RESEARCH COMMUNICATION

Epidemiology of Breast Cancer in Females of Reproductive Age in Kyrgyzstan

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Abstract

The goal of this research was to study breast cancer morbidity in females of reproductive age in Kyrgyzstan. Information on patients was obtained from the National Center of Oncology under the Ministry of Health and the National Statistics Committee of the Kyrgyz Republic. The research was retrospective and covered the period from 1995-2002. Cancer morbidity ratios were calculated for reproductive age according to standard methods of medico-biological statistics. The breast cancer morbidity in the country's female population was determined as 12.3±0.2/ 100,000. The research revealed ethnic specificity: in Russians (crude rate, 32.9±2.1) was higher (p<0.001), than in Kyrgyz and Uzbek females, who demonstrated equal crude incidence rates of – 8.0±0.6. The dynamics over time showed increase in Kyrgyz and Uzbek females but decrease in Russians. Age ratios analysis showed higher morbidity in later reproductive age (40-49 years), with a statistically significant difference (p<0.001) between ethnic Europeans and Asians.

Key words: Breast cancer - reproductive age - morbidity - ethnic populations - Kyrgyzstan

Asian Pacific J Cancer Prev, **6**, 37-40

Introduction

Breast cancer is the most commonly occurring neoplasm in females, particularly in North America, Australia, Western and Northern Europe, but also in Asia (Parkin and Vatanasapt, 2001). Thus, more than 1 million cases of breast cancer were registered at the threshold of the third millennium. The lowest breast cancer incidences are in countries of Asia and Africa whereas countries of Eastern and Southern Europe demonstrate intermediate rates. The highest morbidity is registered in advanced countries of the world (approximately 95 per 100,000) with the lowest rates in developing countries (20 per 100,000) (Parkin et al, 1999; IARC, 2001; Makimbetov et al, 2003).

In Kyrgyzstan, recent epidemiological investigations have shown variation in cancer incidence with the age and ethnic groups of population as well as location of residence above sea level (Igisinov, 2002a; 2002b; 2004). For the breast, the most significant risk factors are those that characterize functioning of the reproductive system (Levshin et al, 1986). Cancer morbidity at a reproductive age is particularly important from the viewpoint of family and other work responsibilities. Elucidation of the epidemiological specifics of breast cancer of females aged from 15 to 49, which depends on various endogenic and exogenic factors, is therefore of great practical and theoretical interest and was the subject of the present research.

Materials and Methods

The basic source of information was the data obtained from the National Center of Oncology under the Ministry of Health of the Kyrgyz Republic on patients, diagnosed for the first time in their lives as having breast cancer at reproductive age (15-49 years) over an 8 year period (1995-2002). Data on the female population of reproductive age was obtained from National Statistics Committee of the Kyrgyz Republic (The Population of Kyrgyzstan, 1999).

The approximate, standardized, equalized and age ratios for breast cancer morbidity in females of reproductive age were calculated according to standard statistics (Merkov et al, 1974; Glantz, 1999). Standardized ratios were calculated through the sectioned standardization method published by Doll and Cook (Makimbetov et al, 2003) with world standard population numbers . Determinations were made of patients' age, average error, 95% confidence intervals (95% CI), and average annual growth ratios (T_{gr}, %). Dynamic rows were equalized with the method of least squares while increase or decrease indexes were calculated in comparison of 1995 with 2002 (L/100,000).

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Table 1. Number of Women of Reproductive Age According to the 1999 Census

Age	All Ethnic Communities		Individual Groups					
			Kyrgyz		Russians		Uzbeks	
	Absol.	%	Absol.	%	Absol.	%	Absol.	%
15-29	649,719	52.3	439,060	54.7	70,879	44.0	88,349	52.8
30-39	349,325	28.1	228,338	28.4	40,472	25.1	49,047	29.3
40-49	243,285	19.6	135,870	16.9	49,830	30.9	29,982	17.9
15-49	1,242,329	100.0	803,268	100.0	161,181	100.0	167,378	100.0

Table 2. Numbers of Women at Reproductive Age with Breast Cancer in Kyrgyzstan over 8 years (1995-2002)

Age	All Ethnic Communities		Individual Groups					
			Kyrgyz		Russians		Uzbeks	
	Absol.	%	Absol.	%	Absol.	%	Absol.	%
15-29	53	4.3	29	5.5	13	3.1	4	3.7
30-39	365	29.6	190	36.3	98	23.1	35	32.4
40-49	815	66.1	305	58.2	314	73.8	69	63.9
Average age	41.0±0.2		39.9±0.3		42.3±0.2		40.3±0.7	

Table 3. Average Annual Crude Ratios of Breast Cancer Incidence/100,000 in Females of Reproductive Age by Ethnic Group in Kyrgyzstan over 8 years (1995-2002)

Ethnic groups	Crude rate	95% CI	T_{gr}, %	L
Kyrgyz	8.0±0.6	6.8 - 9.3	+10.2	+4.5
Russians	32.9±2.1	28.8-37.0	-6.8	-12.4
Uzbeks	8.0±0.6	6.9 - 9.2	+3.5	+0.5

Table 4. Average Annual Standardized Rates for Breast Cancer Incidence in Females of Reproductive Age by Some Ethnic Groups of Kyrgyzstan over 8 years (1995-2002)

Ethnic groups	Standardized rate	95% CI	T_{gr}, %	L
Kyrgyz	9.8±0.8	8.2-11.4	+10.1	+5.56
Russians	27.4±1.8	23.9-30.9	-7.0	-10.31
Uzbeks	9.5±0.7	6.8-8.5	+6.6	+1.95

Results and Discussion

The numbers of females of reproductive age in Kyrgyzstan according to the latest census are given in Table 1, which shows that 91.1% are women of Kyrgyz (64.6%), Uzbek (13.5%) or Russian (13.0%) ethnic origin.

