined, of whom 4380 (42.6%) were of working age. Among the examined able-bodied citizens, the persistent loss of professional working ability and need for rehabilitation measures was determined in one person (0.0097%), 3339 (76.2%) people were recognized as disabled, of whom 1146 (34.3%) were women. There were 18 (0.54%) persons among those recognized as disabled at working age due to work injury or occupational disease. One citizen was recognized as a disabled person due to radiation accidents and catastrophes, which accounted for 0.0097% of all those surveyed for the first time in 2016. The causal relationship of disability with works to eliminate the consequences of radiation accidents and disasters has not been determined in any case.

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In 2017, 10193 people were examined, of whom 4241 (41.6%) were of working age. In no case has a persistent loss of professional working ability or need in rehabilitation and social protection measures been revealed. Disability at working age was established in 3281 (77.36%) people, including 1126 (34.3%) women. Labour injury or occupational disease caused disability in 17 (0.52%) people of working age. The causal link between disability and work on the elimination of the consequences of radiation accidents and disasters, as in 2016, was not determined in any case. The results obtained in 2016 and 2017 had no statistically significant differences. The largest number of persons recognized as disabled for the first time, due to occupational diseases, was noted at the age of 55 years and older, which is probably related to the length of work (experience). Consequences of industrial injuries, as the cause of disability, on the contrary, were more common in young people (Table 01).

Table 01. Distribution by sex and age of persons first recognized as disabled

The name of indicators	**Total disabled**		**Aged from 18 to 44**		**Aged from 45 to 54 (females) and from 45 to 59 (males)**		**Aged older than 55 (females) and older than 60 (males)**	
	2016	2017	2016	2017	2016	2017	2016	2017
In total	8622	8734	1183	1192	2156	2089	5283	5453
Occupational diseases	15	12	0	2	6	2	9	8
Effects of work injuries	15	16	7	6	5	7	3	3

In 2016, 3145 IPR /H were developed; in 2017, 3077 IPR /H were developed for the injured because of an industrial accident and occupational disease. In 2016 sixty-eight (2.16%) people needed vocational training/retraining, in 2017 the number was forty-six (1.49%) people. 2040 (64.86%) and 1766 (57.39%) of examined individuals needed employment in 2016 and 2017, respectively. Of these, for most of the specialists, the usual production conditions were sufficient with the provision of appropriate working conditions: namely, for 1232 (39.17%) people in 2016 and for 1085 (35.26%) people in 2017, respectively.

Specialists of the Bureau of Medical and Social Expertise assessed the effectiveness of the implementation of an individual rehabilitation program during the re-examination of persons with disabilities. In 2016, 2839 IPR /H adults developed in 2015 were evaluated, and in 2017, 2919 IPR /H developed in 2016 were evaluated. The positive effect of rehabilitation was achieved in 2016 and in 2017 (57.3% and 55.7% of disabled people, respectively). The number of persons with disabilities who achieved industrial adaptation was significantly higher in 2017 (40.7%) compared with the results of 2016 (9.5%).

Thus, the analysis of data, including statistics on people with disabilities and persons with reduced working capacity and belonging to highly skilled personnel employed in the field of high technologies, leads to the conclusion about a certain increase in activities aimed at this category of employees at the state level. This encourages a cautious optimism for the prospects of the implementation of various training programs for the rehabilitation and further use of the professional competencies of this professional category. The real economic efficiency of these measures requires additional research.

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7. Conclusion

7.1 Analysis for 2016-2017 showed that the number of people who were able to achieve industrial adaptation, fully restore social, and labour status grows over time, which indicates the social importance of modern rehabilitation medicine.

7.2 The costs of retraining qualified personnel in knowledge-intensive industries with proper organization and competent use of their competencies will bring both economic and humanistic effect. The first will occur at the expense of reducing the cost of the training process, and the second is associated with the improvement of the moral and psychological climate among this category of employees who are aware of their relevance and social utility and are given the opportunity to improve their financial situation.

7.3 It is necessary to involve not only the state, but also various independent structures to the problem of rehabilitation of the studied category of workers. The authors plan to continue their work on this topic, believing that it is necessary to organize a thorough study of the socio-economic conditions and psychological characteristics of those personnel in high-tech industries who have become disabled or partially disabled.

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