

**EVALUATION CHANGES IN INDICATORS OF ONCOLOGICAL SERVICE
IN CORPUS UTERI CANCER IN KAZAKHSTAN****Z.B. Telmanova¹, G.S. Iginova^{2,3}, Z.Z. Kozhakhmetova¹, G.S. Nurtazinova¹,
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Corpus uteri cancer is the sixth most common cancer worldwide. Approximately 417,367 new cases and 97,370 deaths of endometrial cancer occur annually worldwide. Moreover, in many countries such as Europe, the United States, Russia, and Canada, carcinoma of the corpus uteri (endometrial carcinoma) has now surpassed cervical carcinoma as the most common form of malignancy affecting the female genital tract.

The aim of the study was to evaluate some indicators of the oncological service in CUC in Kazakhstan in the period from 2009 to 2018.

The research material was data from the Ministry of Health of the Republic of Kazakhstan – annual form No. 7 and 35 regarding CUC (ICD 10 – C54) for 2009-2018 – incidence, mortality, early diagnosis, neglect, morphological verification. A retrospective study using descriptive and analytical methods of biomedical statistics was used as the main method.

For 2009-2018, 10,522 new cases of CUC were registered in the republic for the first time and 2,774 women died from this disease. The average annual crude incidence rate of CUC was $11.9 \pm 0.3^{0/0000}$ (95% CI=11.3-12.5) and increased in dynamics from $10.7 \pm 0.4^{0/0000}$ (2009) to $11.6 \pm 0.4^{0/0000}$ in 2018, the difference was statistically significant ($t=1.59$ and $p=0.112$). In dynamics, mortality rates from CUC tended to statistically significant ($t=3.89$ and $p=0.000$) decrease from $3.6 \pm 0.2^{0/0000}$ (2009) to $2.5 \pm 0.2^{0/0000}$ in 2018, and the average annual crude mortality rate from corpus uteri cancer was $3.2 \pm 0.2^{0/0000}$ (95% CI=2.9-3.5). The research of the study period reveals a trend: early diagnosis indicators (specific weight

of patients with I-II stage) improved from 82.0% (2009) to 88.6% in 2018, and accordingly the specific weight of neglected patients significantly decreased with stage III (from 12.0% to 8.5%) and with stage IV (from 4.7% to 2.8%). The morphological verification indicators for CUC remained virtually unchanged, remaining fairly high 98.6% and 98.8%, respectively, in 2009 and 2018.

Conclusion. An analysis of the indicators of the oncological service in CUC revealed an improvement in morphological verification and early diagnosis, a decrease in neglect and mortality rates, which is undoubtedly associated with regular anti-cancer activities in Kazakhstan.

Key words: corpus uteri cancer, incidence, mortality, early diagnosis, neglect, morphological verification, Kazakhstan.

АНАЛИЗ НЕКОТОРЫХ ПОКАЗАТЕЛЕЙ ОНКОЛОГИЧЕСКОЙ СЛУЖБЫ ПРИ РАКЕ ТЕЛА МАТКИ В КАЗАХСТАНЕ

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Рак тела матки является шестым по распространенности раком в мире. Ежегодно во всем мире регистрируется примерно 417 367 новых случаев и 97 370 смертей от рака эндометрия. Более того, во многих странах, таких как Европа, Соединенные Штаты, Россия и Канада, карцинома тела матки (карцинома эндометрия) в настоящее время превзошла карциному шейки матки как наиболее распространенную форму злокачественного новообразования, поражающего женские половые пути.

Целью исследования была оценка некоторых показателей онкологической службы в РТМ в Казахстане в период с 2009 по 2018 год.

Материалом исследования послужили данные Министерства здравоохранения Республики Казахстан – ежегодные формы №7 и 35 по РТМ (МКБ 10 – С54) за 2009–2018 годы – заболеваемость, смертность, ранняя диагностика, запущенность, морфологическая верификация. В качестве основного метода было использовано ретроспективное исследование с использованием описательных и аналитических методов биомедицинской статистики.

