



Regional Employment and Occupational Morbidity Indicators in Western Kazakhstan

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Abstract

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BACKGROUND: The article deals with regional employment and occupational morbidity indicators in Western Kazakhstan.

AIM: The purpose is to study the employment indicators in hazardous working conditions and the dynamics of occupational morbidity in the West Kazakhstan region for the period 2013–2017.

MATERIAL AND METHODS: Materials obtained from the Public Health Departments of the Aktobe, Atyrau, West Kazakhstan, and Mangystau regions were studied based on the results of periodic medical examinations of workers employed in hazardous working conditions for the period 2013–2017. The indicators of the dynamics of occupational morbidity in the region are derived from the annual reports of the West Kazakhstan branch of the RSE at the National Hygiene Center for Occupation and Occupational Diseases of the Ministry of Healthcare of the Republic of Kazakhstan for the period 2013–2017.

RESULTS: The Atyrau, West Kazakhstan, and Mangystau regions saw an annual increase in the number of workers employed in hazardous production. In the Aktobe region, the number of people employed in hazardous working conditions decreased due to the decline in industrial production. There is a positive trend in this region to identify occupational diseases. In the Atyrau, West Kazakhstan, and Mangystau regions, the occupational morbidity rate is close to zero.

CONCLUSION: It is necessary to revise the existing orders of the Ministry of Healthcare of the Republic of Kazakhstan concerning the improvement of the occupational health service.

Introduction

The quality of the country's labor resources is determined by the number of workers and their level of health. The main indicator of the health of the working population and the most important criterion for assessing occupational risk in the workplace is occupational morbidity [1], [2], [3].

The Occupational Health and Safety Program of the Republic of Kazakhstan approved by the Decree of the Government of the Republic of Kazakhstan No. 67 as of January 27, 2005, provides specific information about the non-compliance of the working conditions of industrial enterprises with hygienic standards for dust, chemicals, and physical factors. It is noted that the depreciation of fixed assets is more than 50% [4]. Long-term hygienic studies, conducted by Kazakhstani scientists in the framework of planned research and development work, as well as certification audit of the working conditions of production facilities show that 80% of industrial enterprises of the Republic of Kazakhstan do not meet sanitary and

hygienic standards for production and environment [5]. It has been established that more than two thousand industrial enterprises are environmental pollutants, which annually contribute to the entry of tens of millions of tons of harmful impurities into the air [6].

An analysis of various sources revealed a worsening of the demographic situation in the industrial regions of Western Kazakhstan, as well as an increase in the overall incidence rate and malignant tumors [7], [8], [9]. For example, in the Aktobe region, the mortality rate of the population in the area of the chromium biogeochemical industry is 11.8% above the regional average and 11% above the republican average, and there is an increase in the level of disability [10].

According to the Committee on Statistics of the Republic of Kazakhstan, the actual number of workers employed in hazardous working conditions in the country is 368.8 thousand people, one-third of whom work in Western Kazakhstan's enterprises [11]. The recent special literature is replete with the results of hygienic and medico-ecological studies, according to which the technological processes of open and

underground chrome ore mining at the Don Ore Mining and Processing Plant (Khromtau) as well as ferroalloy and chrome production correspond to class 3.1–3.3 in terms of the degree of hazard, severity, and intensity of labor. The main harmful factors are adverse microclimatic conditions, gas pollution and dustiness of the working area, and high levels of noise and vibration, as well as heavy hard labor [12], [13], [14]. In addition, the region has the world's largest developed oil and gas fields – Tengiz, Karachaganak, and Kashagan. The region is the main base of the country's hydrocarbon raw materials (oil, gas, and gas condensate), the negative factors of which affect the formation of public health [15], [16], [17].

The purpose of the present study is to analyze the employment indicators in hazardous working conditions and the dynamics of occupational morbidity in the West Kazakhstan region over the period from 2013 to 2017.

Materials and Methods

Materials obtained from the Public Health Departments of the Aktobe, Atyrau, West Kazakhstan, and Mangystau regions were studied based on the results of periodic medical examinations of workers employed in hazardous working conditions for the period 2013–2017. The indicators of the dynamics of occupational morbidity in the region are derived from the annual reports of the West Kazakhstan branch of the RSE at the National Hygiene Center for Occupation and Occupational Diseases of the Ministry of Healthcare of the Republic of Kazakhstan for the period 2013–2017.

