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CERVICAL CANCER INCIDENCE AND MORTALITY IN ALMATY IN 2005-2022

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ABSTRACT

Relevance: *In Kazakhstan, the standardized incidence rate of cervical cancer for 2022 was 19 per 100,000 women, and the mortality rate was 5.9 per 100,000 female population. The overall survival of cervical cancer in the Republic of Kazakhstan for 2022 was 59.6% (95% CI: 50.7-54.2). Since 2008, in Kazakhstan, there has been a National Screening Program for cervical cancer for women from 30 to 70 years old with an interval of 4 years. Almaty is the largest city in Kazakhstan, with a high incidence and mortality from all types of cancer.*

The study aimed to *analyze the cervical cancer incidence and mortality in Almaty in 2005-2022.*

Methods: *Epidemiological analysis of cervical cancer incidence in Almaty for 2005-2022 was provided with analyzing reporting forms of documentation. Statistical processing was carried out using the SPSS v. 23.0 software.*

Results: *Over the past 18 years (2005 to 2022), there has been an increase in the incidence rate from 16 to 18.3 per 100,000 female population and a consistently high mortality rate, which was 6.6 per 100,000 female population in 2022. In 2005, 108 women with cervi-cal cancer were identified, of which 70% were patients with the first and second stages. In 2022, 198 cases of cervical cancer were regis-tered, where the first stage accounts for 56.5%. In recent years, there has been an increase in the frequency of registration of new cases of cervical cancer starting from 30-34 years old, with a noticeable increase up to 40-44 years old.*

Conclusion: *The results of this epidemiological study of cervical cancer incidence and mortality in Almaty indicate the need to improve and intensify screening among women of reproductive age, and introduce a vaccination and screening program using HPV testing.*

Keywords: *cervical cancer, incidence, mortality, Almaty.*

Introduction: To date, cervical cancer is among socially significant problems worldwide and one of the leading causes of mortality among socially active women aged 40-50 years in developing countries. According to Globocan 2020, malignant neoplasms (MNs) of the cervix rank fourth among female cancer and seventh among all cancers. In 2020, 604,000 new cases of cervical cancer were identified. More than 85% of cervical cancer cases are detected in developing countries, and a third are diagnosed at an advanced stage [1]. The existing primary prevention methods impact the dynamics of cervical cancer development; there is a global downward tendency, though some countries still demonstrate increasing morbidity from cervical MNs [1].

In Kazakhstan, cervical cancer is the most common malignant tumor, second oncological disease in women, and fifth among all MNs. The National Cancer Registry reports an increase in morbidity and consistently high mortality from this pathology despite the implemented screening program [2-5].

The National Screening Program for cervical cancer has been implemented in Kazakhstan since 2008 under the Order of the Minister of Health of the Republic of Kazakhstan (RK) No. 607, dated October 15, 2007, "On improving preventive examinations of certain categories of the adult population." This screening program utilizes the Bethesda system of detecting and evaluating cervical cytology in Papanicolaou smears [5]. In 2008, women aged 35-60 years were subject to screening. However, since 2011 the age range was expanded from 30 to 60 years, and liquid cytology was also introduced. Noteworthy, at the initial stage of the cervical cancer screening program implementation, the focus was on public coverage, not the screening quality. Target coverage of cervical cancer screening in the regions of Kazakhstan reached 72% [5]. According to the Order of the Minister of Health of the RK dated January 10, 2014, No. 16 "On amendments and additions to the Order of the Ministry of Health of the RK dated August 12, 2011, No. 540 "On approval of the Regulations on the activities of healthcare organizations providing oncological care to the population of the Republic of Kazakhstan," an average prognostic coverage of the target group is to be at least 70%. However, according to the Ministry of Health of the RK report for 2015, the target coverage of cervical cancer screening in the RK was about 50%. This indicated the lack of popularity of cervical cancer screening among the population [6].

Considering this indicator, the Ministry of Health, together with "Kazakh Institute of Oncology and Radiology"

JSC, initiated an audit of the existing screening program by WHO Impact Mission experts. The review resulted in updating the screening program to increase screening coverage and treatment of precancerous pathologies [7]. The National Screening Program for Cervical Cancer in the RK now provides for a free cytological examination every four years of all women aged 30 to 70 [7, 8].