Результаты и обсуждение. За 2009–2018 годы в республике впервые было зарегистрировано 10 522 новых случая РТМ, и 2774 женщины умерли от этого

заболевания. Среднегодовой общий показатель заболеваемости РТМ составил $11,9 \pm 0,3^0/0000$ (95% ДИ=11,3-12,5) и увеличился в динамике с $10,7 \pm 0,4^0/0000$ (2009) до $11,6 \pm 0,4^0/0000$ в 2018 году, разница была статистически значимой ($t=1,59$ и $p=0,112$). В динамике показатели смертности от РТМ имели тенденцию к статистически значимому ($t=3,89$ и $p=0,000$) снижению с $3,6 \pm 0,2^0/0000$ (2009) до $2,5 \pm 0,2^0/0000$ в 2018 году, а среднегодовой общий показатель смертности от рака тела матки составил $3,2 \pm 0,2^0/0000$ (95% ДИ=2,9-3,5). За исследуемый период выявили тенденцию: показатели ранней диагностики (удельный вес пациентов с I-II стадией) улучшились с 82,0% (2009 г.) до 88,6% в 2018 г., и соответственно удельный вес запущенных пациентов значительно снизился с III стадией (с 12,0 % до 8,5 %) и с IV стадией (с 4,7% до 2,8%). Показатели морфологической верификации РТМ практически не изменились, оставаясь довольно высокими 98,6% и 98,8% соответственно в 2009 и 2018 годах.

Вывод. Анализ показателей онкологической службы РТМ выявил улучшение морфологической верификации и ранней диагностики, снижение показателей запущенности и смертности, что, несомненно, связано с регулярными противораковыми мероприятиями в Казахстане.

Ключевые слова: рак тела матки, заболеваемость, смертность, ранняя диагностика, запущенность, морфологическая верификация, Казахстан.

Corpus uteri cancer is the sixth most common cancer worldwide. Approximately 417,367 new cases and 97,370 deaths of endometrial cancer occur annually worldwide [1]. Moreover, in many countries such as Europe, the United States, Russia, and Canada [2], carcinoma of the corpus uteri (endometrial carcinoma) has now surpassed cervical carcinoma [3] as the most common form of malignancy affecting the female genital tract. This has occurred as the result of two factors [4]. Firstly, the effective population-based cervical carcinoma screening programs have effectively identified the preclinical phases of this disease with a subsequent reduction in its incidence and mortality rates. Second, the increased life-expectancy in many countries today has, in turn, led to an increased number of patients being diagnosed with endometrial carcinoma [5],

which is predominantly a disease of postmenopausal women.

Studies have shown that menstrual-related risk factors, childbirth at older ages, consumption of external hormone (contraceptive pills and hormone replacement therapy), nutrition (alcohol consumption) and anthropometrics (more weight, weight gain during adulthood and body fat distribution) are important risk factors related to the high incidence of this cancer in countries with a high human development index (HDI) [6,7]. In other words, HDI which reflects the social and economic status of people in different countries, may be associated with the incidence of endometrial cancer [8,9,10,11]. Endometrial carcinoma most often presents as postmenopausal bleeding [12], which results in women presenting promptly for investigation of this complaint.

The purpose of the study was to evaluate some indicators of the oncological service of Kazakhstan on CUC in 2009-2018.

Material and methods

The research material included the data obtained from the annual forms No. 7 & 35 of the Ministry of Healthcare of the Republic of Kazakhstan on CUC (ICD 10 – C54) for 2009-2018 on incidence, mortality, early detection, neglect, and morphological verification. A retrospective study based on descriptive and analytical methods of biomedical statistics was used as the main method. Extensive and intensive indicators were calculated using the generally accepted methods of biomedical statistics [13, 14]. The annual averages (M), mean error (m), 95% confidence interval (95%

CI), and average annual upward/downward rates (T%) were calculated.

Results

In 2009-2018, 16,441 new CUC cases and 2,774 deaths from this pathology were registered in the Republic of Kazakhstan. The average annual crude incidence over the study years was $11.9 \pm 0.3^{0/0000}$ (95% CI=11.3-12.5). The crude CUC incidence rate increased from $10.7 \pm 0.4^{0/0000}$ in 2009 to $11.6 \pm 0.4^{0/0000}$ in 2018, with a statistically significant difference ($t=1.59$, $p=0.112$). The CUC mortality rate decreased statistically significantly ($t=3.89$, $p=0.000$), from $3.6 \pm 0.2^{0/0000}$ in 2009 to $2.5 \pm 0.2^{0/0000}$ in 2018. The average annual crude mortality was $3.2 \pm 0.2^{0/0000}$ (95% CI=2.9-3.5).

Figure 1 shows trends in equalized crude incidence and mortality from CUC in Kazakhstan.