In the investigated period, 1,233 women of reproductive age with breast cancer were registered including 524 Kyrgyz (42.5%), 425 Russians (34.5%) and 108 Uzbeks (8.8%), as shown in Table 2. Breast cancer patients of reproductive age were on average 41.0±0.2 years old. Russian patients were 42.3±0.2 years old, older than Kyrgyz and Uzbek with a statistically significant difference ($p<0.001$).

The average annual crude rate of breast cancer morbidity at reproductive age was 12.3±0.2 per 100,000 women. The standardized incidence was higher and equaled 14.1±0.3. The dynamics show crude and standardized indexes grew on average by 1.9% and 1.2% a year, respectively. The equalization of crude (L=+0.98) and standardized (L=+1.13) indexes confirmed an incidence growth trend.

Tables 3 and 4 show the breast cancer incidence in Russian females of reproductive age to be higher than in Kyrgyz and Uzbek females ($p<0.001$) and dynamically decreasing. Kyrgyz and Uzbek incidences, in contrast, showed a tendency for growth. Breast cancer rate analysis by age revealed the morbidity to grow with age as the highest rates were detected in older reproductive age of 40-49 (Table 5). The difference between ratios of 15-29, 30-39 and 40-49 age groups is statistically significant ($p<0.001$). Table 5 shows age morbidity rates in Russians to be higher than in Kyrgyz and Uzbeks with statistical significance ($p<0.001$).

Looking at breast cancer rates in women of reproductive age in different regions of the country, Bishkek and the Chuy region demonstrated the highest rates of 20.6±1.2 and

Table 5. Average Annual Age Ratios of Breast Cancer Incidence by Reproductive Age and Ethnic Group in Kyrgyzstan in 1995-2002

Age	Ethnic groups							
	All		Kyrgyz		Russians		Uzbek	
	Rate	95% CI	Rate	95% CI	Rate	95% CI	Rate	95% CI
15-29	1.0	0.8-1.2	0.8	0.5-1.1	2.3	1.3-3.3	0.6	-0.2-1.3
30-39	13.0	11.7-14.3	10.3	8.2-12.3	30.4	22.4-38.4	8.9	6.0-11.8
40-49	41.6	39.1-44.0	27.7	22.8-32.6	78.6	70.3-86.9	28.5	22.9-34.2

Table 6. Average Annual Crude Rates of Breast Cancer Incidence/100,000 by Reproductive Age and Region of Kyrgyzstan over 8 Years (1995-2002)

Region	Mean ± SD	95% CI
Bishkek	20.6±1.2	18.3-22.9
Chuy region	19.2±1.6	16.1-22.2
Talas region	13.2±2.0	9.2-17.2
The nation	12.3±0.2	11.8-12.8
Issyk-Kul region	11.5±1.3	8.9-14.1
Naryn region	9.7±1.7	6.2-13.1
Jalal-Abad region	7.3±1.1	5.1-9.6
Osh region	7.1±0.7	5.6-8.6

Table 7. Average Annual Standardized Ratios of Breast Cancer Incidence/100,000 by Reproductive Age and Region of Kyrgyzstan over 8 years (1995-2002)

Region	Mean ± SD	95% CI
Bishkek	23.5±1.4	20.8-26.2
Chuy region	18.3±1.5	15.4-21.3
Talas region	14.4±2.3	9.8-19.0
The nation	14.1±0.3	13.5-14.7
Issyk-Kul region	11.9±1.2	9.5-14.4
Naryn region	10.9±1.9	7.1-14.8
Jalal-Abad region	8.7±1.2	6.3-11.1
Osh region	8.6±0.9	6.8-10.4

19.2±1.6 respectively. The Talas region rate (13.2±2.0) was also higher than the national rate. In the remaining regions the rates were lower. A statistically significant difference ($p<0.05$) was determined between regions with morbidity higher and lower than the national rate except for Talas (Table 6). The standardized ratios of breast cancer at reproductive age in all country's regions were higher than the approximate ratios except in the Chuy region. Analysis of standardized ratios revealed the same regional differences except for the Talas region (Table 7).

The dynamics of breast cancer morbidity at reproductive age in all the regions had a growing trend except for Bishkek with average annual growth rate of minus 5.5% (Table 8). Thus, this reproductive age female breast cancer study revealed:

1. A breast cancer incidence in the female population of Kyrgyzstan at reproductive age of 12.3±0.2.

2. Ethnic variation in breast cancer at reproductive age. The standardized ratio for ethnic Russian females was 27.4±1.8, with 9.8±0.8 and 9.5±0.7 for Kyrgyz and Uzbek females, respectively.

