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EPIDEMIOLOGICAL ANALYSIS OF BREAST CANCER MORTALITY IN THE REPUBLIC OF UZBEKISTAN AND THE SAMARKAND REGION

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Summary: was carried out epidemiological analysis of mortality from breast cancer (the current situation) with their dynamic observation for the period from 2013 to 2017. We studied rough and standardized indicators of breast cancer mortality in dynamics with the calculation of the rate of increase/decrease, average annual age and prognosis.

In the structure of oncological diseases, breast cancer (BC) occupies one of the leading places, which is a global problem for clinical oncology worldwide. According to the International Agency for Research on Cancer (IARC) GLOBOCAN 2018, the World Health Organization (WHO) BC ranks second in the world in the overall structure among all malignant neoplasms (MN) in terms of morbidity, and in terms of mortality it is in fifth place.[1,4,5,7]

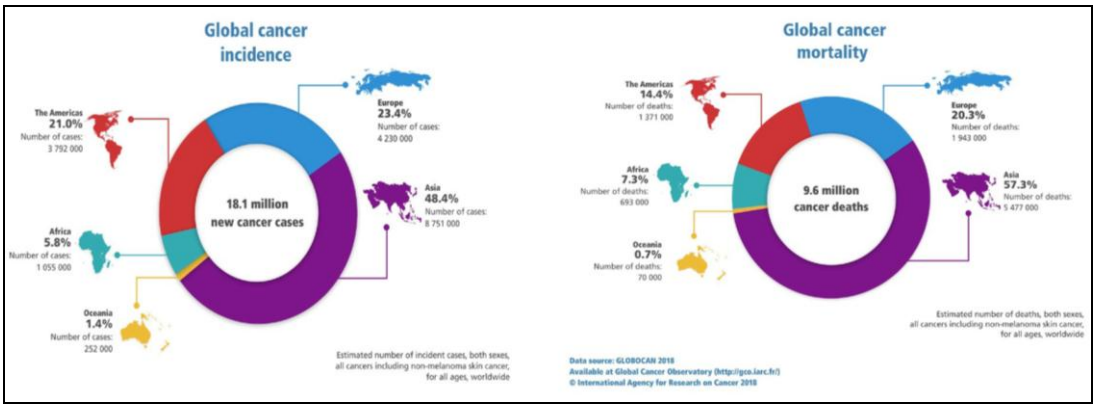

Figure 1. Morbidity and mortality from malignant neoplasms worldwide (GLOBOCAN, 2018).

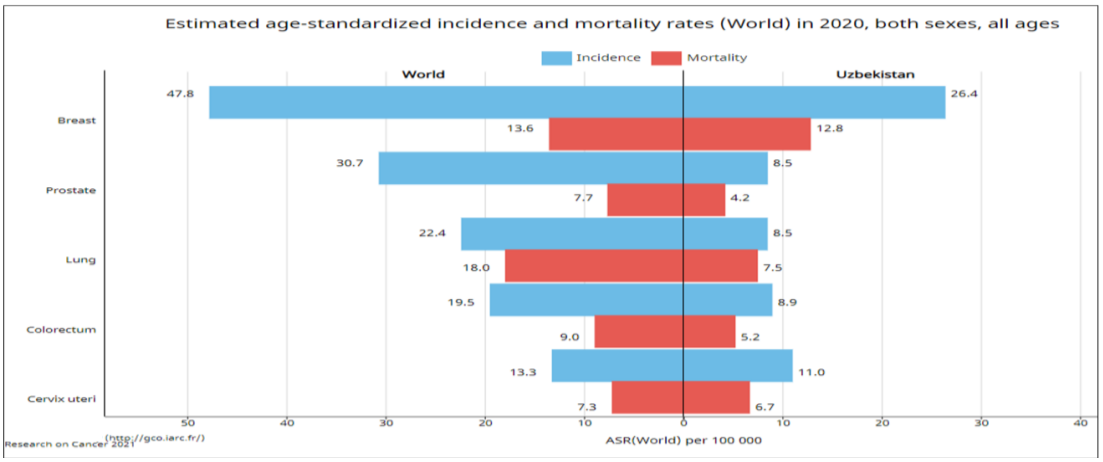

Figure 2. Structure of morbidity and mortality from malignant neoplasms in the world and Uzbekistan for 2020 (GLOBOCAN, 2020)