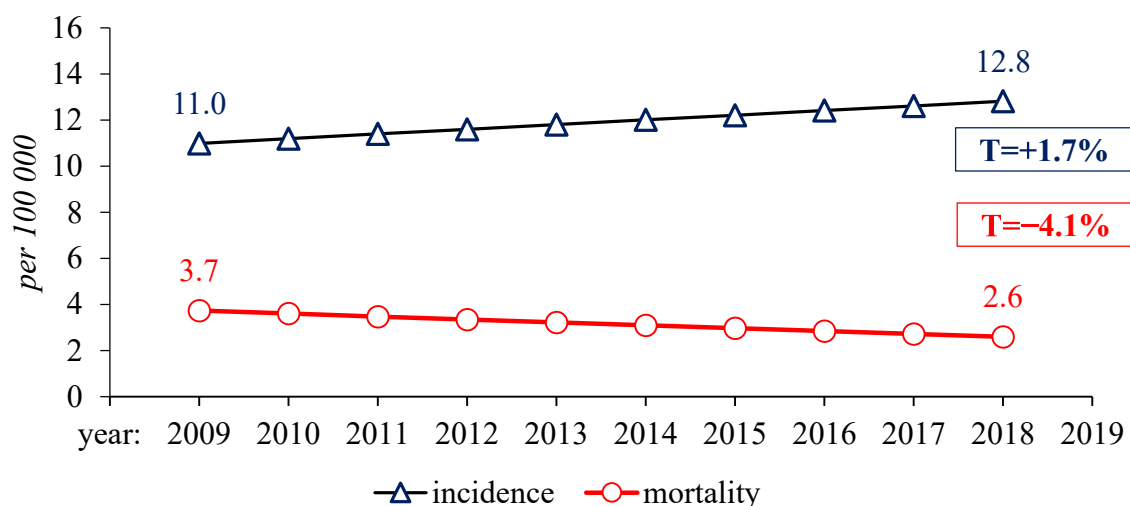


Fig. 1. Trends of equalized incidence and mortality rates from CUC in Kazakhstan, 2009-2018.

The average annual equalized CUC incidence increase was equal to $T=+1.7\%$, at the average annual mortality decrease of $T=-4.1\%$ (figure 1).

The trends in equalized incidence rates by stage showed an increase in stage I-II CUC incidence and a decrease in stage III and IV incidence (figure 2).

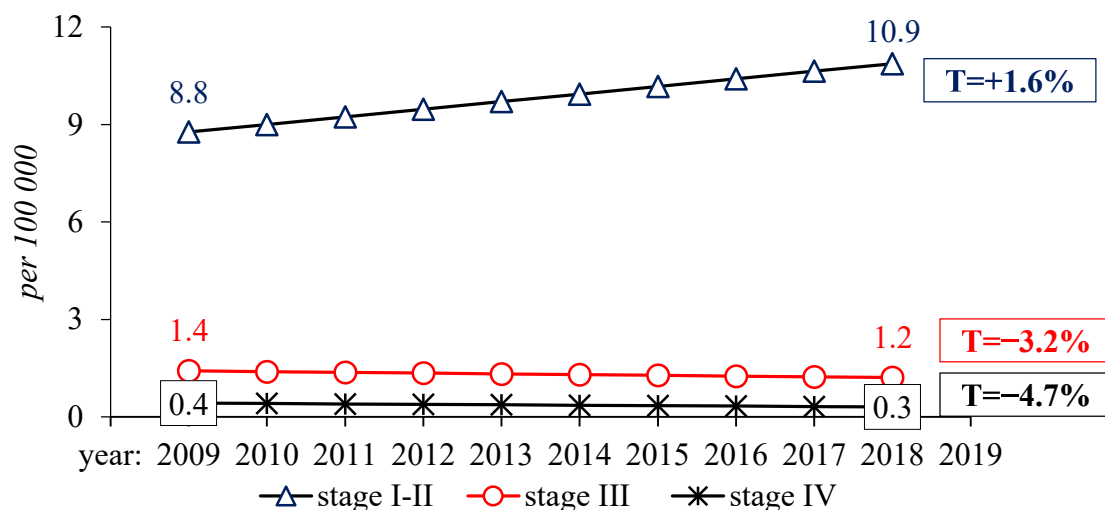


Fig. 2. Trends in equalized CUC incidence rates by disease stage in Kazakhstan, 2009-2018.

Over time, the share of patients with stages I-II CUC increased from 82.0% in 2009 to 88.6% in 2018 (figure 3), with an average annual increase in the equalized rate of $T=+0.9\%$.

The share of patients with stage III CUC decreased from 12.0% in 2009 to 8.5% in 2018 (figure 3), with an average annual decrease in the equalized rate of $T=-3.8\%$.

