
RESEARCH COMMUNICATION

Dynamics of the Incidence Rates for Separate Forms of Cancer in the Female Population of Kyrgyzstan

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Abstract

The purpose of the present research was to estimate trends of change in cancer morbidity for the breast, uterine corpus, cervix uterus, and ovaries of the female population of Kyrgyzstan as a whole and in separate regions over a 10 year period (1989-1998).

This retrospective study, applying descriptive and analytical methods of modern oncoepidemiology, established that breast cancer occupies the first place, neoplasia of the cervix uterus the second, of the ovaries the third and the uterine corpus the fourth, within the range of malignant neoplasms of the female reproductive system. On the whole the indicated cancer incidence rates tend to growth in dynamics and different regional specificities.

Key Words: breast cancer - corpus uteri cancer - cervix uteri cancer - ovarian cancer - incidence rates.

Asian Pacific J Cancer Prev, 3, 29-32

Introduction

Over the last decades of the twentieth century there was observed an increase in some forms of malignant tumors, especially of the breast, corpus uteri, ovaries and cervix uteri. Within the body of female malignant neoplasms, the above-mentioned occupy the the most important place.

This is very interesting from the epidemiological point of view, and research in this direction is progressing worldwide in consideration of separate exogenetic and endogenetic factors (Chacklin, 1963; Nugmanov, 1969; Purde, 1974; Sayenko, 1975; Tominaga, 1985; Zaridze et al., 1990; Parkin, 1994; Ferlay et al., 1998; Trapeznikov et al., 1999). Data on the epidemiology of separate female cancers in high altitude countries are limited, especially with regard to comparisons. In this case, Kyrgyzstan can be taken as a geographical model for epidemiological research, as a region in difficult conditions of high-altitude with different social-demographical and climatic-geographical peculiarities.

Ascertaining the role of separate factors and their mixed influence on different cancer forms in Kyrgyzstan was the aim of the present research. The long term goal is elaboration

of ways to introduce measures for primary and secondary prevention of cancer development in the republic.

Materials and Methods

In the present study were analyzed data from the oncology establishments of the republic, concerning breast, corpus uterus, cervix uterus, and ovarian cancers over a decade (1989-1998), for a total of 8190 patients. For data on population size the documentation of the National Statistics Committee in Kyrgyz Republic from 1989 to 1998 were employed.

We estimated crude, standardized incidence rates for the female population morbidity in total and due to tumours localized at specific sites according to generally accepted methods of medical statistics (Merkov et al., 1974; Stenton, 1999). For standardization the age groups of the world population were used. Defined were average age of the patients, rates for different age groups and rates for increase or reduction, depending on the age group, over time (T_{in} , %). Leveling of dynamic lines was performed by the method of the least squares, and increase or reduction was estimated comparing 1989 with 1998 ($L, \frac{0}{0000}$).

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Table 1. Age Distribution of Women’s Cancer by Site in Kyrgyzstan over the Decade (1989-1998).

Age group	BC		CeUC		OC		CoUC		All	
	Number	%	Number	%	Number	%	Number	%	Number	%
00-29	61	1.7	51	2.1	106	8.7	12	1.2	230	2.8
30-39	450	12.7	320	13.2	133	10.9	35	3.5	938	11.5
40-49	845	23.8	526	21.7	225	18.4	115	11.6	1711	20.9
50-59	791	22.2	521	21.5	270	22.1	257	26.0	1839	22.5
60-69	888	25.0	632	26.1	317	25.9	381	38.5	2218	27.1
70+	522	14.7	369	15.3	173	14.1	190	19.2	1254	15.3
Total	3557	100	2419	100	1224	100	990	100	8190	100
Middle age	56.3±0.8		56.5±1.0		54.4±1.7		62.3±1.4		56.8±0.6	

Note: BC, breast cancer, CeUC, cervix uteri cancer, OC, ovary cancer, CoUC, corpus uteri cancer

Results and Discussion

For the fixed period there were registered 8190 cases in the republic of separate female cancers, comprising: breast cancers, 3557 (43.4%); cervix uteri cancers, 2419 (29.5%); ovarian cancers, 1224 (15.0 %); and corpus uteri cancers, 990 (12.1%). Specific incidences according to age groups in the republic for the last decade (Table 1) were: 00-29 years old, 230 (2.8%); 30-39 years old , 938 (11.5%); 40-49 years old , 1711 (20.9%); 50-59 years old, 1839 (22.5%); 60-69 years old , 2218 (27.1%) and 70 years old and older, 1254 (15.3%). In total and for the separate cancer forms, the high incidences were in women in the 60-69 years age group.