As can be seen from the statistics on the structure of morbidity both in the world and in Uzbekistan, BC remains in the list of leaders for a number of years, so the global morbidity for 2020 according to GLOBOCAN is $47,8^0/_{0000}$, mortality – $13,6^0/_{0000}$; in Uzbekistan, 26,4 and $12,8^0/_{0000}$, respectively. This situation is also typical for many developing and developed countries of the world. The highest rates remain in the United States, Australia, Switzerland, Kazakhstan, Uzbekistan, Tajikistan, China, Japan and Russia, and the lowest – in African countries.[2,3,9,11,12,13] Epidemiological studies are conducted in many countries of the world, as there are territorial and regional differences in both morbidity and mortality associated with the influencing risk factors (exogenous, endogenous, etc.) for the occurrence of the disease.

The aim of this article was to study the epidemiological aspects and features of BC, which are relevant and in demand in connection with the increasing trend in both morbidity and mortality.

MATERIALS AND METHODS OF RESEARCH: we conducted an epidemiological analysis, data were obtained from the official reports - "Report on diseases with malignant neoplasms" (registration form 7-SSV) for 2013-2017 and the State Statistics Committee of the Republic of Uzbekistan on the population of the Republic of Uzbekistan and the Samarkand region. We carried out study and analysis of mortality with the calculation of rough and standardized indicators, growth/loss rates, 95% confidence interval, average age, trends and mortality forecasting. The subject of the study is the search for epidemiological features of mortality from BC in the Republic of Uzbekistan and the Samarkand region during the study period.

A retrospective study using descriptive and analytical methods of modern oncoepidemiology was used as the main method for studying mortality from BC. Crude and standardized mortality rates are determined according to the generally accepted methodology used in modern biostatistics.[6,10,15] We did not justify the main calculation formulas in this work, since they are described in detail in the methodological recommendations and textbooks of oncostatistics. We studied dynamics of mortality rates for 5 years, and their trends was determined by the least squares methods. We used calculate the average annual growth and/or growth rate of the dynamic series, the methods of calculating the geometric mean of the annual growth/loss rate. The relationship was measured by calculating the correlation coefficient (calculating the strength of the relationship between phenomena). Viewing and processing of the received materials was carried out using Microsoft Office 2007 (Excel) programs.[5,6,8,14]

RESULTS: As is known, the main cause of high mortality from BC is the neglect of the disease, but the identification of patients in the early stages has favorable outcomes of the process, which requires the search for causal factors contributing to the fatal outcome of the disease and its assessment.

In this study, in order to assess the epidemiological situation of mortality from BC, we studied the indicators both in the Republic of Uzbekistan and in the Samarkand region. The study of the indicators was carried out for the period from 2013 to 2017, when 6852 deaths from BC were registered in the Republic (Fig. 3).