Over time, the share of patients with stage IV CUC decreased from 4.7% in 2009 to 2.8% in 2018 (figure 3), with an average annual decrease in the equalized rate of $T=-5.4\%$.

During the study period, morphological verification in CUC remained almost at the same level exceeding 98.3-99.5%, except for 97.7% in 2014 (figure 4).

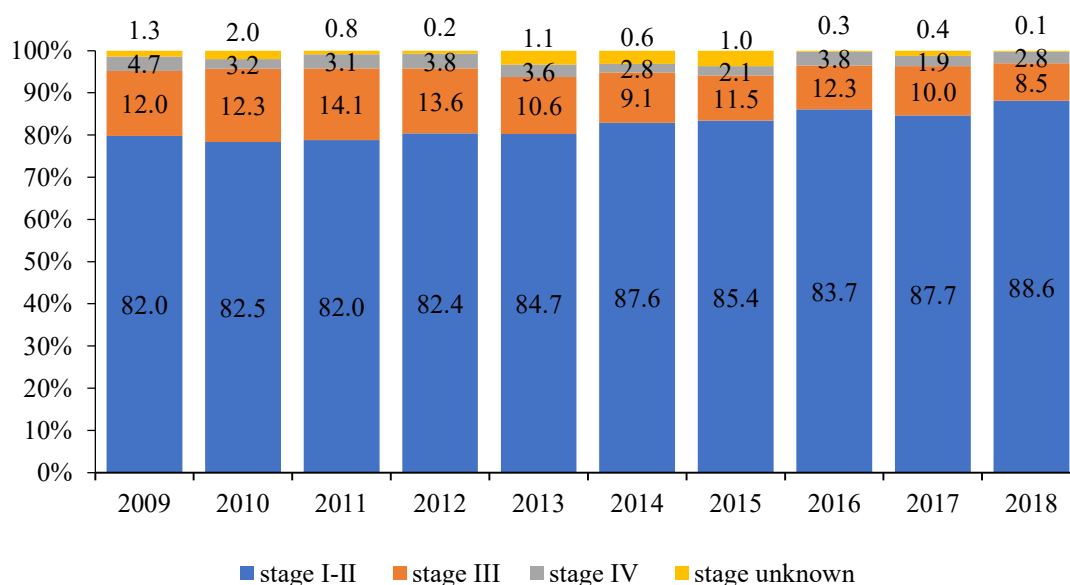


Fig. 3. The dynamics of CUC early detection (stage I-II) and neglect (stage III and IV) in Kazakhstan, 2009-2018.

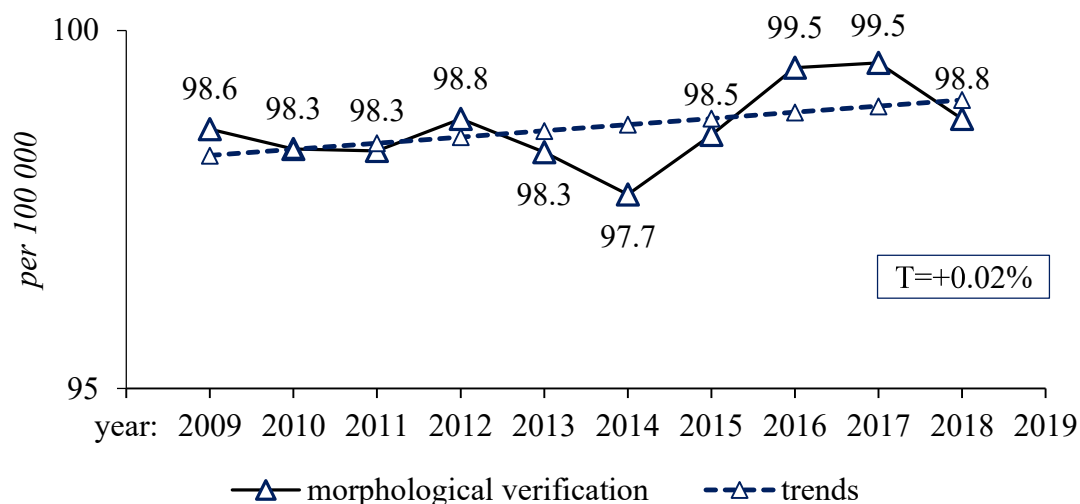


Fig. 4. The dynamics of CUC morphological verification in Kazakhstan, 2009-2018.

At that, the equalized morphological verification rates have remained at the same level of $T=+0.02\%$ (figure 4).

