

# NEED TO DEVELOP PREVENTIVE MEASURES FOR BREAST CANCER CONSIDERING RISK FACTORS IN LATE REPRODUCTIVE AGE WOMEN

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**Keywords:**

late reproductive age, breast cancer, risk factors, measures, prevention.

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**ABSTRACT**

Breast cancer (BC) is one of the pressing medical and social problems of modern oncology due to the prevalence and psychological aspects associated with the problems of social adaptation. More than 1.3 million disease cases are registered annually in the world. In Russia, breast cancer has been the leading pathology in the structure of malignant neoplasms in the female population of late reproductive age since 1985. Malignant tumours of the mammary gland occupy a leading position in determining the level of temporary and permanent disability, reduce the average life expectancy of the female population, and cause irreparable economic damage to society. Late diagnosis of breast cancer, a large proportion of standard disease stages (41.9%), and high one-year mortality (10.9%) determine the importance of measures for early diagnosis. Therefore, an urgent issue is preventive measures substantiation for breast cancer based on the study of women's risk factors in late reproductive age.

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## 1. INTRODUCTION

Malignant tumours of the mammary gland occupy a leading position in determining the level of temporary and permanent disability, reduce the average life expectancy of the female population, and cause irreparable economic damage to society. Late diagnosis of breast cancer, a large proportion of standard disease stages (41.9%), and high one-year mortality (10.9%) determine the importance of measures for early diagnosis – the identification of precancerous and neoplastic breast pathology in the early stages of the disease for their timely treatment [1- 4].

In 2015, the number of cases was projected to increase up to 1.6 million in 2025 [<http://globocan.iarc.fr/>].

Numerous screening programs are aimed at early cancer diagnosis in women. The main purpose is the selection of the primary contingent requiring in-depth examination, narrow specialist consultation, and the formation of groups at increased risk of the disease. For decades, X-ray mammography has been the primary screening and clarifying method in diagnosing breast diseases [5], [6]. However, due to the relatively high

cost of X-ray methods, their mass introduction in our country is impossible. In this regard, it is relevant to search for rational forms of conducting preventive examinations that ensure their most excellent efficiency and effectiveness at the lowest economic costs, with the coverage of many people with the help of a limited number of medical personnel. One of the solutions to this problem is forming high-risk groups based on an assessment of individual risk using a questionnaire. The use of automated testing will help solve this problem and contribute to developing ways to prevent breast cancer in women of late reproductive age [7].

## **2. Purpose of the work**

To substantiate the need to develop preventive measures for breast cancer based on risk factors.

## **3. Materials and methods**

In work, we used the method of test-polling of women who were observed in 9 antenatal clinics in Moscow and who were registered at the dispensary for breast cancer - 450 people. The method of systems analysis was applied to substantiate the development of preventive measures.

## **4. Results**

In the structure of morbidity in the female population throughout the territory of the Russian Federation, breast tumours were the leading oncological pathology (19.4%). The second and third places were occupied by neoplasms of the skin (13.0%, with melanoma - 14.8%) and stomach (8.0%). It is followed by neoplasms of the colon (6.9%), the body of the uterus (6.8%), the cervix (5.1%), ovaries (5.0%) of the rectum, rectosigmoid junction, anus (4.9%), lymphatic and hematopoietic tissue (4.4%), trachea, bronchi, lung (4.0%). Compared to the Russian Federation, the incidence in Moscow of malignant neoplasms of the same localizations in 2019 was distributed as follows: breast tumours (23.9%), skin neoplasms (9.1%, with melanoma - 11%), stomach (7.5%), neoplasms of the colon (9.4%), the body of the uterus (7.4%), cervix (3.9%), ovaries (5.8%), rectum, rectosigmoid junction, anus (4.1%), lymphatic and hematopoietic tissue (4.1%), trachea, bronchi, lung (3.6%). Based on the integral data of territorial oncological institutions reports on the absolute number of cases, their distribution within age groups and data from the State Statistics Committee, we have calculated intensive and standardized (the age distribution of the female population throughout the world is taken as a standard) incidence rates per 100 thousand female population, age-specific indicators per 100 thousand women of the corresponding age, average annual rate and overall growth (with the preliminary alignment of time series) indicators and the risk of developing malignant breast neoplasms during life. According to the data for 2019, the intensive incidence rates of the entire population for all classes of malignant neoplasms in the Russian Federation amounted to 317.44 per 100 thousand. In Moscow, it was, respectively, 321.78 per 100 thousand of the population. The standardized indicator for the Russian Federation is 211.35 per 100 thousand of the population; for Moscow, it is 196.68 per 100 thousand of the population, respectively.