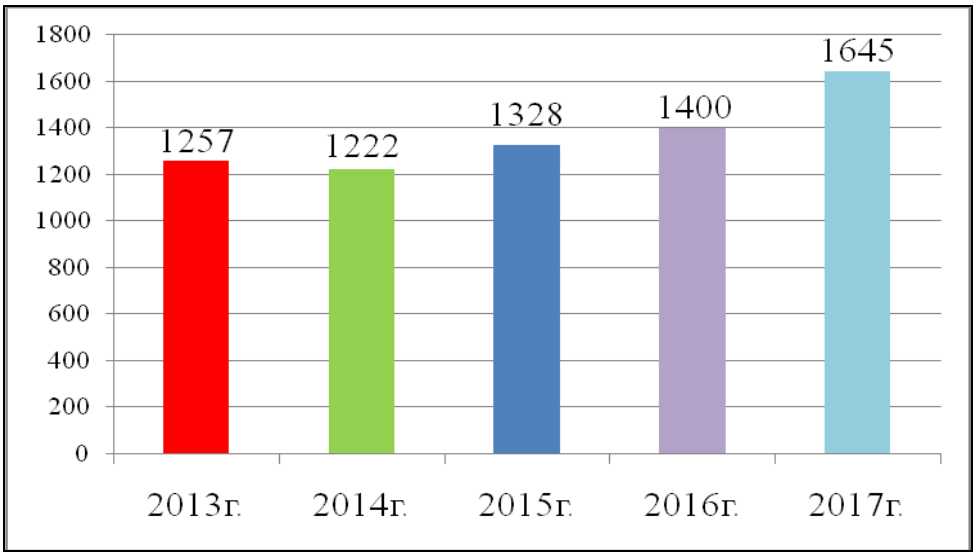

Figure 3. Absolute number of deaths from BC for the period from 2013 to 2017 in the Republic of Uzbekistan.

From fig. 3, you can be seen, from year to year there is an increase in the number of patients who died from BC, which by 2017 amounted to 1645 cases.

In the age aspect, the structure of the deceased was as follows: under 15 years - not noted, 15-17 years -

1(0,01%); 18-44 years – 1156 (16,9%); 45-64 years – 3955(57,0%); 65 years and older – 1740(25,4%) (fig. 4).

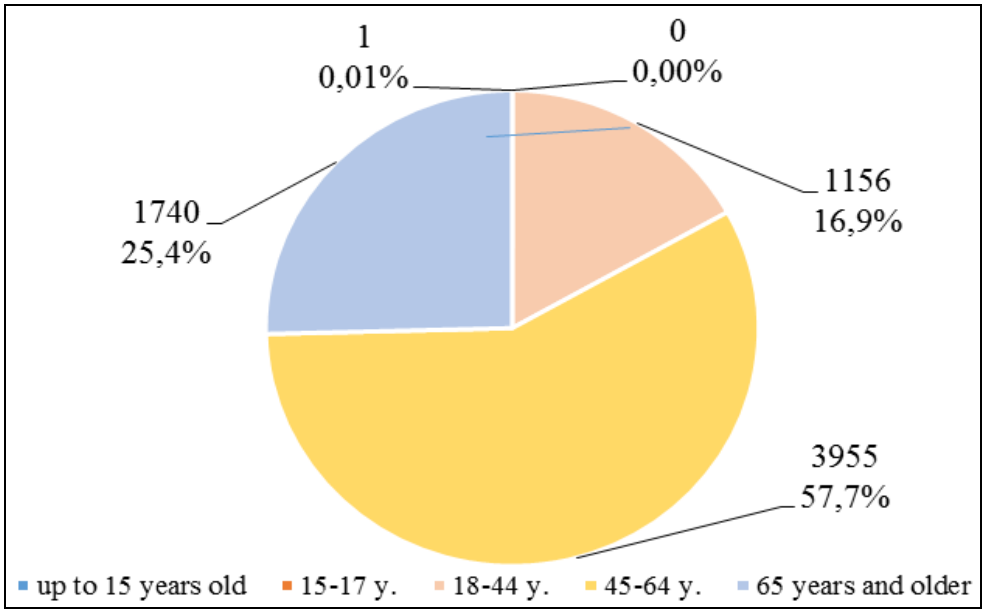

Figure 4. Distribution of deaths from BC by age group in the Republic of Uzbekistan for 2013-2017.

The highest number of deaths from BC was observed in the group aged 45-64 years – 57,7%. The average annual average age was 57,6±0,16 years (95% CI 97,3-97,9 years), with an annual growth rate of T_{pr}=+0,2%. The prognostic values of the average age for 2020 were 58,5 years (tab.1, fig.5).

