Ecological and Epidemiological State of Cancer Incidence in the Chechen Republic

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Abstract. The article presents statistical indicators based on the materials of The Department of the Federal service for supervision of consumer rights protection and human welfare in the Chechen Republic. The analysis of the geographical distribution of cancer incidence in the Chechen Republic was carried out. Various features of the impact on human health are considered.

1. Introduction
Public health and environmental issues are among the most pressing issues facing human society. Currently, close attention is paid to cancer incidence, which is becoming a significant cause of high human mortality. The state of health of the population is a state problem that requires immediate measures aimed at correcting the current situation. To improve the health of the population, the Chechen Republic has approved the regional program "Fight against cancer" as part of the implementation of Decree of the President of the Russian Federation No. 204 of may 7, 2018 "on national goals and strategic objectives for the development of the Russian Federation for the period up to 2024". This program is designed to conduct scientific research and make statistical analysis to identify the causes of diseases, consequences and methods of their treatment. Analysis of the literature data makes it possible to present a General [1–4].

The aim of the work is to study the epidemiological indicators of the incidence of malignant neoplasms in the Chechen Republic for 2016-2018. Research result. Data on the dynamics of cancer incidence show that in the period from 2016 to 2018, there is no increase in the number of registered patients. The figure shows the indicators of primary cancer incidence in 2018 was 150.9 per 100 thousand people; 2017 –150.7; 2016 –218.1.

2. Theoretical part
Analysis of the literature data makes it possible to present a General picture of oncological diseases in the Chechen Republic [1–4]. The global steady increase in the incidence of malignant neoplasms and mortality from them is almost becoming apparent. According to the latest expert estimates of the International Agency for research on cancer (IARC) in 2000, the number of new cancer cases in the world was estimated at more than 140 million people, while in 1990 the same estimate did not exceed 8 million. Tracing the dynamics of growth of malignant neoplasms for 25-30 years, we can conclude...
that the rate of increase in cancer incidence exceeds the annual rate of population growth over the same period. A special place in the violation of physiological processes and the formation of pathological manifestations in humans belongs to the environment. The incidence directly depends on the quality of water, air, food, compliance with sanitary and hygienic standards and can serve as an indicator of environmental problems. The constant aggravation of the environmental situation leads to an increase in the number of mutagenic factors, creating a real basis for increasing the genetic load and changing the rate of the mutation process [5–7].

3. Research result
Data on the dynamics of cancer incidence show that in the period from 2016 to 2018, there is no increase in the number of registered patients. Figure 1 shows the indicators of primary cancer incidence in 2018 was 150.9 per 100 thousand people; 2017-150.7; 2016-218.1.

![Figure 1. Dynamics of the incidence of malignant neoplasms in the Chechen Republic in 2016-2018.](image)

According to statistical data from the Office of the Federal service for supervision of consumer rights protection and human welfare in the Chechen Republic in 2018, 2,198 people were registered for the first time with a malignant neoplasm, which is 2.9% higher than in 2017. (table 1).

**Table 1.** Comparative table of newly detected cancer incidence in the Chechen Republic for 2016-2018 (per 100 thousand population).

| Areas                  | 2016 г. | 2017 г. | 2018 г. | Growth / decline 2018/2017 % | Average multi-year indicator for 3 years | Growth / decline in dynamics for 3 years % | Ranking by indicators (in the republic) |
|------------------------|---------|---------|---------|-------------------------------|------------------------------------------|--------------------------------------------|----------------------------------------|
| Republic of Chechnya    | 152,1   | 150,7   | 150,9   | +1,0                          | 151,2                                    | -0,2                                       |                                        |
| Achkhoy-Martanovsky    | 153,1   | 77,1    | 95,0    | +1,2                          | 108,4                                    | -12,3                                      |                                        |
| Vedeno                 | 131,8   | 154,6   | 189,7   | +1,2                          | 158,7                                    | +19,5                                      |                                        |
| Groznsensky            | 125,7   | 153,6   | 181,6   | +1,1                          | 153,6                                    | +18,2                                      | 5                                      |
| Gudermessky            | 163,1   | 172,7   | 144,6   | -1,2                          | 160,1                                    | -9,7                                       |                                        |
| Kurchaloevsky          | 113,1   | 110,7   | 103,2   | -1,0                          | 109,0                                    | -5,3                                       |                                        |
| Nadterechny            | 172,4   | 177,2   | 203,9   | +1,1                          | 184,5                                    | +10,5                                      | 2                                      |
The incidence of malignant neoplasms in the Chechen Republic remains below the national average and the North Caucasus Federal district indicators. These data are the result of low detection of pathology at the outpatient level, the lack of morphological studies (there is no full-fledged pathoanatomic service in the region). Among children under 14 years of age, 54 primary cases of cancer were registered in 2018; 64 cases in 2017; and 48 cases in 2016. The mortality rate from neoplasms in 2018 was 68.1 cases per 100 thousand population, in 2017 – 83.2 cases, and in 2016 – 84.1.

The main cause of environmental diseases of the population is a significant change in the quality of the environment. Therefore, the level of public health and quality of life are the main criteria for the ecological well-being of the territory. In this regard, we believe that it is important to study the dependence of the growth of malignant neoplasms on the impact of environmental factors, both natural and anthropogenic, in different regions of the Republic. Along with the quantitative assessment of the risk of malignant neoplasms, it is important to assess the epidemiological features of the spread of cancer in rural areas and cities of the Republic (fig. 2). according to the World Health Organization, environmental factors determine health indicators by 25%, and in the case of cancer pathology – by 60-80% [9].

![Figure 2](image-url)  
Figure 2. Average annual rates of cancer incidence in the regions of the Chechen Republic for 2018.
According to the research results, the regions of the Chechen Republic with the highest and lowest average long-term rates of cancer were identified. As can be seen in figure 2, the leading position is occupied by the Shatoy district, exceeding the average Republican level for many years. The second place is Nadterechny district and the 3rd place is Grozny. The picture is more favorable in Nozhay-Yurtovsky, Kurchaloyevsky and Achkhoy-Martanovsky districts. The study of the causes of human tumors and the implementation of measures for the prevention of malignant tumors requires a thorough analysis of the factors that affect the incidence of malignant neoplasms and mortality from them in certain population groups in various geographical, industrial and household conditions.

Precancerous conditions are known for each cancer location. For a significant number of precancerous and malignant tumors, appropriate preventive measures are known. The basis of lung cancer prevention is the fight for the purity of the inhaled air and the activation of the processes of self-purification of the lung. It is necessary to promote Smoking cessation, recommend sports, and systematic physical activity in the fresh air. To prevent cancer of the gastrointestinal tract, it is necessary to follow the rules of food and oral hygiene. To prevent breast cancer, it is necessary to refuse abortions and uncontrolled use of hormonal contraceptives, etc (fig. 3).

![Graph](image)

**Figure 3.** Incidence of malignant neoplasms by localization in dynamics for 2016-2018.

4. **Conclusion**

Thus, the study of the epidemiological features of the spread of malignant neoplasms provides us with new materials for studying the causes of human tumors. Identifies areas of relatively high or relatively low morbidity. The results of these studies are the basis for conducting comprehensive ecological and geographical studies of the natural and anthropogenic environment of the Chechen Republic. Based on statistical data, we can see that the dynamics of cancer incidence among the population of the Chechen Republic has decreased, but the incidence rate remains high. As a result, the issue of early diagnosis remains paramount, which affects not only the early detection of cancer, but also the life of the patient.

5. **References**

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