Let us compare the incidence rates of malignant neoplasms in the female population for the same year. Moscow is characterized by more intensive and standardized indicators (Table 1). Thus, in Moscow, the intensive incidence rate of the female population with malignant neoplasms of the mammary gland in 2019 was 349.27 per 100 thousand of the female population. In the Russian Federation, the same indicator was 311.62 per 100 thousand of the female population. It was 187.92 per 100 thousand of the female population in Moscow and 176.64 - in the Russian Federation for standardized indicators.

**Table 1** The incidence of malignant neoplasms in the female population of late reproductive age in the Russian Federation and Moscow in 2019 (all neoplasms (SOO-97))

Territory	Absolute number of patients	Rate per 100 thousand female population		
		Intensive indicator	Inaccuracy	Standardized indicator
Russian Federation	239128	311,64	0,41	186,64
Moscow	18987	349,27	1,51	187,92

We carried out a comprehensive retrospective analysis of several indicators for a more detailed understanding of the situation.

A detailed analysis for 16 years of observation (from 2003 to 2019 inclusive) allows us to compare the growth rate of intensive and standardized indicators. Thus, the increase in the intensive incidence rate of the female population with malignant neoplasms of the mammary gland in the Russian Federation from 2003 to 2019 amounted to 46.58%. In Moscow, the growth of the same indicator is 66.73%. The average annual growth rate of the intensive indicator of the incidence of malignant neoplasms of the mammary gland in the female population for the analyzed period in the entire territory of the Russian Federation was 2.58%, and in Moscow - 3.47%, respectively. The indicated increase in indicators is due to a significant “ageing” of the female population and an actual increase in the incidence. In order to assess the growth of actual morbidity, in addition to intensive indicators, we carried out a comparative analysis of the dynamics of the standardized indicators of the malignant neoplasms incidence of the mammary gland in the female population of the Russian Federation and Moscow over the same period. The growth of the standardized indicator in the Russian Federation amounted to 25.83%. In Moscow, the growth of the same indicator is 40.21%. The average annual growth rate of the standardized incidence rate of the female population of malignant neoplasms of the mammary gland throughout the Russian Federation from 2003 to 2019 is 1.54%. A similar indicator calculated for the same period in Moscow is 0.74% more and amounted to 2.28%.

Since there was a decrease in the incidence of breast cancer in some years, and others - an increase, to identify the main regularity of the dynamics of the incidence, we preliminarily aligned this series of indicators. The data obtained indicate an excess of the growth rate of the malignant neoplasms incidence of the mammary gland among women in Moscow compared to the average indicators in the Russian Federation for the observation period from 2003 to 2019. This fact requires close attention to the systematic study of women’s health status and the implementation of preventive health measures by the city’s health authorities and medical and preventive institutions. However, in this situation, the recalculation of the population for 2018 and 2019 according to the calculation formula applied by the State Statistics Committee in the period from 2003 to 2019 will distort the general trends in the leading demographic indicators since it will significantly increase the gap between the estimated and actual population size.

It is important to emphasize that the aligned rows reflected a negative trend towards an increase in the incidence of malignant neoplasms of the breast over a long period.