Table 1: Distribution of the average annual-average age of the deceased, from BC in dynamics for 2013-2017.

indicator	2013	2014	2015	2016	2017
middle age	57,7	57,4	56,8	58,5	57,8
m	0,5	0,5	0,4	0,5	0,4
trend	57,2	57,3	57,4	57,6	57,7
min	56,7	56,5	55,9	57,6	57,0
max	58,6	58,4	57,7	59,4	58,6

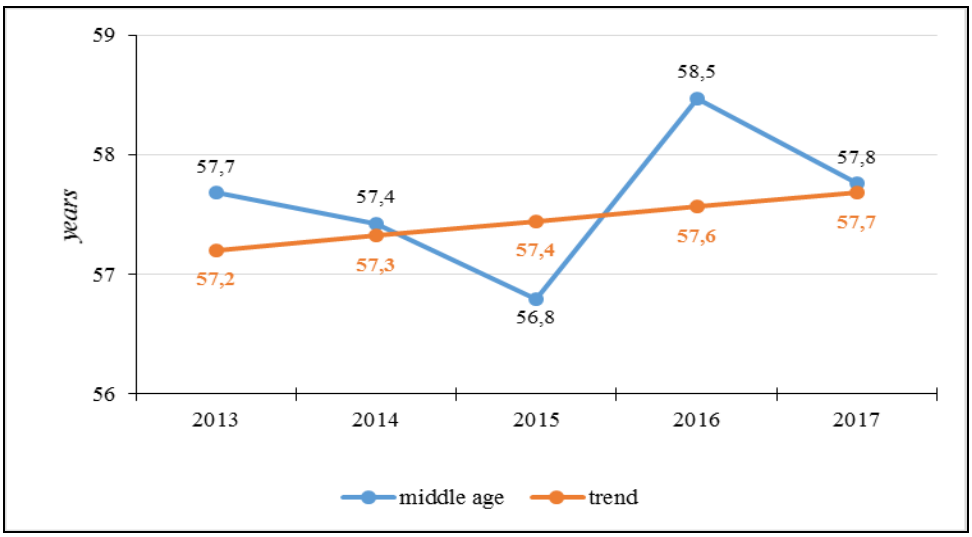

Figure 5. The age trend of people who died from BC in the dynamics of 2013-2017 in Uzbekistan.

From fig.5 you can see, the average annual average age does not have a particular tendency to significant fluctuations, and the trend as a whole has a relative increase, while maintaining a certain stability.

The study of the average annual "rough" and "standardized" mortality indicators revealed a significant increase in the rough indicator in 2017 in comparison with the lowest indicator in dynamics for the studied

period in 2014 – 8,0$^{0}/_{0000}$. The highest increase in the gross index was observed at the age of 65 years and older, which was 48,8$^{0}/_{0000}$, the lowest indicator was observed at the age of 15-17 years and was 0,01$^{0}/_{0000}$ (fig. 6).