Despite an intensive implementation and improvement of cervical cancer screening, early diagnostics of cervical cancer remains an issue in the RK due to the conceptually outdated screening methods. Many countries have proven the effectiveness of HPV tests as a screening tool for cervical cancer.

Almaty is the biggest city in Kazakhstan, with a population of over 2 million. Women aged 30 to 60 accomplish more than 20% of the city population. As of 2023, 48 primary health care polyclinics carry out cervical cancer screening in Almaty. The "Almaty Oncological Center" MSE on REM monitors the screening program implementation.

The chosen screening strategy shall be medically, socially, and economically efficient [9]. The screening program analysis and assessment are the main tasks of public health to evaluate the screening effectiveness and the relevance of financial investments and optimize the health care resource planning.

The study aimed to analyze the cervical cancer morbidity and mortality in Almaty in 2005-2022.

Materials and Methods: The dynamics and structure of morbidity and mortality from cervical cancer in Almaty over the past 18 years (2005-2022) were analyzed using the main accounting and reporting forms of documents. The object of the study was 2,462 women first diagnosed with cervical cancer in 2005-2022.

The materials for epidemiological analysis included:

1. International Classification of Diseases, revision 10 (ICD-10), by localization;

2. Updated official reports of regional oncological dispensaries – "Report on MNs" (registration form No. 7) in the RK territory in 2005-2022;

3. Medical records of patients first diagnosed with MNs (registration form No. 090/U);

4. Data of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan on the size, sex, and age composition of the population by oblasts and regions of the RK for 2005-2022;

5. Form No. 030-6/U "Control card of dispensary observation";

6. Data from the National Cancer Register (Electronic Register of Cancer Patients) on MNs and cervical cancer;

7. Data from the National Center for Healthy Lifestyle Formation reports on the results of screening surveys of the RK population target groups in 2005-2022.

The epidemiological study of morbidity and mortality from cervical cancer in the RK utilized the descriptive and analytical methods of modern cancer epidemiology [10]. The cervical cancer morbidity and mortality indicators were calculated using generally accepted sanitary statistics methodology. The morbidity presented in absolute figures shows the number of cases registered per 100,000 female population in a year. The population distribution is standardized by the World Standard (World) to eliminate age differences in the compared populations. The IARC-recommended methodology [11] was used to calculate standardized indicators.

Results: Crude intensive morbidity of cervical cancer shows an increase in detecting this disease in 2005-2022 (Figure 1). The morbidity amounted to 16 per 100,000 females in 2005 vs. 18.3 per 100,000 females in 2022. A peak morbidity of 28.7 per 100,000 females was registered in 2017. The National Cancer Register reported 198 cases of cervical cancer in 2022 in Almaty.

A sharp increase in cervical cancer morbidity was associated with increased detection due to the introduction of screening.

The mortality from cervical cancer increased in the analyzed period from 42 deaths registered in 2005 (the mortality rate – 5.5 per 100,000 females) to 72 deaths in 2022 (the mortality rate – 7.2 per 100,000 females) (Figure 1).

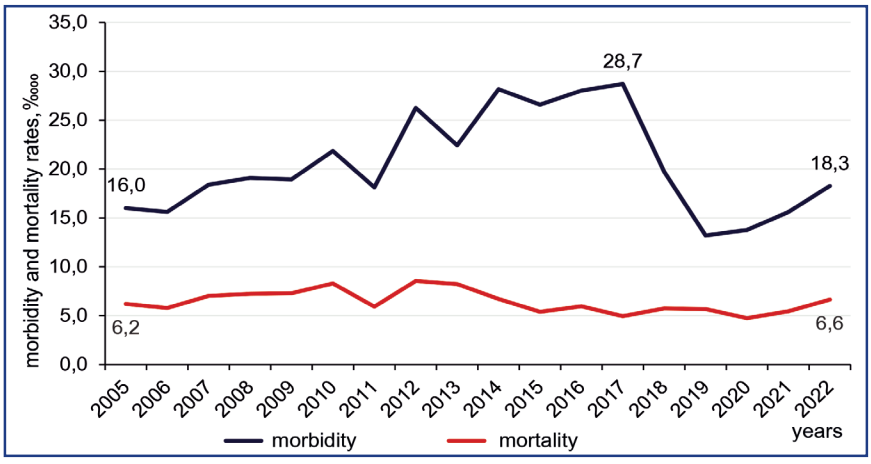

Figure 1 – Trends in intensive morbidity and mortality from cervical neoplasms per 100,000 females in 2005-2022

Age-dependent indicators of new cervical cancer cases showed that the number of cases registered at a younger age increased in 2022 vs. 2005 (Figure 2). The peak morbidity shift towards cervical cancer rejuvenation confirms the need to improve and strengthen screening among young and middle-aged women.