A trend analysis of the data was carried out using the Statistica-10 program by the least-squares method with the calculation of growth rates.

Results

The employment rates of the able-bodied population in the Aktobe region from 2013 to 2017 are characterized by an annual decline. Its rate amounted to 6.42%. On the contrary, in other areas of the Western region, for the same period, there is a positive trend in the number of workers. The average annual increase in the number of workers in production in the Atyrau, West Kazakhstan, and Mangystau regions for 2013–2017 was 11.54%, 10%, and 6.5%, respectively (Figure 1).

An analysis of employment indicators in hazardous working conditions showed that in the Aktobe region, the share of workers employed in industries

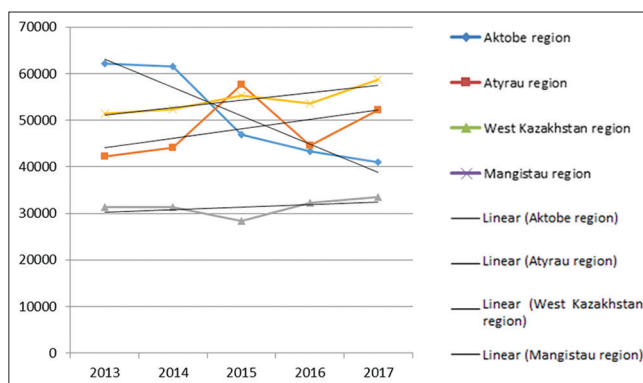


Figure 1: Dynamics of employment rates in Western Kazakhstan

with hazardous working conditions amounted to 82.8% of the total number of workers in 2013. In dynamics, this indicator was decreased in the following years, reaching 82.6% in 2014, 84.2% in 2015, 80.2% in 2016, and 59.1% in 2017.

The employment indicators of workers in hazardous working conditions in the Atyrau region for the analyzed period are characterized by instability. For example, in 2013, this figure was 60.1%. In 2014 and 2015, there was a decrease to 57.8% and 58.1%, respectively. In subsequent years, there was a sharp increase in the indicator to 83.2% in 2016 and to 87.5% in 2017.

In the West Kazakhstan region, from 2013 to 2015, there was a tendency to a decrease in the number of workers employed in industries with hazardous working conditions. In subsequent years, there was a significant increase in this indicator, and by the end of 2017, it amounted to 61.8% of the total number of workers.

In the Mangystau region, in 2013, 2014, and 2015, the number of workers employed in hazardous industries was relatively stable, accounting for 61.01%, 61.57%, and 61.89% of the total number of workers, respectively. In 2016, there was no significant increase in the number of workers employed in hazardous working conditions. However, due to the general decline in employment rates, the number of people employed in hazardous working conditions began to account for 70.85% of the total number of workers. In 2017, there was an increase in the number of workers employed in hazardous working conditions (78.35%) and in the total number of workers in the Mangystau region (Figure 2).

When comparing the dynamics of primary occupational morbidity in the Western region with the average data for Kazakhstan [18], [19], Russia [20], [21], [22] and some developed industrial countries [23], [24], [25], a generally low level of occupational morbidity was revealed. At the same time, only the Aktobe region is characterized by a tendency to an increase in the occupational morbidity rate, which amounted to 0.58, 0.78, 0.75, 0.86, and 1.03 in 2013, 2014, 2015, 2016, and 2017, respectively. In particular years, isolated cases of primary occupational

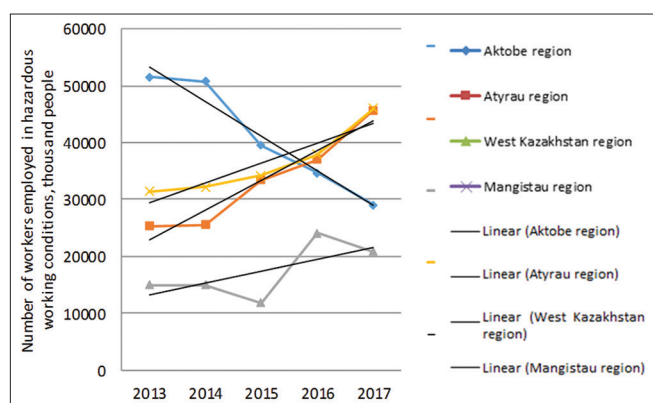


Figure 2: Dynamics of employment indicators in hazardous working conditions in Western Kazakhstan

diseases are observed in the Atyrau and Mangystau regions. However, in general, the occupational morbidity rate in these areas is close to zero. Over the past 5 years, no cases of occupational diseases have been identified in the West Kazakhstan region (Figure 3).

