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CONTENTS

DETECTION OF NEOPLASMS IN THE PROCESS OF CLINICAL EXAMINATION OF THE ADULT POPULATION OF RUSSIA

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Abstract. The article analyzes the detection of neoplasms, including malignant ones, in the process of clinical examination of the adult population of Russia. It is shown that during the period of 2013-2020, 312206 cases of neoplasms, including 183436 malignant ones, were detected during the clinical examination. There is a tendency to an increase in the detection of neoplasms, including malignant ones, the average annual growth rate is 6.6%. Even taking into account the difficult epidemiological situation in 2020 caused by the new coronavirus infection COVID-19, which led to the termination for some time of the clinical examination, the detection of neoplasms, including malignant ones, continued to grow. Thus, detection of oncological diseases is increasing, which indicates the effectiveness of large-scale preventive measures, in particular, the clinical examination.

Keywords: active detection, medical examination of the adult population; screening; neoplasms; preventive measures.

1. Introduction

In 2013, the World Health Organization published the Plan of Action for the Prevention and Control of Noncommunicable Diseases for 2013-2020, one of the global goals of which was to reduce premature mortality from cardiovascular diseases, cancer, chronic respiratory diseases and diabetes by 25% [1]. In Russia in 2013 a large-scale preventive program was launched to detect chronic non-infectious diseases at an early stage of their development — the clinical examination of certain groups of the adult population, hereinafter referred to as a 'clinical examination' (Order of the Ministry of Health of the Russian Federation No. 1006n "On Approval of the Procedure for Clinical Examination of Certain Groups of the Adult Population" of 03.12.2012).

Special attention is paid to the detection of circulatory system diseases, diabetes mellitus, chronic lung diseases and malignant neoplasms. According to previous studies, malignant neoplasms occupy one of the leading positions among causes of morbidity, disability and mortality, which cause significant damage to labor, production and financial resources both in the world and in Russia [2, 3]. In this context, cancer control is an important part of all existing healthcare systems in the world: public, private and mixed. In Russia, where the public health system prevails, the fight against cancer is carried out within the framework of the national project 'Healthcare' of which the federal project 'Combating malignant neoplasms' is a part (Passport of the national project 'Healthcare' (approved by the Presidium of the Presidential Council for Strategic Development and National Projects, protocol of 24.12.2018 N 16; Federal project 'Combating malignant neoplasms'; Presidential Decree of 07.05.2018 № 204 'On national goals and strategic objectives of the Russian Federation for the period until 2024') [4]. One of the target indicators of the federal project 'Combating malignant neoplasms' is the share of malignant neoplasms

detected at the early stages (stages 1-2). The leading direction for detecting malignant neoplasms at early stages, along with preventive examinations and population screening programs, is the dispensary. Early diagnosis of malignant neoplasms gives an opportunity to start treatment in time and reduce both human losses and costs for health care system [5, 6].

The specific feature of the clinical examination developed in Russia is the two-stage principle of its conduct. At the first screening stage, signs of chronic non-infectious diseases and risk factors for their development are identified. Medical indications are determined for additional examinations by specialists in order to clarify the diagnosis. At the second stage of the clinical examination, additional examinations are carried out and the diagnosis of the disease (condition) is clarified. Currently, in the first part of the two-stage clinical examination, cancer screening is performed for the seven most common localizations of cancers. The second part includes additional examinations to clarify the diagnosis of the disease (condition) if there are medical indications and in accordance with the clinical recommendations of specialists (Order of the Russian Ministry of Health No. 404n of April 27, 2021 'On approval of the procedure for preventive medical examinations and clinical examination of certain groups of citizens'). Our study shows the state of active detection of oncological diseases in the early stages of development in the process of clinical examination of the adult population in the Russian Federation.

Our study contributes to the identification of organizational problems faced by a physician of a medical organization providing medical care in outpatient settings when providing preventive medical services. Let us note that clinical examination is a typical preventive measure in Russia, covering more than 50% of the adult population. The study of the dynamics of the detection of cancer diseases in the process of clinical examination for eight years will make it possible to determine the ways of further development of clinical examination of the adult population. The experience of Russia presented in this study may be extrapolated to other regions of the world, especially to those countries where there is a high degree of state participation in the health services provision.

2. Literature Review

In accordance with the normative documents regulating the conduct of clinical examinations, the main criterion of the effectiveness of clinical examinations is the coverage by health examinations of the population who are covered by medical care in a medical organization and are subject to a scheduled medical examination in the current year [7].

According to our earlier analysis, in 2013-2019 one fifth of the adult population of Russia underwent annual clinical examinations. The population older than working age (over 60) was more involved [8].

The analysis of the form №131/o has shown that the coverage of the population by screening increases every year, and its contribution to the detection of cancerous diseases also grows. A statistically significant correlation of strong and moderate strength between the coverage of the population by clinical examination and the primary incidence of malignant diseases has been revealed [9]. However, despite rather high coverage of the population by clinical examinations, it is necessary not only to continue health education work with the population, but also to find new ways to attract citizens to undergo medical examinations [10].

