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Age Features of the Prevalence of Prostate Cancer in Uzbekistan

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Abstract: Prostate cancer is the most common disease in the world, ranking 2nd among men in cancer and 6th leading cause of death. This study describes patterns and trends in development of prostate cancer in a population by region, identifying age-specific standardized indicator.

Key words: prostate cancer, age-specific standardized indicator.

Introduction. Prostate cancer (PC) diagnosis was more prevalent among men worldwide in 2020, ranking fifth leading cause of cancer death among men [7]. According to the World Health Organization's 2020 report prostate cancer incidence rate was 37.5 per 100,000 population, there were an estimated 1.4 million new cases among men [2]. According to Bray F (2018) analysis, the highest incidence rates were in Europe, which is 128.9 (per 100,000 population), followed by Central and South America at 122.3 (per 100,000 population). Australia and Oceania combined ranked 3rd with incidence rates of 122.3 [4]. The increasing life expectancy and the Western lifestyle has been interpreted in most literatures as a risk factor for development of PC [6]. At the same time, there is a perception that the increase in incidence rates is due to variations in the generally accepted screening schemes and mechanisms [3]. As an example, Farmer P. (2010) found in their study that while in 1970 the number of new cases was 15%, in 2008 it increased to 56%, and by 2030 it is estimated to increase to 70% [5].

According to Tillyashaykhov M.N. (2022), the population of the Republic of Uzbekistan in 2021 was 34,558,891, increased by 653.6 thousand compared to 2020, i.e. with growth rate of 1.9%. In 2021, 25,578 malignant tumors were detected, of which 10,499 (41%) among men. [1].

Objectives: The main purpose of our research was to study the trends in the spread of prostate cancer in the Republic of Uzbekistan.

Materials and Methods: We used secondary data for the studies (Form 7). For extrapolation assessment in terms of population we used the figures shown in the reports of the Republican

Specialized Scientific and Practical Medical Center of Oncology and Radiology [1]. The total number of patients diagnosed with prostate cancer (S61) at the end of 2021 was 1,919, and the studies were conducted across 14 regions**.** In analyzing the collected data, the correct standardization method was used to calculate the age-specific (ASR) rates (per 100,000 population). This method fully meets our research objectives and allows us to find the age and stage coefficients for each studied population. To calculate the age-specific indicators, we used the following formula: 105 (Dn/Yn), in which Dn is the number of cases, and Yn is the number of population at risk. ASR was calculated according to the following formula ∑((Dn*Wn)/Yn). Wn in this formula is the number of population in the Republic. The standard error and 95% confidence interval were calculated according to the Keyfitz formula (19).

Results

The variation was found among the patients in the age range of 44–87, with an average age of 65.5. According to the figure 1, in 2019, 483 patients in the country were taken to the outpatient observation (dispensary supervision); in 2021, 625 patients were registered with primary prostate cancer, of which, in 2019, 7.2% were diagnosed at the time of routine (preventive) check-up, and in 2021 – 12.3%. The results of histological verification of patients in the Republic in 2019 amounted to 93.6% in 2019, and in 2021 – 88.6%

Tab 1. The main indicators of prostate cancer by the regions (2019-2021)

	2019 abs	2021 abs	2019 active detected %	2021 active detected	2019 йил Morphologically certified %	2021Morphologically certified %
Uzbekistan	483	625	7,2	**12,3**	93,6	**88,6**
Sirdarya	9	1	0	0	77,8	100
Karakalpakstan	20	19	10	31,6	90	68,4
Navoiy	8	22	12,5	4,5	100	68,2
Surxondaryo	19	22	0	0	100	95,5
Tashkent region	55	33	5,2	21,2	98,2	97
Jizzax	14	34	14,3	5,9	100	88,2
Andijan	42	34	14,3	35,3	100	97,1
Xorezm	26	37	3,8	8,1	84,6	100
Namangan	21	40	0	0	90,5	100
Bukhara	36	58	0	0	88,9	70,7
Samarkand	39	61	5,1	8,2	97,4	90,2
Kashkadarya	41	61	0	1,6	97,6	82
Fergana	48	81	16,7	22,2	93,8	91,4
Tashkent region	105	122	9,5	18	89,5	91,8

Figure 2. shows the age-specific standardized indicator (ASR) for each year of 2019, 2020 and 2021, the figure also shows the confidence interval and the confidence rate “P”. Differences include years of 2019-2021 cited by regions.

Regions	**Year of 2019**	**Year of 2021**	**P**
Republic of Uzbekistan	10.6 (9-12.1)	21.4 (18.0-22.3)	9.7(0.001*)
Syrdarya	4.8 (1.7-8.0)	2.1 (0.1-4.1)	6.1 (0.181)
Republic of Karakalpakstan	11.6(6.2-16.4)	10.7(5.7-15.8)	(-1.3)(0.760)
Navoi	8.5(4.8-12)	12.1(8-16.3)	9.9 (0.035*)
Surkhandarya	7.3 (3.4-12.1)	8.7(4.2-13.2)	2.3(0.066)
Tashkent region	5(1.7-8.1)	7.2(3.6-11.1)	6.1 (0.181)
Djizak	8.9 (6.8-11.6)	21.6 (15.8-27.5)	9.8 (0.046*)