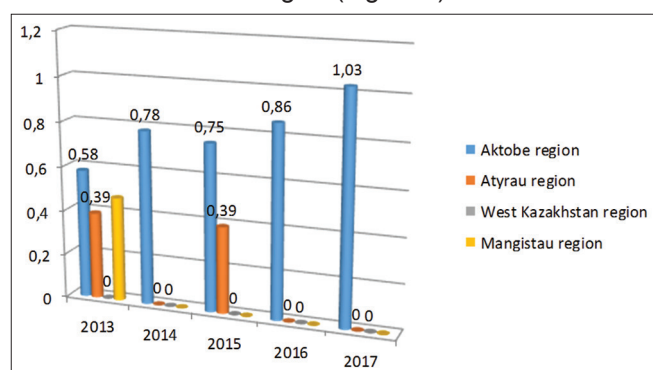


Figure 3: Dynamics of occupational morbidity indicators in Western Kazakhstan (per 10,000 workers)

Discussion

The implementation of a number of state programs aimed at strengthening the economy and socioeconomic transformations in the Republic of Kazakhstan contributed to the creation of a dynamically developing labor market [26]. According to the Committee on Statistics of the Republic of Kazakhstan, in the post-crisis conditions of the global economy, the situation in the whole country in terms of employment and unemployment is stable. As shown by our studies, in the Atyrau, West Kazakhstan, and Mangystau regions, there was an annual increase in the number of people employed in production. A different picture was observed in the Aktobe region, where in 2015, seven large industrial facilities shut down, which negatively affected both the total working population and the proportion of workers employed in hazardous working conditions.

Occupational morbidity in industrial enterprises with hazardous working conditions serves as a generally

accepted criterion of the negative effect of adverse production factors on human health. As can be seen from the results of the analysis, the primary occupational morbidity in the region is extremely low. At the same time, in the Aktobe region, there were isolated cases of occupational diseases that have a tendency to increase. This trend could be affected by the annual decline in the number of workers employed in hazardous working conditions since the calculation is made for 10,000 workers (according to the generally accepted method of calculating occupational morbidity). At the same time, it is necessary to take into account the fact that the West Kazakhstan branch of the RSE at the National Hygiene Center for Occupation and Occupational Diseases of the Ministry of Healthcare of the Republic of Kazakhstan is located in the city of Aktobe. Its employees conduct active organizational, methodological, therapeutic, preventive, and educational activities.

In the Atyrau, West Kazakhstan and Mangystau regions, despite the annual increase in the number of people employed in hazardous working conditions, the occupational morbidity rate is close to zero. The reason for this is more likely to be the lack of organizational measures for the early detection of occupational diseases as well as the insufficient quality of periodic medical examinations. In all three regions, there are no regional occupational pathology examination rooms. Occupational therapy posts at both the regional and republican levels are temporary, which reduces activity in this direction. The existing orders of the Ministry of Healthcare of the Republic of Kazakhstan do not allow opening occupational pathology examination rooms, as according to the current standards [27], the outpatient-polyclinic unit does not provide for occupational therapy posts. In all public polyclinics, occupational therapists are employed from paid services and their functions are limited only to conducting mandatory medical examinations (on a paid basis). The same situation is observed in private clinics.

In 2016, the National Hygiene Center for Occupation and Occupational Diseases and its affiliates underwent significant staff reductions. Due to staff shortages, the West Kazakhstan branch does not have a real possibility of full-scale organizational activities throughout the region. In addition, the geographical remoteness of the center for occupational health, located in Karaganda, can be considered a serious cause of the low rates of primary occupational morbidity since only the National Hygiene Center for Occupation and Occupational Diseases can diagnose a primary occupational disease. This geographical distance leads to difficulties in workflow and to patients refusing to travel to the center for occupational pathology.