3. Age specifics were identified with the high morbidity rate of 41.6±1.3 for the oldest group (40-49 years). The investigation in all the age groups came up with higher rates for Russians as compared with Kyrgyz or Uzbeks ($p<0.001$).

4. Russian female morbidity dynamics showed a decreasing trend (T_{gr}=-6.8%, L=-12.4), while in Kyrgyz (T_{gr}=+10.2%, L=+4.5) and Uzbek females (T_{gr}=+3.5%, L=+0.5) the dynamics pointed to increase.

5. Morbidity rates for Bishkek and the Chuy region were identified as high and for Jalal-Abad and Osh regions as low. The dynamics showed ratios of breast cancer morbidity in females at reproductive age to be growing except in Bishkek, the capital of the country, where many people of Russian ethnicity reside.

Table 8. The Dynamics of Crude Rates of Breast Cancer at Reproductive Age by Region of Kyrgyzstan in 8 Years (1995-2002)

Region	1995	1996	1997	1998	1999	2000	2001	2002	T_{gr}, %
Bishkek	23.8	19.2	22.7	23.4	16.7	22.8	20.2	16.0	-5.5
Chuy region	20.0	15.8	23.7	19.6	17.1	17.8	13.3	25.9	+3.7
Talas region	6.3	16.7	18.8	10.4	16.6	6.0	19.5	11.4	+8.9
Issyk-Kul region	7.9	10.8	9.8	6.9	14.9	12.5	11.3	17.5	+12.1
Naryn region	5.2	15.8	5.3	8.8	15.8	5.1	8.3	12.9	+13.7
Jalal-Abad region	5.0	5.9	8.6	7.6	3.3	6.7	13.5	8.0	+7.1
Osh region	5.3	6.5	5.6	7.1	11.7	7.4	6.5	6.7	+3.6
The nation	11.3	11.5	13.2	12.5	12.7	12.1	12.3	12.9	+1.9

Table 9. Equalized Crude Rates of Breast Cancer Morbidity at Reproductive Age by Region of Kyrgyzstan in 8 Years (1995-2002)

Region	1995	1996	1997	1998	1999	2000	2001	2002	L, $^0/_{0000}$
Bishkek	22.96	22.29	21.61	20.94	20.27	19.60	18.93	18.26	-4,70
Chuy region	18.82	18.91	19.01	19.10	19.20	19.29	19.39	19.48	+0.66
Talas region	12.48	12.69	12.89	13.10	13.31	13.52	13.73	13.94	+1.46
Issyk-Kul region	7.90	8.92	9.93	10.95	11.97	12.98	14.00	15.02	+7.12
Naryn region	8.73	8.99	9.26	9.52	9.79	10.05	10.32	10.58	+1.86
Jalal-Abad region	5.26	5.84	6.43	7.02	7.61	8.20	8.79	9.38	+4.13
Osh region	6.28	6.51	6.75	6.99	7.23	7.47	7.70	7.94	+1.67
The nation	11.83	11.97	12.11	12.25	12.39	12.53	12.67	12.81	+0.98

References

Glantz S (1999). Medical-biological statistics. Monograph, Moscow, 460 pp.

IARC (2001). GLOBOCAN 2000: Cancer Incidence, Mortality and Prevalence Worldwide, Version 1.0, Vol. 2001. IARC CancerBase No. 5.

Levshin VF, Chepurko AD (1986). Reproductive anamnesis and breast cancer. *Soviet Medicine*, **6**, 15-21.

Makimbetov EK, Vasilevsky MG, Satylganov ID, Bebezov BH (2003). Statistics and methodology of cancer. Monograph, Bishkek, 132 p.

Merkov AM, Polykov LE (1974). Sanitary statistics. Monograph, Leningrad, 384 pp.

Parkin DM, Pisani P, Ferlay J (1999). Estimates of the worldwide incidence of 25 major cancers in 1990. *Int J Cancer*, **80**, 827-41.

Parkin DM, Vatanasapt V (2001). Cancer registration in Asia in the year 2000: past, present and future. *Asian Pac J Cancer Prev*, **2**, S1-89.

The population of Kyrgyzstan (1999). Results of the First national population census of Kyrgyzstan of 1999 in tables. The book II (a part the first). Bishkek, 289 pp.

Igisinov N, Kudaibergenova I, Igisinov S, Subanbaev T (2002). Dynamics of the incidence rates for separate forms of cancer in the female population of Kyrgyzstan. *Asian Pac J Cancer Prev*, **3**, 29-32.

Igisinov N (2004). Ethnic and age variation of cancer of the reproductive system in women of Kyrgyzstan. *Asian Pac J Cancer Prev*, **5**, 217-22.

Igisinov S, Soodonbekov E, Igisinov N, Subanbaev T. (2002). Epidemiology of esophagus, lung and breast cancer in mountainous regions of Kyrgyz Republic. *Asian Pac J Cancer Prev*, **3**, 73-6.