## 5. Discussion

Additionally, we analyzed the cumulative risk (for the female population) of developing breast cancer. Today, a comparison of the risk of developing a malignant neoplasm of the breast, which a woman would undergo

during her lifetime (0 - 74), in the absence of all causes of death, is of particular interest. Thus, the cumulative risk of developing a malignant neoplasm of the mammary gland is initially higher in Moscow. According to data for 2003, it amounted to 3.1537% in the Russian Federation and 4.5447% in Moscow. Subsequently, there was a tendency towards an increase in the cumulative risk of developing a malignant neoplasm of the mammary gland among the female population both in the Russian Federation as a whole and in Moscow. If the indicators of the Russian Federation are characterized by a steady increase in the cumulative risk of developing a malignant neoplasm of the mammary gland (a slight decrease in this indicator was observed only in 2009 (the cumulative risk was 4.1708%>) compared to the indicator in 2008 (the cumulative risk was 4.1758%), then for Moscow, against the background of a general tendency towards an increase in the indicator, several periods of a decrease in the cumulative risk of developing a malignant neoplasm of the mammary gland were noted as compared to the previous year. ), which is slightly lower than in 2003, when the same indicator was 4.5447% ". A similar situation was observed in 2019 (the cumulative risk of developing a malignant neoplasm of the breast was 4.7189%>) compared to 2018 (4.8056%), in 2016 (5.0577%) compared to 2015 (5.2289 %), in 2016 (5.1453%) and 2017 (5.3803%) compared to 2018 (5.562%). 2019 (5.4181%) can be compared to 2018 (5.4749%).

We paid particular attention to a comparative analysis of indicators of the age-specific incidence of malignant neoplasms of the mammary gland in the female population throughout the Russian Federation and Moscow. Carrying out such an analysis allows in the future to most effectively draw up and implement programs for the prevention, timely detection and treatment of these malignant neoplasms. In addition, although age peaks in morbidity occur in older age groups, for women aged 20-44 years, malignant neoplasms of the breast are one of the leading causes of disability and mortality, which is primarily due to the more malignant course of the disease in young people. Analysis and further comparison of the data indicate an incidence increase of malignant neoplasms of the mammary gland in women in parallel with an increase in their age up to 70 years and older. A similar trend was observed in almost all years of research, both in the Russian Federation as a whole and separately in Moscow. In the age group 30-39 years, the age-specific incidence rate of malignant neoplasms of the mammary gland in 2003 was 22.7 per 100 thousand female population in the Russian Federation. The same indicator reached 25.12 per 100 thousand of the female population in Moscow. In 2019, the same indicator, calculated for the Russian Federation, was 21.51 per 100 thousand of the female population, and in Moscow, 19.25 per 100 thousand of the female population. The highest level of the age-specific incidence rate of malignant neoplasms of the mammary gland in the group of 30-39 years was noted in the Russian Federation in 2008 and amounted to 24.14 per 100 thousand female population, and in Moscow in 2007, it was 31, 09 per 100 thousand female population, respectively. The lowest level of this indicator was noted in the Russian Federation (21.51 per 100 thousand female population) in 2018. In Moscow, its lowest level was observed in 2019 and amounted to 19.25 per 100 thousand of the female population.

This age group and the previous one are characterized by a decrease in morbidity over time. At the same time, in Moscow, the decline was (based on the results of 16 years of observation) 13.5% and 1.18% in the Russian Federation. Comparison of these indicators reveals a tendency towards a more intensive decrease in the levels of age-specific morbidity of malignant neoplasms of the mammary gland in the age group of 30-39 years in Moscow compared to the Russian Federation as a whole. In the age group 40-49 years, the age-specific incidence rate of malignant neoplasms of the mammary gland in 2003 was 71.5 per 100 thousand female population in the Russian Federation. The same indicator reached 98.15 per 100 thousand of the female population in Moscow. In 2019, the same indicator calculated for the Russian Federation was at 80.41 per 100 thousand of the female population, and in Moscow, 87.11 per 100 thousand of the female population. The highest level of the age-specific incidence rate of malignant neoplasms of the mammary gland in the group of 40-49 years was noted in the Russian Federation in 2008. It amounted to 83.65 per 100 thousand of