During studying and analyzing the data of form №131/o, it became clear that in the structure of diseases annually detected during the clinical examination, neoplasms occupy the 10th rank out of 11. The low detection rate of oncological diseases during

clinical examination, compared to other chronic non-infectious diseases, is caused by a number of factors, including:

- insufficient cancer awareness among doctors at medical institutions providing primary health care, and, as a result, untimely registration of citizens for follow-up care;
- under-fulfillment of the volume of examinations provided for by the procedures for conducting clinical examination, including its oncological component;
- inadequate organizational and methodological guidance in terms of controlling the routing of patients with suspected or already diagnosed cancer at the level of the subject of Russia [11,12];
- different level of material, technical, and staffing support of medical organizations in Russian regions, what determines the availability and quality of medical care in the 'oncology' profile [3,4,12,13].

In order to eliminate the negative factors outlined above, it is necessary to actively study and improve approaches to organizational technologies for conducting clinical examinations.

A good example of a quick response to the new requirements for the health care system caused by the COVID-19 outbreak is the introduction of changes in the procedure for conducting clinical examinations for citizens who have had a new coronavirus infection. From 01.07.2021, the above-mentioned citizens undergo an in-depth medical examination.

3. Data and Methodology

Based on the data from the official statistics of the sectoral statistical reporting form No.131/o 'Information about the clinical examination of certain groups of the adult population' and 'Information about the preventive medical examination and clinical examination of certain groups of the adult population' (form No.131/o) the dynamics of detection of neoplasms, including malignant ones, during clinical examination in the period from 2013 to 2020 in Russia were assessed. Clinical examinations in Russia are conducted according to the district (territorial) principle and serve the population assigned to the medical organization that provides primary health care in outpatient settings. In the present work we relied on information provided directly by primary health care medical organizations, the activity of which includes the identification and elimination of risk factors, including preventive measures for early detection of malignant tumors. Generalization, system and functional approaches as well as methods of descriptive statistics were used in the study. The indicators of dynamic rows, intensive and extensive indicators were calculated.

4. Results

At the first stage of the study, we studied the coverage of clinical examination of the adult population of the Russian Federation in 2013-2020. It should be noted that in 2020, due to the complicated epidemiological situation caused by the new coronavirus infection COVID-19 [14,15], the clinical examinations were suspended, and the report includes data only for the first four months.

The analysis of the data of form №131/o for 2013-2020 showed that, according to medical organizations of Russian regions, the share of persons who underwent stage I medical examinations varied from 77.1% (2015) to 97.4% (2019) of those

subject to the plan. The proportion of persons who underwent clinical examination in 2020 was 44.7% of those subject to the plan (Fig. 1).
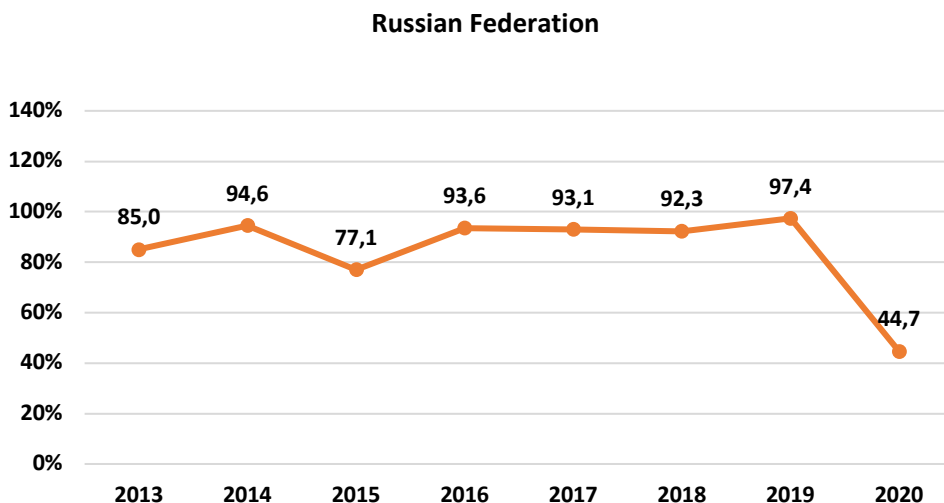
Russian Federation

Fig. 1. Percentage of persons who underwent Stage I clinical examination of those subject to the plan for the period 2013-2020 in the Russian Federation (%).
Source: Own data analysis based on industry statistical reporting forms №131/o.

The decrease in the share of persons who underwent medical examinations in 2015 was due to changes in the procedures for undergoing medical examinations, including reporting and accounting documents.

