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Dynamics and Forecast of Mortality of Prostate Cancer in the Republic of Uzbekistan

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Abstract This article represents the results of dynamic change of mortality rate of a prostate cancer in the Republic of Uzbekistan (crude and standardized indicators) for 2012-16y, mortality trends, the forecast for 2020y., their dynamic change.

Keywords Prostate cancer, Republic of Uzbekistan, Mortality, Trend, Standardization, Dynamic observation

1. Introduction

The Prostate Cancer (PC) has been described for the first time in 1853 by the English surgeon J. Adams, i.e. historically this disease is known for many years, but until today the problems related to its diagnostics and treatment remain relevant [5, 7]. Studying of a disease from the point of view of an onco-epidemiology is important. In this article studying of rates of mortality of PC in dynamics in the Republic of Uzbekistan for 2012-16 is carried out.

The PC incidence is different in all regions of the world, including racial distinctions are noted that causes various levels of rates of incidence and mortality of this pathology. This disease is considered the most widespread among black Americans - $272^0/_{0000}$, at the same time incidence in residents of Southeast Asia – China is rather low – $1,9^0/_{0000}$. All this defines need of studying this pathology in the epidemiological aspect, in this connection mortality in the Republic of Uzbekistan is studied.

Mortality rates also vary in the different countries of the world, for example, in Sweden this indicator it the highest in the world [2, 3, 6] and is the second most common cause of death in men, after death from cardiovascular diseases. At the same time standardization of rate of mortality at PC in breakdown by age shows its decrease for the last 15 years, at the same time the greatest decrease – 35% was observed among men younger than 75 years old that is associated with the fact that the number of elderly men among the population and life expectancy increase.

2. Materials and Methods

For assessment of rates of mortality of PC in dynamics the data obtained from the State Committee of the Republic of Uzbekistan on statistics according to form 7-SSV, have been analyzed, processing of the received materials are carried out with use of the Microsoft Office2007: (Excel, Word, Access; statistics 0,6) programs.

3. Results and Discussions

In this research studying of mortality rate in dynamics in the Republic of Uzbekistan for the 5-year period is carried out (2012-16.).

In the general structure of mortality from the malignant neoplasms (MN) in 2016, PC took the 20th place, at the same time the crude indicator of mortality was – $0,8^0/_{0000}$, calculated for the number of male population, mortality has risen to the 7th rank place (253), and mortality rate made $1,6^0/_{0000}$, with the general mortality of $42,6^0/_{0000}$.

In the analysis of age aspects of PC, average age of mortality of pathology was 73,7+0,40 years, 95% confidence interval (95% CI) – 72,9-74,5, at the same time the highest rate of mortality was noted in 2012 and made 75,8 years. Growth rate of mortality was the R_{gr} = +15,4%, the analysis of trends of mortality has shown their dynamic increase: 2012 - 67,2; 2013 – 80,2; 2014 – 93,2; 2015 – 106,2; 2016 – 119,2.

Calculation of predictive age has shown that if this trend to mortality growth continued average age in 2020 will make 69,6 years.

Also age-specific indicators at which the greatest average value of mortality was defined in group of PC patients at the age of 65 and older have been studied and it has made $28,2\pm0,92^0/_{0000}$, 95% CI $26,5\text{-}30,0^0/_{0000}$, and the smallest one in age of 15-44 years $0,48\pm0,005^0/_{0000}$, 95% CI – $0,0\text{-}0,1^0/_{0000}$, the rate of a decrease R_{decr} =-1,2%. At other age average values of mortality for the studied periods are also estimated and made: 18-44 years - $0,048\text{-}0,006^0/_{0000}$, 95% CI

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0,0-0,006$^{0}/_{0000}$, R_{gr} = +8,4%; 45-64 years 2,4±0,1$^{0}/_{0000}$, 95% CI 2,2-2,7$^{0}/_{0000}$, R_{gr} = +9,2%; (tab.1)

When carrying out standardization of mortality indicators of the population according to international standard (IS) the following data have been obtained: the indicator of mortality was 2,8±0,07$^{0}/_{0000}$, 95% CI – 2,7-3,0$^{0}/_{0000}$, the growth rate R_{gr} made +0,3%.