Conclusions:

1. In the Republic of Kazakhstan, over the study years, the absolute number of people with newly diagnosed CUC has increased by 22.6%. CUC incidence per 100,000 women has increased by 6.7% over the decade. At that, the incidence of stage I CUC was growing, and the incidence of stage III-IV was decreasing.

2. In 2009-2018, the absolute number of deaths from CUC in Kazakhstan decreased by 22.5%. The mortality from CUC per 100,000 women has decreased by 31.4% over the decade.

3. In the study period, the number of patients with stages I-II at diagnosis has added 30.3%, with stage III – lost 15.2%, with stage IV – lost 26.8%. In general, there was a positive trend in the early detection and reduction of neglect.

The obtained data shows that Kazakhstan follows the global trend of growth in CUC

incidence. At the same time, we can observe positive changes in the cancer service indicators: a growing share of morphological verification and early detection, reducing share patients with stage III-IV at diagnosis, and reduction in the CUC mortality rate. Cancer of the corpus uteri is among leading causes of cancer mortality pose a serious epidemiological problem. Decreasing trends in corpus uteri cancer mortality were observed suggesting shared risk factors and reduction in their prevalence or improvements in diagnosis and treatment. To further reduce the impact of the corpus uteri cancer, recommendations to address preventable identified risk factors, such as obesity, diet, and lack of physical activity and further improvement in survival, including raising awareness of symptoms, ensuring prompt access to optimal diagnosis and treatment to all patients, and continuous monitoring of cancer management and outcomes, should be implemented.

References

1. Ferlay J, Ervik M, Lam F, et al. (2020A). *Global Cancer Observatory: Cancer Today*. Lyon, France: International Agency for Research on Cancer. Available from: <https://gco.iarc.fr/today>.
2. Bray F, Loos AH, Oostindier M, Weiderpass E. Geographic and temporal variations in cancer of the corpus uteri: incidence and mortality in pre- and postmenopausal women in Europe. *Int J Cancer*. 2005;117(1):123–131.
3. Xi Y, Wang W, Chen W, Han K, Qiao L, Chen W. Incidence and mortality of corpus uteri cancer in China, 2008-2012. *Chin J Cancer Res*. 2019;31(3):435-442. doi:10.21147/j.issn.1000-9604.2019.03.05.
4. Amant F, Mirza MR, Koskas M, Creutzberg CL. Cancer of the corpus uteri. *Int J Gynaecol Obstet*. 2018;143 Suppl 2:37-50. doi:10.1002/ijgo.12612.
5. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin*. 2011;61(2):69–90.
6. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2018;68:394–424.
7. Chaichian S, Khateri S, Moradi Y, Shadmani FK, Mansori K, Khazaei Z, et al. Trends in cervical cancer incidence in Iran from 2003 to 2009. *Middle East J Cancer*. 2017;9:57–63.
8. Torres-Cintrón M, Ortiz AP, Ortiz-Ortiz KJ, Figueroa-Vallés NR, Pérez-Irizarry J, Díaz-Medina G, et al. Using a socioeconomic position index to assess disparities in cancer incidence and mortality, Puerto Rico, 1995–2004. *Prev Chronic Dis*. 2012;9:E15.
9. Ghoncheh M, Mohammadian-Hafshejani A, Salehiniya H. Incidence and mortality of breast cancer and their relationship to development in Asia. *Asian Pac J Cancer Prev*. 2015;16:6081–6087.
10. Goodarzi E, Moslem A, Feizhadad H, Jarrahi AM, Adineh HA, Sohrabivafa M, et al. Epidemiology, incidence and mortality of thyroid cancer and their relationship with the human development index in the world: an ecology study in 2018. *Adv Hum Biol*. 2019;9:162–167.
11. Khazaei Z, Goodarzi E, Sohrabivafa M, Naemi H, Mansori K. Association between the incidence and mortality rates for corpus uteri cancer and human development index (HDI): a global ecological study. *Obstet Gynecol Sci*. 2020;63(2):141-149. doi:10.5468/ogs.2020.63.2.141.
12. Seebacher V, Schmid M, Polterauer S, Frischmuth KH, Leipold H, et al. The presence of post-menopausal bleeding as prognostic parameter in patients with endometrial cancer: a retrospective multinational study. *BMC Cancer*. 2009;9:460-69.
13. Merkov AM, Polyakov LE. *Sanitarnaya statistika (Sanitary statistics) [in Russian]*. Leningrad: Medicine. – 1974. – 384 p.
14. Glanc S. *Mediko-biologicheskaya statistika (Biomedical statistics) [in Russian]*. Moscow: Practice. – 1999. – 460 p.