The average age for all affected women was 56.8±0.6 years old (Table 1). For particular types the highest average was for corpus uteri cancers (62.3±1.4 years), and the lowest was for patients with ovarian cancers (54.4±1.7), the difference being statistically significant (t=3.6; p<0.01).

The average annual crude incidence rate (per 100,000) for women with all cancer forms in total was 36.2±1.3, for breast cancer was 15.7±0.8, for cancer of the cervix uteri was 10.7±0.7, for ovarian cancer 5.4±0.5 and for neoplasia of the corpus uteri 4.4±0.4 (Figure 1). The incidence rate in total increased from 37.4 (1989) to 39.7 in 1998 (Figure 2).

Average annual incidence rate of increasing composed 107.7% ($T_{in}=+7.1\%$). With leveling the given data it is noted, that there is tendency to increase ($L=+0.37$). Analogous findings were apparent for breast, cervix uteri and ovarian cancer, and average annual rates of increasing incidence were 101.2% ($T_{in}=+1.2\%$), 100.2% ($T_{in}=+0.2\%$) and 100.7% ($T_{in}=+0.7\%$).

Leveling of incidence rates showed the tendency to increasing in breast cancer ($L=+0.59\%_{/0000}$) and reduction in cervix cancer ($L=-0.14$), ovarian cancer ($L=-0.01$) and corpus uteri ($L=-0.15$).

Standardized incidence rates (world standard) with the separate cancer forms were higher than crude rates (figure

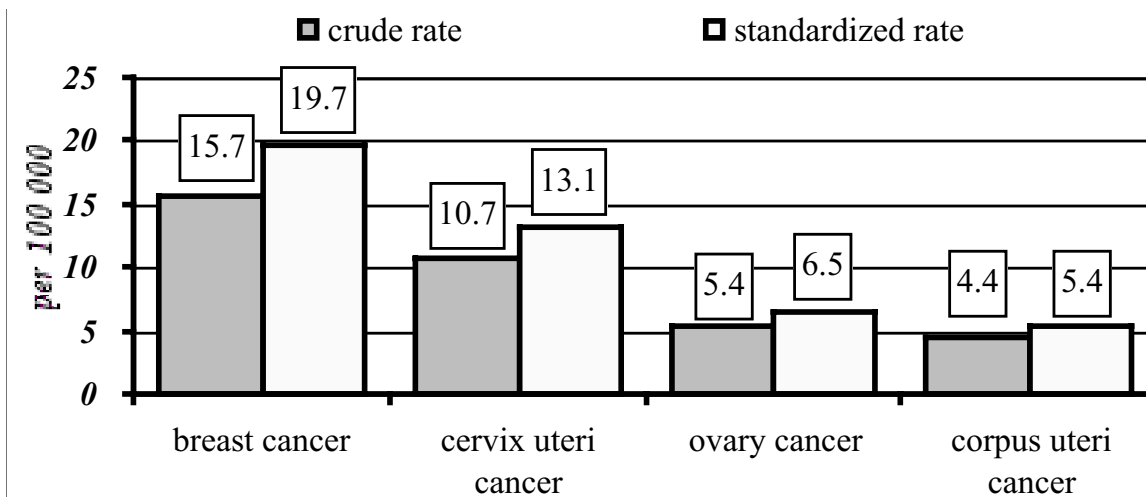


Figure 1. Average Annual Incidence Rate (per 100,000) of Female cancers in Kyrgyzstan for the decade (1989-1998)

Table 2. Average Annual Age Specific Incidence Rates for Separate Cancer by Site in the Female Population of Kyrgyzstan for the Decade (1989-1998)