The standardized indicator calculated by years in dynamics has shown the following: in 2012 – 3,1$^{0}/_{0000}$; 2013 – 2,5$^{0}/_{0000}$; 2014 – 2,9$^{0}/_{0000}$; 2015 – 2,6$^{0}/_{0000}$; 2016 – 3,1$^{0}/_{0000}$, i.e. are obvious their difference in comparison with crude indicators which didn't exceed 1,6$^{0}/_{0000}$. Increase in mortality indicators is an adverse factor (fig. 1).

According to the obtained standardized mortality indicators while maintaining this standard and conditions the predictive indicator for 2020 which has made 2,9$^{0}/_{0000}$ (fig. 2) is calculated.

As the Figure 2 shows, the forecast for 2020 shows some decrease with maintaining insignificant growth rate R_{gr} = +0,3%.

4. Conclusions

The leading causes of mortality which increase its level at PC most likely are the reasons associated with the insufficient level of diagnostics that leads to a large number of the patients overflowing specialized institutions at widespread stages of process as well as system generalization.

The main practical result of this epidemiological research is the calculation of the standardized indicators allowing to carry out comparative studying and also a calculation of trends of determination of growth/decrease rates and predictive indicator. It allows to define and estimate the possible social and economic damage caused by increase in an indicator of mortality of this pathology that is necessary when forming national programs of fight against malignant neoplasms, developing programs of screening, early diagnostics that is especially important for male population of working-age.

Table 1. Age-specific rates of PC mortality in the Republic of Uzbekistan for 2012-16

Years	2012	2013	2014	2015	2016	**M±m**	**95% CI**
under 15 years old	0,0	0,0	0,0	0,0	0,0	0,004±0,003	-0,001-0,009
15-17 years old	0,1	0,1	0,0	0,0	0,0	0,043±0,015	0,01-0,07
18-44 years old	0,1	0,0	0,0	0,0	0,1	0,048±0,006	0,0-0,06
45-64 years old	1,8	2,0	2,8	3,0	2,6	2,440±0,135	2,2-2,7
65 years old and older	32,5	25,7	28,0	24,0	31,0	28,253±0,916	26,5-30,0
Crude indicator	1,4	1,2	1,5	1,4	1,6	1,414±0,032	1,4-1,5
Standardized indicator	3,1	2,5	2,9	2,6	3,1	2,8±0,07	2,7-3,0