At present, legally fixed paid (at the expense of the employer) [28] periodic medical examinations are perceived by many medical institutions only as an additional source of funding. One of the unspoken clauses of contracts concluded between the employer

and the contractor is the non-detection of occupational diseases. Therefore, the identification of the earliest signs of occupational diseases, including general morbidity, is not at the proper level.

A new problem in the detection of occupational diseases has become the low information capacity of the sanitary and epidemiological characteristics of working conditions since it is this document that serves as the basis for establishing the primary diagnosis of an occupational disease. The results of the hygienic studies presented in this document, unfortunately, do not reflect the real working conditions of workers employed in hazardous industries. In the Republic of Kazakhstan, the majority of state-owned enterprises have become private, where profit is at the forefront; the principles of medical services provided for industrial enterprises and their accountability have changed along with the procedure for implementing the sanitary inspection of industrial enterprises. The only thing that has not changed is the approaches of occupational therapists in detecting occupational diseases characterized by conservatism, which is the reason for the failure to identify an occupational disease with obvious clinical signs in many patients.

When identifying occupational diseases, one of the requirements is the annual excess of maximum permissible concentrations and levels of harmful production factors throughout the entire occupational route. However, according to the current legislation, measurements are carried out only on the basis of mandatory prior notification of the enterprise [29]. This is probably one of the reasons for "favorable" working conditions in many hazardous industries. In addition, planned laboratory measurements are carried out as part of the state order, which does not allow for systemic sanitary and hygienic monitoring, annual measurements in all workplaces, and time-weighted averages of harmful substances and physical factors. The ongoing certification of workplaces also does not reflect the real working conditions since it is held once every 5 years [30]. Accordingly, the sanitary and epidemiological characteristics do not provide these data.

Another requirement in identifying occupational diseases is a mandatory analysis of the outpatient card to check whether the patient sought medical advice for the disease being identified. However, often, especially in the medical and preventive treatment institutions subordinated to the enterprise, there is an incorrect, possibly deliberately erroneous coding of workers' chronic diseases. In addition, workers often refuse to document temporary disability to avoid losing workdays. For this reason, occupational diseases are not identified for the majority of patients; instead, they are recommended to be treated in the "risk group."

The foregoing indicates that there is a discrepancy between employment indicators, working conditions, and real occupational morbidity rates. To

solve the problems of occupational morbidity in the region, it is necessary to revise the existing orders of the Ministry of Healthcare of the Republic of Kazakhstan concerning the optimization of occupational health activities in the country, namely, to decentralize the activity of the occupational health service as well as to open occupational pathology examination rooms in all regional centers and industrial areas. It also seems appropriate to redefine and reassess the role and importance of the current sanitary and epidemiological characteristics in examining and establishing the relationship between the disease and the occupation. The implementation of effective interdepartmental and intersectoral interaction of state bodies, society, workers, and citizens will contribute to reducing the risk factors for the life and health of the working contingent.

Conclusions

There is an annual increase in the number of workers employed in hazardous production in the Atyrau, West Kazakhstan, and Mangystau regions. A different picture is observed in the Aktobe region, where the number of people employed in hazardous working conditions decreased due to the decline in industrial production. At the same time, there is a positive trend in this region to identify occupational diseases. In the Atyrau, West Kazakhstan, and Mangystau regions, despite the annual increase in the number of people employed in hazardous working conditions, the occupational morbidity rate is close to zero.

The reason for the low occupational morbidity in the West Kazakhstan region can be considered the lack of organizational measures for the early detection of occupational diseases, namely, absence of regional occupational pathology examination rooms; poor quality of ongoing examinations; poor quality certification of workplaces and incomplete registration of sanitary and epidemiological characteristics of working conditions; low motivation of patients concerning examination in the center for occupational pathology; conservatism of principles and methodological approaches to the identification of occupational diseases; and their inconsistency under the current regulatory legal base.

To solve the problems of occupational morbidity in the region, it is necessary to revise the existing orders of the Ministry of Healthcare of the Republic of Kazakhstan concerning the improvement of the occupational health service, as well as the effectiveness of interdepartmental and intersectoral interaction of state bodies, society, workers, and citizens in reducing the risk factors for the life and health of the working contingent.

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