Andijan	7.9(3.4-12.4)	6.2(4.1-13)	1.6(0.81)
Khorezm	7.9(3.4-12.3)	14.1(8.4-20)	12.7(0.055*)
Namangan	20.4(15.6-25.2)	53.4(45.6-61.4)	20.3(0.0035*)
Bukhara	7.9(3.5-12.3)	8.8(4.2-13.2)	2.4(0.039*)
Samarkand	8.7 (5.1-12.4)	12 (8-16.1)	9.8(0.035*)
Kashkadarya	8.6(4.9-12.6)	11(6.9-15)	4.9(1.950)
Ferghana	19.8(16.0-24.3)	52.4(45.8-61.2)	20.3(0.0031)

The incidence rate increased sharply during this period in Samarkand and Namangan regions (P≤0.003), the age-specific standardized rate increased from 20.4 to 53.4 per 100,000 population (CI 45.6-61.4), which is higher than in 2019. At the same time, in Bukhara, Khorezm and Djizak regions there was an increase in age-specific incidence rate, but not in Samarkand and Namangan regions. In particular, in Bukhara region, the age-specific standardized rate increased from 7.9 to 8.8 per 100,000 population (P≤0.03), in Khorezm it changed from 7.9 to 14.1 (P≤0.055).

In Karakalpakstan, we observed this rate to decrease from 11.6 to 10.7 (per 100,000 population) CI (5.7-15.8), P≥0.07

When examining the data obtained using the Joinpoint regression model, we identified a number of dynamic changes.

In 2019, age-specific standardized rate was low and observed around 7.4% (95% CI = 1.0–14.3). However, it increased and comprised 12.6% (95% CI = 3.8–22.2) by 2021.

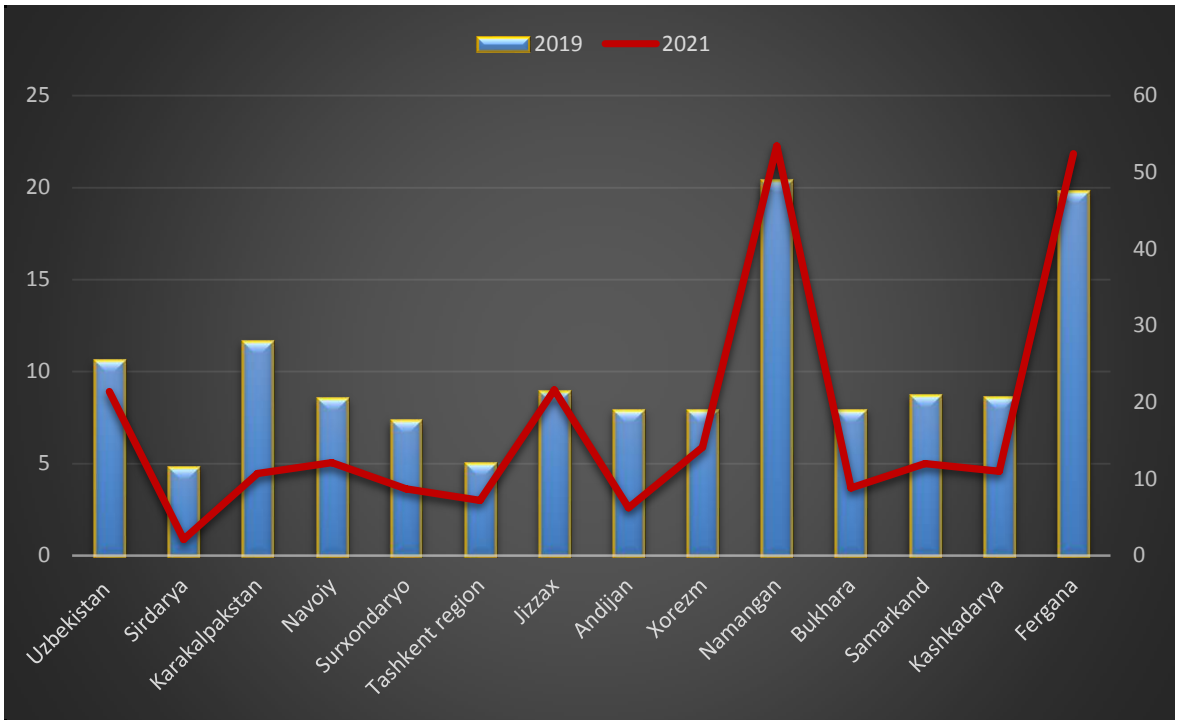

Figure 1. Joinpoint regression model.

Analysis of age-related incidence in prostate cancer by geographic region showed that there is a tendency to its “rejuvenation” in the northern regions. The incidence of prostate cancer in Samarkand and Navoi regions demonstrates clearly this “rejuvenation”, while in Bukhara, Khorezm and Djizak regions there is a slight tendency to “rejuvenation” of prostate cancer.

Along with the dedication of the health system, that is to improve the screening system, it paves the way for a wider diagnosis of prostate cancer through prostate-specific antigen testing.

Conclusion

For many years, prostate cancer has been one of healthcare problems. Recent studies have shown that age-related changes are observed in the profile of prostate cancer. Namangan and Samarkand regions are “hotspots” in this regard. There are limited studies in this area, and we think that the increase in incidence rates shows that there are a number of risk factors among the population. We are continuing our observations through studying these risk factors and additional investigations. This cohort study based on status monitoring is of great importance for understanding the risk factors associated with an increase in prostate cancer in the region.

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