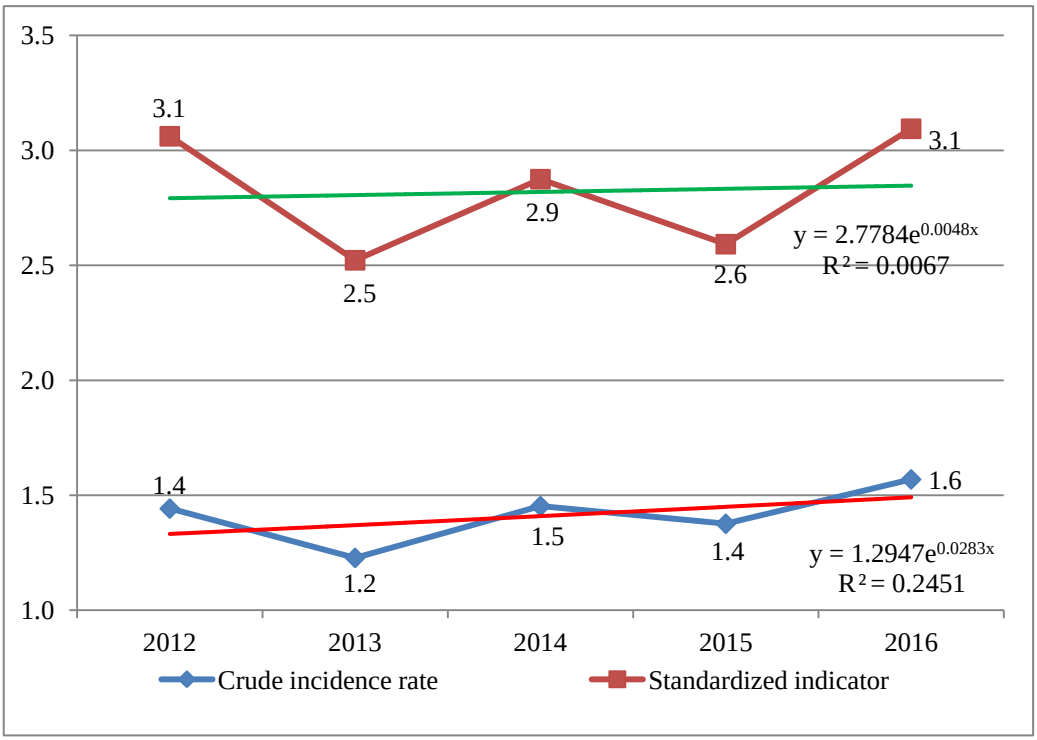

Figure 1. Crude and standardized PC mortality in the Republic of Uzbekistan for 2012-16

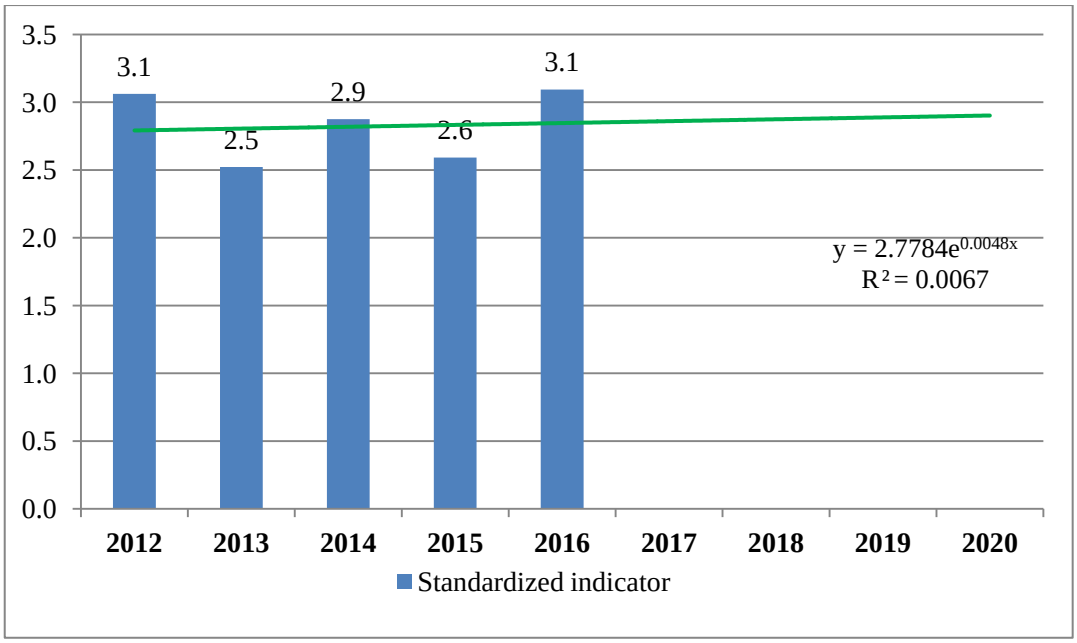

Figure 2. Calculation of estimated rate of PC mortality in the Republic of Uzbekistan for 2020

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