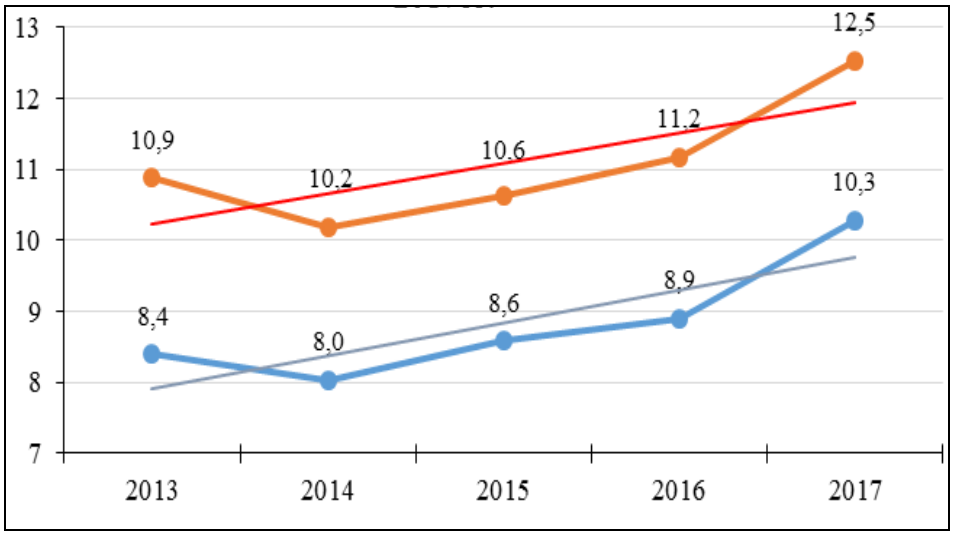

Figure 6. Dynamics and trends (linear) of rough and standardized indicators of mortality from BC in the Republic of Uzbekistan for 2013-2017.

This indicates the need for more careful attention to older and elderly patients, in whom an increase in the mortality rate is associated not only with the aging processes of the body, but also with the occurrence of pronounced processes of disorganization and activation of metastasis and prevalence, as well as the occurrence of secondary MN.

Standardization of mortality indicators showed the presence of higher values, with the highest it was observed in 2017 – 12,5±0,23$^{0}/_{0000}$ (95% CI 10,6-11,5). With the existing dynamics of the process, the calculation of the growth rate showed its increase to T_{pr}=+3,6%, the calculation of the projected mortality rate for 2020 was 14,1$^{0}/_{0000}$, while maintaining the existing linear relationship and the dynamics of the process.

In order to study the epidemiological situation of mortality from BC, its analysis was carried out in the Samarkand region. The study of mortality from BC during the study period in the Samarkand region showed that the absolute number of deaths was 524, which in the age structure were as follows: 18-44 years -13%; 45-64 years – 58,8%; 65 years and older-28,2% (fig. 7).

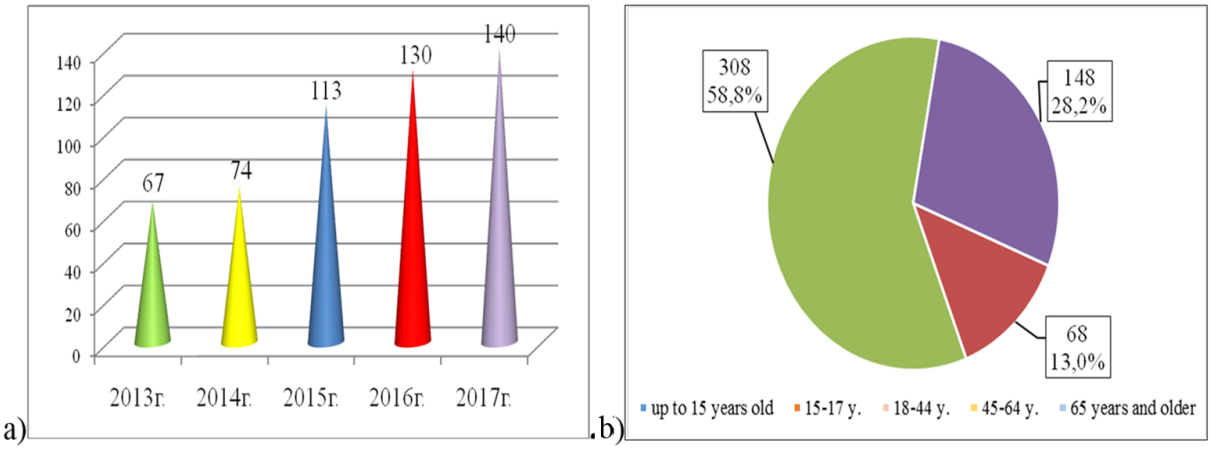

Figure 7. a) The absolute number of deaths from BC for the period from 2013 to 2017 in the Samarkand region; b) the distribution of deaths from BC by age groups in the Samarkand region.