the female population, and in Moscow in 2005, it was 99.77 per 100 thousand women, respectively. The lowest level of this indicator was noted in the Russian Federation (69.81 per 100 thousand female population) in 2005. In Moscow, its lowest level was observed in 2019 and amounted to 81.24 per 100 thousand of the female population. The main trends in the dynamics of the incidence of malignant neoplasms of the mammary gland in women in the 40-49 age group are different in the Russian Federation and Moscow. Thus, according to the results of data analysis for 16 years of observation, the increase in the indicator in the Russian Federation amounted to 13.75%. On the contrary, there was a decrease (by 6.12%) in the incidence in the given age group in Moscow.

In the group of 50-59 years, the age-specific incidence rate of malignant neoplasms of the mammary gland in 2003 in the Russian Federation was 83.18 per 100 thousand of the female population. The same indicator reached 118.11 per 100 thousand of the female population in Moscow. In 2013, the same indicator, calculated for the Russian Federation, was at the level of 143.91 per 100 thousand of the female population and 175.19 per 100 thousand of the female population in Moscow. The highest level of the age-specific incidence rate of malignant neoplasms of the mammary gland in the group of 50-59 years was noted in the Russian Federation in 2019. It amounted to 143.91 per 100 thousand female population, and in Moscow, it amounted to 175.19 per 100 thousand of the female population, respectively. The lowest level of this indicator was noted in the Russian Federation (83.18 per 100 thousand of the female population) in 2003. In Moscow, its lowest level was observed in 2003 and amounted to 118.11 per 100 thousand of the female population, respectively. In the 60-69 years, the age-specific incidence rate of malignant neoplasms of the mammary gland in 2003 in the Russian Federation was 95.43 per 100 thousand of the female population. The same indicator reached 148.37 per 100 thousand of the female population in Moscow. In 2019, the same indicator, calculated for the Russian Federation, was at the level of 146.56 per 100 thousand of the female population, and in Moscow, 209.85 per 100 thousand of the female population. The highest level of the age-specific incidence rate of malignant neoplasms of the mammary gland in the group of 60-69 years was noted both in the Russian Federation and in Moscow in 2019. It amounted to 146.56 per 100 thousand of the female population in the Russian Federation, and in Moscow, 209.85 per 100 thousand of the female population, respectively. The lowest level of this indicator was noted in the Russian Federation (95.43 per 100 thousand female population) in 2003. In Moscow, its lowest level was observed in 2005 and amounted to 132.64 per 100 thousand of the female population.

In the group of 70 years and older, the age-specific incidence rate of malignant neoplasms of the mammary gland in 2003 in the Russian Federation was 75.45 per 100 thousand of the female population. The same indicator reached 141.02 per 100 thousand of the female population in Moscow. In 2019, the same indicator, calculated for the Russian Federation, was at 134.98 per 100 thousand of the female population, and in Moscow, 207.8 per 100 thousand of the female population. According to the results of a comprehensive data analysis for the given period, the increase in the incidence of malignant neoplasms of the mammary gland in women in the Russian Federation as a whole amounted to 74.36%, and in Moscow – to 54.71%. It made it possible to say that the technology of complex prevention of breast diseases is based on a systematic approach in identifying risk factors for the development of breast cancer. Our data on the analysis of the risk factors occurrence frequency shows that reproductive system disorders are in the first place - 56% of observations, followed by breast injuries - 18% of observations and molecular genetic mutations up to 10% of observations. Factors reflecting a violation of general adaptive reserves (overweight in 40% of cases and chronic psycho-emotional overload in 60% of cases) are found in combination with reproductive system disorders, breast trauma, and oncological heredity. Many researchers believe that breast self-examination remains the only method for early breast cancer detection in the population.

The use of this method is due to several preconditions: the most frequent mechanism for detecting breast tumours is the detection of a tumour by women themselves (97.11%), simplicity and affordability, and the comparative ease of teaching women (training is possible even in upper secondary schools as a method of hygienic education).