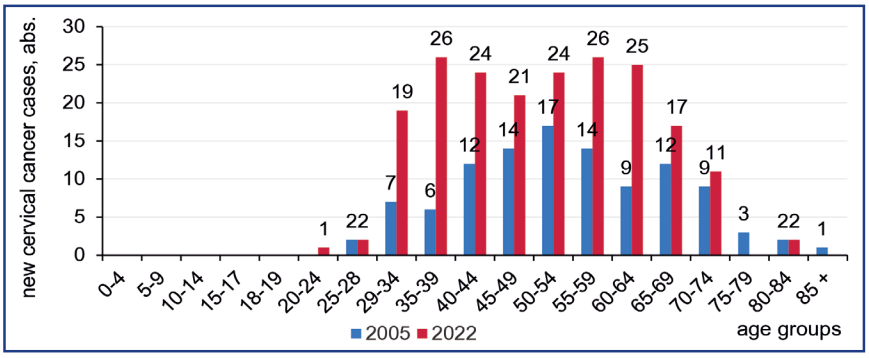

Figure 2 – New cervical cancer cases, by age, 2005 vs. 2022, abs.

Cervical cancer statistics by stage indicated an increase in early detection from 2005 to 2022 (Figures 3, 4). Thus, out of 108 women registered with cervical cancer in 2005, 70% had stage I-II of the disease. In 2022, 85.4% of 198 new cases were registered at stage I-II.

Noteworthy, till 2017, stages I and II were accounted together. Since 2017, they have been separated in the National Cancer Registry. In 2022, stage I accounted for 56.5% of identified cases. A notable fourfold decrease in stage III cervical cancer detection was not accompanied by similar dynamics in advanced stage IV cancer detection.

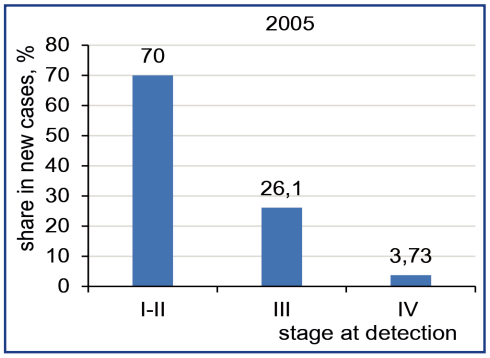

Figure 3 – Shares of stages I-II, III, and IV in new cervical cancer cases registered in Almaty, 2005 (%)

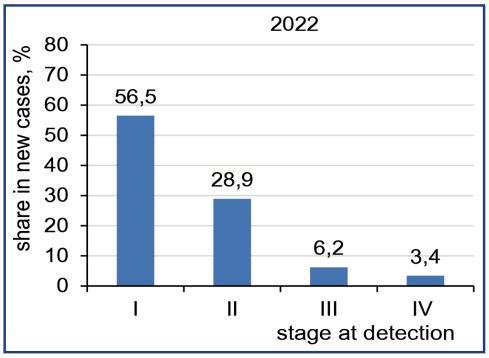

Figure 4 – Shares of stages I-IV in new cervical cancer cases registered in Almaty, 2022 (%)

Table 1 presents the main statistical indicators characterizing the state of oncological care for cervical cancer neoplasms in Almaty. In 2022, the number of new cases achieved 198, an increase of 54.4% vs. 2005. 93.2% of cases were morphologically confirmed in 2022. According to the Cancer Register for 2022, 56.5% of cases were detected at early stages, 81% – during preventive examinations. Early detection of cervical cancer notably increased in 2022 compared to 2005 due to effective screening. Nevertheless, one-year mortality remained high, at 4.32% in 2022.

The percentage of patients who required radical treatment was also high. In 2022, 93.2% of cases required radical treatment; one patient refused specialized treatment.

The number of patients on record increased in 2022 to 2,353; 68.7% were registered for five years and more.