Age group	BC		CeUC		CoUC		OC		All	
	‰	T _{in}	‰	T _{in}	‰	T _{in}	‰	T _{in}	‰	T _{in}
00-29	0,4	-7,4	0,4	-6,0	0,1	0,0	0,7	+2,5	1,6	-1,1
30-39	14,4	-2,2	10,2	+7,0	1,1	-1,7	4,3	-5,0	30,0	+0,3
40-49	48,1	+2,1	29,4	+3,9	6,4	+7,6	12,3	+8,5	96,2	+4,0
50-59	55,1	+3,0	35,7	-1,8	18,0	+3,8	18,5	-0,9	127,3	+1,3
60-69	67,8	-1,5	48,3	-4,0	29,1	-1,0	24,3	-1,2	169,4	-2,0
70+	55,1	+7,1	38,9	+1,5	20,1	-1,8	18,3	+0,7	132,4	+3,1

Note: BC – breast cancer, CeUC – cervix uteri cancer, OC – ovary cancer, CoUC – corpus uteri cancer

1) and composed in total, 44.8 ± 1.4 ($T_{in} = +1.1\%$), and for breast cancer, 19.7 ± 0.9 ($T_{in} = +1.6\%$), cervix uteri cancer, 13.1 ± 0.8 ($T_{in} = +0.2\%$), ovarian cancer, 6.5 ± 0.6 ($T_{in} = +1.4\%$) and corpus uteri cancer, 5.4 ± 0.5 ($T_{in} = +1.4\%$), that is corrected with dissimilarity of age group of patients. Trends of standardized incidence rates had tendencies to increasing as in total ($L = +2.55$), and also for breast cancer ($L = +1.59$), cervix uteri ($L = +0.08$), ovaries ($L = +0.28$) and corpus uteri ($L = +0.62$).

Analysis of age specific incidence rates of separate cancer forms showed increasing with the peak in age group 60-69, and totally composed 169.4, breast cancer 67.8, cervix uteri 48.3, corpus uteri, 29.1, and ovaries, 24.3 (Table 2). Average annual incidence rates of increment of studied cancer forms in each age group are introduced below, where these rates had various tendencies in dynamics.

So, while, leveling of age incidence rates, there is increasing in next age groups: 00-29 years old ($L = +0.15$); 40-49 years old ($L = +23.69$); 50-59 years old ($L = +15.61$) and 70 years old and older ($L = +17.2$), and reduction – 30-39 years old

($L = -0.18$) and 60-69 years old ($L = -34.25$).

Trends of leveled age incidence rates of breast cancer in age groups 40-49 years old ($L = +5.69$), 50-59 years old ($L = +13.09$) and 70 years old and older ($L = +26.96$) increased, and in age groups as: 00-29 years old – to 0.14; 30-39 years old – to 4.22, and 60-69 old – reduced to 12.17.

Leveled age incidence rates of cervix cancer increased in age of 30-39 years old ($L = +3.58$) and 40-49 years old ($L = +8.51$). In the next of age groups there is noted reduction: 00-29 years old ($L = -0.02$); 50-59 years old ($L = -3.93$); 60-69 years old ($L = -8.74$) and 70 years old and older ($L = -8.66$).

Age incidence rates of ovarian cancers demonstrated a different tendency in dynamics. So in leveling there is observed increasing in the next age groups: 00-29 years old ($L = +0.25$) and 40-49 years old ($L = +6.94$). In contrast reduction was noted for the ages of 30-39 ($L = -0.33$), 50-59 ($L = -1.83$), 60-69 ($L = -5.8$) and 70 and older ($L = -1.97$).

Trends for age incidence rates of corpus uteri cancer were increasing in age groups 30-39, 40-49, 50-59 and 70 years old and older, by 0.7, 2.54, 8.2 and 0.86, respectively.