The average annual average age of the deceased in the dynamics over the studied period was 59,5±0,45 years (95% CI 58,7-60,4 years) with the rate of loss of T_{de}=-0,4, which indicates a «rejuvenation» of the age at which women die from this pathology (tab. 2).

Table 2: Distribution of the average annual average age of the deceased, from breast cancer in dynamics for 2013-2017 in the Samarkand region.

indicator	2013	2014	2015	2016	2017
middle age	61,0	60,6	56,6	59,5	60,0
m	2,2	2,2	1,4	1,4	1,3
trend	60,2	59,9	59,5	59,2	58,9
min	56,7	56,3	53,9	56,8	57,3
max	65,3	64,8	59,4	62,2	62,6

The study of the trend of mortality by age showed that there was a tendency for its decline in dynamics, which amounted to 58,9 years according to 2017 data, compared with 2013 – 60,2 years (fig. 8)

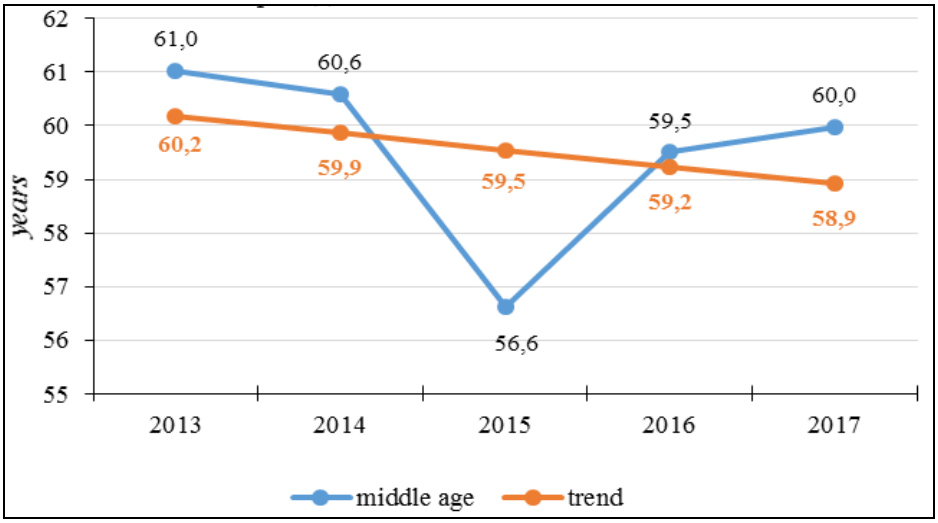

Figure 8. Age trend of deaths from breast cancer in dynamics for 2013-2017 in the Samarkand region.

The dependence of mortality rates on age according to the calculated data was as follows: the highest mortality was observed at the age of 65 years and older and was 48,8±1,4$^0/_{0000}$ (95% CI 46,1-51,6$^0/_{0000}$) with a growth rate of T_{pr}=+1,9%; 45-64 years – 29,0±0,6$^0/_{0000}$ (95% CI 27,7-30,2$^0/_{0000}$) T_{pr}=+5,0%; 18-44 years – 3,3±0,1$^0/_{0000}$ (95% CI 3,2-3,5$^0/_{0000}$) T_{pr}=+2,6%. As can be seen from fig. 7, the sharpest downward jump was observed in 2015, when the average annual average age was 56,6 years.

In the future, we studied the "rough" and "standardized" indicators of mortality from BC in the Samarkand region, with the highest value for the rough indicator observed in 2017 and it was 7,7$^0/_{0000}$ compared to the standardized one, which was significantly higher – 10,4$^0/_{0000}$. Only in 2014 there was a dynamic decrease in the indicators, while the rough one was 4,3$^0/_{0000}$, and the standardized one was 6,3$^0/_{0000}$. In subsequent years, the mortality rates increased significantly and in 2015 were 6,4 and 8,4$^0/_{0000}$, respectively (fig. 9).