Table 1 – Main statistical indicators for cervical cancer

Indicator	2005 г.	2022 г.
Number of new cases	108.0	198.0
Morbidity per 100,000 population (crude intensive)	16.0	18.3
Early detection (stages I and II), % of all registered cases	70.0	85.4
Early detection during preventive examinations (stages I and II), % of all new cases	30.5	81.0
Less than one-year survival among those registered in the previous year (one-year mortality, %)	4.5	4.3
Radical treatment provided (% of all new cases)	62.6	65.8
Deaths from cancer	39.0	42.0
Mortality per 100,000 population (crude intensive)	6.2	6.6
Patients registered as of the year-end	971	2353
Of them, those registered for five years and more	597	1618

Discussion: Globocan 2020 reports about 600,000 new cases of cervical cancer registered annually in the world [1]. To date, mortality from this disease remains relatively high despite the primary and secondary prevention programs and new approaches to cervical cancer treatment and diagnostics.

Cervical cancer is a visually localized tumor process with real opportunities for early diagnosis. Morbidity and mortality from cervical cancer have fallen by half in developed countries thanks to successfully organized screening. Still, a more significant decrease is expected when vaccination among girls against HPV is included in the national immunization calendar [12-15].

Increased cervical cancer morbidity in developing countries, high mortality, and one-year mortality indicate gaps in cervical cancer primary and secondary prevention, including in Kazakhstan.

In Almaty, cervical cancer ranks third in female cancer morbidity. Over the past 18 years (2005-2022), 3169 new cervical cancer cases were registered, and 984 women died from this disease. A significant share of new cases affects women of reproductive age.

The increase in cervical cancer mortality in Almaty and the RK is associated with better detection due to the introduction of cervical cancer screening.

Despite the screening aimed at early detection, the mortality from cervical cancer remains consistently high. It amounted to 6.6% in 2020 vs. 6.2% in 2005. The morbidity and mortality rates were similar in developed countries with successful screening programs before they introduced effective screening [16, 17].

In recent years, more new cervical cancer cases have been registered in patients over 30-34 years, with a noticeable increase to 40-44 years. In 2022, peak cervical cancer morbidity shifted to 40-44 years compared to 50-54 years in 2005.

The cervical cancer distribution analysis shows a noticeable increase in early detection. A twofold increase in this disease registration is due to the national screening program for cervical cancer. However, despite cytological tests during screening, late detection of cervical cancer remains at the same level. High one-year mortality and low five-year survival of patients with cervical cancer indicate actual neglect of the tumor process and imperfect actions on early detection.

Conclusion: The conducted epidemiological study of cervical cancer morbidity and mortality in Almaty evidences the need to improve and strengthen screening activities among women of reproductive age and introduce HPV vaccination and HPV tests at screening.

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АҢДАТПА

2005-2022 ЖЫЛДАРДАҒЫ АЛМАТЫ ҚАЛАСЫНДАҒЫ ЖАТЫР МОЙНЫ ОБЫРЫМЕН СЫРҚАТТАНУШЫЛЫҚ ЖӘНЕ ӨЛІМ-ЖІТІМ

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Өзектілігі: *Қазақстан Республикасында (ҚР) 2022 жылға арналған жатыр мойны обырының (ҚК) стандартталған сырқаттанушылық көрсеткіші 100 000 әйелге шаққанда 19-ды құрады, өлім-жітім деңгейі 100 000 әйел халыққа шаққанда 5,9 болды. 2022 жылға Қазақстан Республикасында жатыр мойны обырының жалпы өмір сүру деңгейі 59,6%-ды құрады (95% СИ: 50,7-54,2). 2008 жылдан бастап Қазақстан Республикасында жатыр мойны обырының Ұлттық скринингтік бағдарламасы жұмыс істейді, ол 30 жастан 70 жасқа дейінгі әйелдер арасында 4 жыл аралықпен жүргізіледі. Бүгінгі күнде Алматы қаласы, Қазақстан Республикасындағы қатерлі ісік ауруы мен өлім-жітім деңгейі жоғары қала болып қала береді.*

Зерттеудің мақсаты *– Алматы қаласы бойынша 2005-2022 жж. жатыр мойны обырынан сырқаттанушылық пен өлім-жітім динамикасын талдау.*

Әдістері: *Құжаттаманың негізгі есепке алу және есептілік нысандарын пайдалана отырып, 2005-2020 жылдар аралығында Алматы қаласы бойынша жатыр мойны обырынан сырқаттанушылық пен өлім-жітім динамикасы мен құрылымына талдау жүргізілді. Статистикалық өңдеу SPSS23.0 көмегімен жүзеге асырылады*