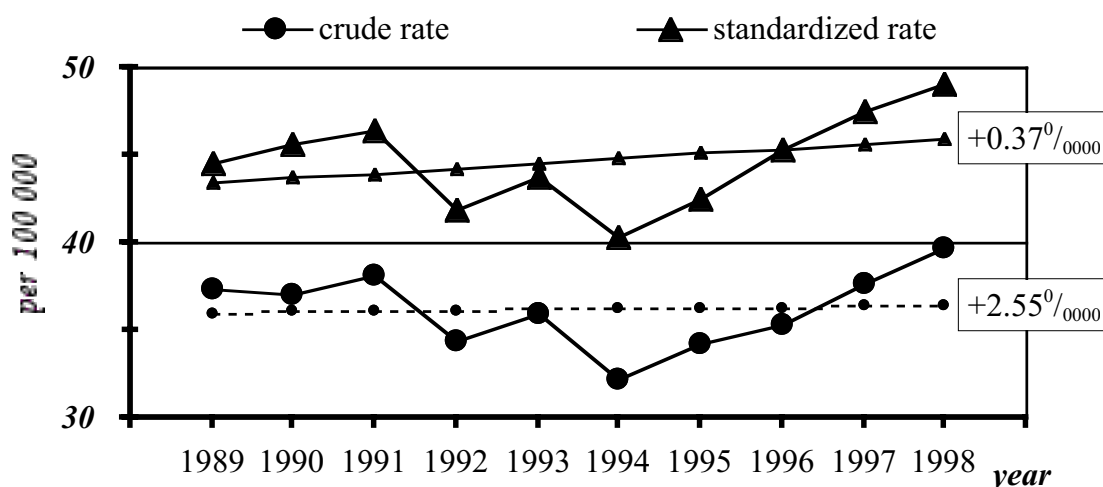


Figure 2. Dynamics of Female Population's Incidence Rates (per 100,000) in the Republic with the Separate Cancer Forms in total for the Decade (1989-1998).

Reduction was observed in the age group 60-69 years old ($L=-7.52$), and there were no changes over the decade in the age group 00-29 years old.

It was established that there was a reverse correlation between population size and age rate of morbidity, in general, and with separate cancer forms. The coefficients were, in total, $r=-0.780\pm 0.175$, for breast cancer $r=-0.819\pm 0.147$, for cervix cancer $r=-0.804\pm 0.158$, for ovary cancer $r=-0.755\pm 0.192$ and for corpus uteri cancer $r=-0.613\pm 0.279$. Correlation coefficients were significant, i.e. with the reduction in population size by age, the morbidity with these cancer types is increasing.

Conclusions

The present focus on the incidence rates of separate cancer types in women in Kyrgyzstan, demonstrated that breast cancer occupies the first place, cervix the second, ovary the third, and corpus uteri the fourth in the field of malignant tumors. Breast cancers in particular are showing a clear tendency for increasing in dynamics. Increase has been most profound in the peak of 60-69 years old. Standardized incidence rates of breast cancer, cervix, ovary and corpus uteri vary greatly. The results characterize the prevalence of different cancer forms in women in Kyrgyzstan.

References

- Chacklin A V (1963). Regional peculiarities of malignant tumor spreading. Monograph, Leningrad, 184 p.
- Ferlay J, Parkin DM, Pisani P (1998). Globocan 1: Cancer Incidence and Mortality Worldwide. IARC press.
- Merkov AM, Polyakov LE (1974). Sanitary statistics. Monograph, Leningrad, 384 p.
- Nugmanov SN (1969). Epidemiology of malignant tumors in Kazakhstan. Monograph, Alma-Ata, 280 p.
- Parkin DM (1994). Cancer in Developing Countries. *Cancer Surveys* **19/20**, 519-561.
- Purde MK (1974). Epidemiology of malignant tumors in Eston SSR. Monograph, Tallinn, 104 p.
- Sayenko AI (1975). Cancer Epidemiology Middle Asia. *Voprosy Onkologii*, **21**, 40-44.
- Stenton G (1999). Medical-biological statistics. Monograph, Moscow, 460 p.
- Tominaga S (1985). Cancer incidence in Japanese in Japan, Hawaii and Western United States. *Natl Cancer Inst Monogr.* **69**, 83-92.
- Trapeznikov NN, Aksel EM (1999). Malignant neoplasm morbidity and mortality of CIS state's in 1997. Moscow: RAMS, 281 p.
- Zaridze DG, Basieva TH (1990). Incidence of cancer of the lung, stomach, breast, and cervix in the USSR: pattern and trends. *Cancer Causes Control*, **1**, 39-49.



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Nurbek Iginov was born in Alma-Ata City in Kazakhstan in 1973. In 1996 he had graduated from the General Treatment Department of Kyrgyz State Medical Institute. During 1996-1999 he was a postgraduate student at the Kazakh Research Institute of Oncology and Radiology. He became a candidate for the degree of Doctor of Philosophy in the medical sciences from 1999 (Ph.D.).

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