Women who practice self-examinations on a regular basis should be sure to receive prompt, expert advice when needed. At the same time, free receptions become important, when women practicing self-examination can at any time consult a highly qualified clinician - mammologist. With this technique, the elimination of such a significant drawback of the self-examination technique as the absence of an immediate positive result is achieved. At the same time, the majority of women experience a decline in psychological stress. This highly qualified specialist, an employee of an oncological center, not a polyclinic, is always the last resort on the path of the patient, and during screening, the first instance on their way. And in this situation, relying on their experience, knowledge, their intuition, the consultant must:

1. to select persons with pathology subject to observation and treatment exclusively by oncologists.
2. to exclude or confirm the pathology suspected by the patient, i.e. clinically differentiate.
3. to identify patients with suspicion of a malignant process and assign them an appropriate follow-up examination in the conditions of the RCCO.
4. to give appropriate recommendations to the patients themselves and their relatives who came to the consultant.

Self-examination of the mammary glands is undoubtedly a promising method. On the other hand, there is no sufficient reason to consider it an alternative to screening. Therefore, from our point of view, it is advisable to use it as a pre-screening event where the health service should actively involve women.

The following is required to prevent breast cancer in the region:

to open offices in each district, regional centres and in Dushanbe, for women with diseases of the mammary glands, where highly qualified specialists would work - an oncologist and a nurse (in addition to examination and consultation, each visitor must be given a manual on self-examination of the mammary glands).

1. to distribute information in the city and throughout the region among the population about the offices of open reception.
2. to train doctors and nurses of examination rooms to correct examination of the mammary glands (improving their qualifications).
3. to create field visits or oncological outpatient clinics for remote villages once every 1-2 years.
4. to resume annual medical examinations with a mandatory examination of the mammary glands in organizations and enterprises where the female population mainly works.

## **6. Conclusion**

1. Morbidity study of late reproductive age female population in the Russian Federation and Moscow with this pathology made it possible to establish the most critical trends for reasonable health care, to clearly show the differences in the morbidity structure among the female population of Moscow and the Russian Federation as a whole.
2. Only the systemic situational analysis state methodology and strategy development for comprehensive prevention of breast diseases can improve the quality and effectiveness of preventive care for the female population of late reproductive age in Russia in the timely detection of breast cancer, especially among women of working age.
3. It is necessary to make wider use of the propaganda opportunities: a) the women themselves who have already attended the open reception; b) medical institutions (district polyclinics, examination rooms,

medical and sanitary units); c) mass media (radio, television, advertisements in newspapers, in advertising applications).

## 7. References

- [1] A month of raising awareness about breast cancer, WHO 2015. Link: <http://www.who.int/mediacentre/commentaries/breast-cancer-awareness/ru>.
- [2] Healthcare in Russia. Federal State Statistics Service (Rosstat), 2015. Statistical collection, Moscow.
- [3] State of cancer care in Russia in 2015. Edited by A.D. Kaprin, V. V. Starinsky, and G. V. Petrova, Moscow, 2016.
- [4] Oncological diseases of the breast, soft tissue and bone sarcomas: textbook. V. K. Kosenok [et al.]; ed. by A. I. Novikov [et al.]. Omsk: Publishing House of the center of MO and Itomgma, 2008. 187 p. Kharchenko V. P., Rozhkova N. I. Mammology: national guide. GOATER Media. 2009. -328 p.
- [5] Trufanov G. E. Serebryakova S. V., Yukhno E. A. MRI in mammology-SPb.: ELBI-SPb, 2009. - 201s.
- [6] Chissov, V. I. Oncology: textbook with CD / edited by V. I. Chissov, S. L. Daryalova. - M.: GEOTAR-Media, 2007. - 560 p.).
- [7] Wang L, Guyatt G, Kennedy S et al. Predictors of persistent pain after breast cancer surgery: a systematic review and meta-analysis of observational studies. CMAJ, 2016 July 11. First published July 11, 2016, doi:10.1503/cmaj.151276.