Нәтижелері: *Соңғы 18 жылда аурушаңдық деңгейі 100 000 әйелге шаққанда 16-дан 18,3-ке дейін өсуі және өлім-жітімнің тұрақты жоғары деңгейі байқалды, ол 2022 жылы 100 000 әйелге шаққанда 6,6 құрады. 2005 жылы жатыр мойны обырына шалдыққан 108 әйел анықталды, оның 70%-ы бірінші және екінші сатыдағы науқастар. 2022 жылы жатыр мойыны обырының 198 жағдайы тіркелді, оның бірінші сатысы 56,5% құрайды.Соңғы жылдары 30-34 жастан бастап айтарлықтай байқалатын жатыр мойны обырының жаңа жағдайларының тіркелу жиілігінің артуы байқалады. 40-44 жасқа дейін өседі. 2022 жылы жатыр мойны обырының 2005 жылмен салыстырғанда ең жоғары деңгейі «50-54 жастан» 40-44 жас тобына ауысты.*

Қорытынды: *Қазақстандағы жатыр мойны обырынан болатын аурушаңдық пен өлім-жітім көрсеткіштерін эпидемиологиялық зерттеу нәтижелері скринингті жақсарту, репродуктивті жастағы әйелдер арасында оны белсендіру, сондай-ақ HPV-ге тестілеуді қолдана отырып, вакцинация және скринингтік бағдарламаны енгізу қажеттілігін көрсетеді.*

Түйінді сөздер: *жатыр мойны обыры, аурушаңдық, өлім-жітім, Алматы.*

АННОТАЦИЯ

ПОКАЗАТЕЛИ ЗАБОЛЕВАЕМОСТИ И СМЕРТНОСТИ ОТ РАКА ШЕЙКИ МАТКИ В ГОРОДЕ АЛМАТЫ ЗА 2005-2022 гг.

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Актуальность: *В Республике Казахстан (РК) показатель стандартизованной заболеваемости раком шейки матки (РШМ) за 2022 г. составил 19 на 100 000 женщин, показатель смертности - 5,9 на 100 000 женского населения. Показатель общей выживаемости РШМ в РК за 2022 г. соответствовал 59,6% (95% ДИ:50,7-54,2). В РК с 2008 г. существует Национальная скрининговая программа РШМ, которая охватывает женщин в возрасте 30-70 лет и проводится с интервалом в 4 года. На сегодняшний день г. Алматы остается крупнейшим городом РК с высоким уровнем заболеваемости и смертности от всех видов рака.*

Цель исследования *– анализ динамики заболеваемости и смертности от РШМ в г. Алматы за 2005-2022 гг.*

Методы: *Анализ динамики и структуры заболеваемости и смертности от РШМ в г. Алматы с 2005 по 2022 гг. проведен с использованием основных форм учетно-отчетной документации. Были проанализированы сравнительные данные. Статистическая обработка проведена с помощью программного обеспечения SPSS v. 23.0.*

Результаты: *За последние 18 лет в г. Алматы отмечается рост показателя заболеваемости с 16 до 18,3 на 100 000 женского населения и стабильно высокий показатель смертности, который в 2022 г. составил 6,6 на 100 000 женского населения. В доскрининговом периоде в 2005 г. РШМ был обнаружен у 131 женщины, из них 70% составили пациентки с первой и второй стадией заболевания. В 2022 г. было зарегистрировано 198 случаев РШМ, причём на долю I-II стадии пришлось 85,4%.*

За последние годы отмечается увеличение частоты регистрации новых случаев РШМ, начиная с возраста 30-34 лет, с заметным ростом до 40-44 лет. В 2022 г. пик заболеваемости РШМ по сравнению с 2005 г. сместился с возраста 50-54 года на возрастную группу 40-44 года.

***Заключение:** Проведенное эпидемиологическое исследование заболеваемости и смертности от РШМ в г. Алматы свидетельствуют о необходимости совершенствования скрининга, его активизации среди женщин репродуктивного возраста, а также внедрения программы вакцинации и скрининга с использованием тестирования на ВПЧ.*

***Ключевые слова:** рак шейки матки (РШМ), заболеваемость, смертность, г. Алматы.*

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