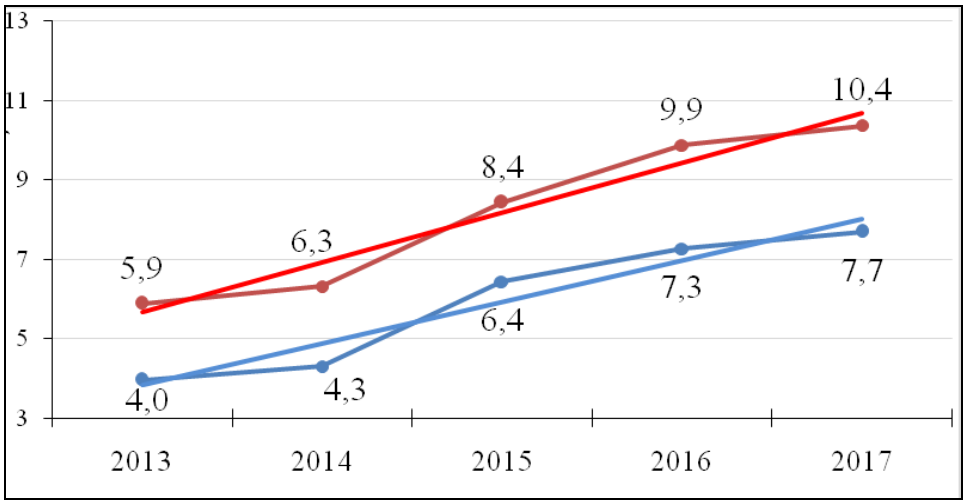

Figure 9. Dynamics and trends (linear) of rough and standardized indicators of mortality from BC in the Samarkand region for 2013-2017.

The existing jumps and changes in mortality rates during the study periods can be explained by the unsatisfactory level of proper organization of statistical reporting of MN in the region, as well as in the primary link, in which cancer clinics operate and district oncologists work. This is one of the urgent organizational problems in the oncology service of the republic, which requires solving by creating and forming a single Cancer register for the republic.

The analysis of the mortality rate in dynamics in different age periods showed its increase at the age of 65 years and older, at which it was – 41,4±2,1$^{0}/_{0000}$ (95% CI 37,3-45,5) with an increase rate of T_{pr}=+9,1%; at the age of 45-64 years – 20,7±2,1$^{0}/_{0000}$ (95% CI 16,6-24,7) T_{pr}=+2,7%; the lowest mortality rate was observed at the age of 18-44 years, which was 1,7±0,1$^{0}/_{0000}$ (95% CI 1,6-1,9) T_{pr}=+8,7%.

Conclusion: In order to determine the dynamic changes (jumps) in epidemiological indicators, it is necessary to conduct large-scale studies to identify deeper risk factors for the occurrence of the disease, in this case, BC, which can be both biological, endogenous, exogenous, and social.

The analysis of mortality from BC in the Samarkand region over the study period in dynamics indicates the absence of significant fluctuations in rough and standardized indicators, both by year and by average annual age, which indicates their stability and gradual growth. A comparison of the standardized annual indicators indicates a significant difference between them and those in the Republic of Uzbekistan. According to the age indicators, the average annual age of the deceased was in the range of 59-60 years and according to the trend had no significant fluctuations. Mortality under the age of 40 was rare and its rate was the lowest. The highest mortality rates were observed at the age of 65 years and older, with the highest trends observed at 52,1 years in 2017.

Conclusion: Mortality from BC both worldwide and in our country continues to be one of the most pressing epidemiological problems that require further in-depth epidemiological studies to find causal risk factors for its occurrence. As can be seen from the data obtained in the Samarkand region, there are unequal calculated mortality rates, as well as their predicted values in comparison with the national ones, which determines the need for both organizational measures at the primary level related to preventive problems, as well as the improvement and introduction of modern methods of diagnosis and treatment of BC.

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