Taking into account the fact that in 2020 the clinical examination was carried out for only four months, we calculated the average indicators of the series of dynamics of the coverage of the Russian adult population with and without 2020. Over the period 2013-2019, an average of 21.481 million people underwent annual clinical examination for the entire analyzed period, the growth of the coverage rate was 1.0464, that is, on average, the coverage each year increased by 4.6% (1.013 million people). Taking into account the difficult epidemiological situation of 2020, the average indicators of the dynamics of the series show not anticipated growth but decrease. Thus, over the entire analyzed period (2013-2019) the decrease in the index of coverage of the adult population by medical examinations was 0.9082, i.e. the average coverage decreased every year by 9.2% (1.360 million people).

In the next stage of the study, we've analyzed the detection of neoplasms, including malignant neoplasms, in the course of clinical examinations in 2013-2020.
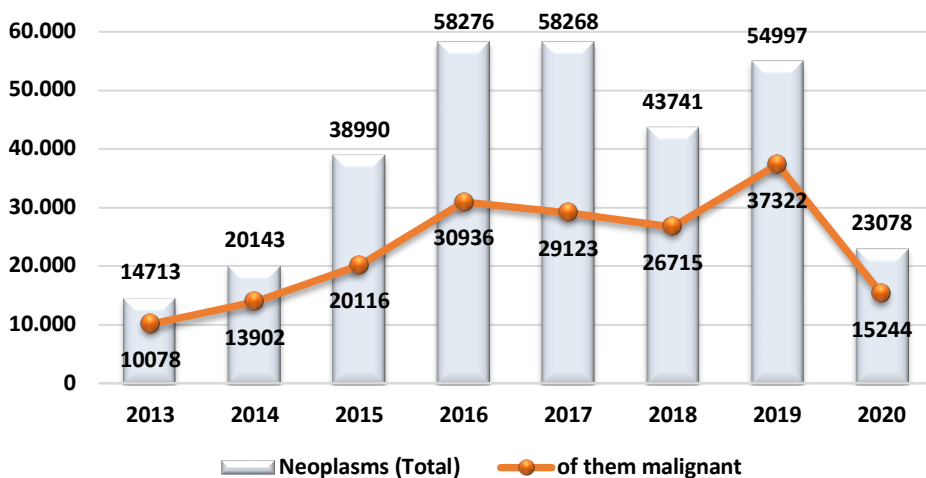
Fig. 2. The number of persons with newly detected neoplasms, including malignant neoplasms, during clinical examination of the adult population for the period 2013-2020 in the Russian Federation (abs. numb.).

Source: Own data analysis based on statistical reporting forms №131/o.

Fig. 2 shows the number of first-time detected neoplasms, including malignant ones. During the analyzed period, 312206 cases of oncological diseases were detected, of which 183436 (58.8%) were malignant. The largest number of cancer diseases was detected in 2016, 2017 and 2019, which may be due to changes in the frequency of medical examinations for certain categories of citizens, the volume and multiplicity of examinations and tests. The smallest number of oncological diseases was detected in 2013 and 2014, at the initial stage of implementation of the dispensary project, as well as in 2020, during the COVID-19 pandemic. Nevertheless, the share of registered malignant neoplasms from all oncological diseases fluctuates in the range of 50-69%.

The average values of the detected neoplasms, including malignant ones, during the clinical examination also depend on the consideration in the analysis of 2020, when the clinical examination was carried out for only four months. Despite the fact that in 2020 the number of oncological diseases detected for the first time during the clinical examination was expected to decrease, the dynamics of the index remained positive (Table 1).

Table 1. Average rates of detection of neoplasms, including malignant ones, during clinical examination of adult population in Russia with and without taking into account the data of 2020

	Average value	Average growth rate, %	Average growth rate, %	Average absolute gain, abs.
2013-2019	42378,83	1,25	24,6	6714
2013-2020	41901,5	1,07	6,6	1195

Source: Own data analysis based on statistical reporting forms №131/o.

5. Conclusion

Thus, the goal of our study, which was to study the dynamics of cancer detection in the process of clinical examination of the adult population, was achieved by using the methods of descriptive statistics, generalization and compilation of dynamic rows and mean values. Based on our study we have made the following conclusions:

1. There is a positive dynamic of coverage of the adult population by medical examinations during 2013-2019.

2. The growth of oncological diseases detection rate in the study period, including in 2020 on the background of a difficult epidemiological situation caused by a new coronavirus infection was recorded.

3. The share of detected malignant neoplasms out of all neoplasms is 58.8%.

4. The results of 2020 are comparable with the data of the first years of the clinical examination (2013-2014) both in terms of coverage of the adult population by dispensary and detection of oncological diseases.

5. The results of our study can be useful for both health organizers and clinicians, as well as for epidemiologists, because part of the study was conducted in a difficult epidemiological situation caused by a new coronavirus infection.

6. For a more encompassing analysis of cancer detection in the process of clinical examination, it is necessary to increase the level of continuity between medical organizations providing care in outpatient settings and specialized medical organizations.

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