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EPIDEMIOLOGICAL SITUATION OF SKIN CANCER AND MELANOMA IN THE REPUBLIC OF KAZAKHSTAN IN 2012-2022

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ABSTRACT

Relevance: *Skin cancer, including melanoma, is a major health problem and one of the most common cancers in the world.*

The study aimed to *obtain a complete epidemiological picture of skin cancer and melanoma in the Republic of Kazakhstan for 11 years, including analysis of data for 2022, considering various parameters such as age, sex, ethnicity, region, and tumor type.*

Methods: *The study used data from patients registered in the national cancer registry of the Republic of Kazakhstan from 2012 to 2022, diagnosed with skin carcinoma and skin melanoma (ICD-10 code: C44-C43). The number of skin carcinomas and melanoma cases is presented as absolute and crude rates per 100,000 population. Absolute standardized morbidity and mortality rates were calculated using the world standard (World).*

Results: *At the end of 2022, 19,714 and 2,689 patients were diagnosed with "Skin Cancer" or "Skin Melanoma" in the Republic of Kazakhstan, respectively. From 2012 to 2022, the incidence of skin cancer increased by 24% and melanoma by 15%. In 2022, the incidence of skin cancer and melanoma was higher among women by 24% and 26%, respectively. Mortality from skin cancer is in 23rd place, from melanoma in 21st place. Mortality rates from skin cancer and melanoma were 0.5 and 0.7 per 100 thousand population, respectively. The peak incidence of skin cancer in 2022 was observed in the age group 65-74 years (36%), and mortality in the age groups 65-74 and 75-84 years (17% each). The peak incidence of skin melanoma in 2022 was observed in the age groups 55-64 years and 65-74 years (24% and 25%), and mortality in the groups 45-54 years and 35-44 years (14% and 10%).*

Conclusion: *There has been a steady increase in the incidence of skin cancer and melanoma, which indicates the seriousness of this problem in the country and underlines the need for further measures to prevent, diagnose and treat skin cancer and melanoma in the Republic of Kazakhstan. It should be remembered that many cases of skin cancer can be prevented with simple precautions.*

Keywords: *epidemiology, morbidity, skin cancer, melanoma, mortality.*

Introduction: Skin cancer presents a unique challenge in estimating morbidity due to the fact that non-melanoma skin cancer, which comprises up to 85% of cases, is often not recorded in cancer registries. This is because many no-nmelanoma skin cancers are benign and can be effectively treated with surgery or ablation, leading to under-reporting in official records.

In 2022, skin cancer was not included in the classification of malignant neoplasms for the population of the Republic of Kazakhstan (Republic of Kazakhstan).

Globally, skin cancer is often overlooked in statistical analyses. According to GLOBOCAN 2020, the total global incidence of non-melanoma skin cancer was 1,198,073 cases, which represents 6.2% of all cancers and ranks fifth after breast, lung, colorectal, and prostate cancer. The incidence was significantly higher among men, accounting for 722,348 cases (60%), compared to 475,725 cases (40%) among women. Countries such as Australia/New Zealand, and the US reported the highest overall levels of non-melanoma skin cancer [2].

In 2020, a total of 325,000 new cases of melanoma were reported worldwide, with 174,000 cases occurring in men and 151,000 in women. There were 57,000 deaths attributed to melanoma, with 32,000 occurring in men and 25,000 in women. The regions with the highest incidence rates for both men (42 per 100,000 population) and women (31 per 100,000 population) were Australia/New Zealand, followed closely by Western Europe (19 per 100,000 population years for both men and women), North America (18 per 100,000 population years for men, and 14 per 100,000 population years for women), and Northern Europe (17 per 100,000 population years for men, and 18 per 100,000 population years for women). Melanoma remains relatively rare in most of Africa and Asia, with incidence rates typically less than 1 per 100,000 population. Notably, the mortality rate was reported to be 5 per 100,000 population in New Zealand, although geographic differences in mortality were generally less pronounced compared to incidence rates [3].

The study aimed to obtain a complete epidemiological picture of skin cancer and melanoma in the Republic of Kazakhstan for 11 years, including analysis of data for 2022, considering various parameters such as age, sex, ethnicity, region, and tumor type.

Materials and methods: This study included all patients registered in the Kazakhstan National Cancer Registry between 2012 and 2022 who were diagnosed with skin carcinoma and skin melanoma, classified under the ICD-10 codes: C44-C43. The data collected from the Cancer Registry encompassed various aspects including demographic

information, disease stage, tumor histological type, treatment methods, and survival data throughout the country. Demographic variables such as sex, age, and regions of residence were analyzed as part of the study [4-9].

The incidences of skin carcinomas and melanoma were represented as absolute and crude rates per 100,000 population. Additionally, standardized morbidity and mortality rates were computed using the world standard (World) and presented as absolute values. A graphic representation of these calculated indicators was achieved using the MS Excel program from 2012 to 2022.

Results:

Trends in cancer and skin melanoma incidence in the Republic of Kazakhstan from 2012 to 2022.

Between 2012 and 2022, a total of 45,843 cases of skin tumors were documented. The incidence of skin tumors was 34% higher among women compared to men. Specifically, the increase in cases during the study period was 11% for men and 20% for women.

Throughout the review period, 4,229 cases of skin melanoma were identified, representing 9% of all cases of skin cancer. The incidence of melanoma was 1.7 cases per 100,000 population. Although these figures indicate a relatively low proportion of melanoma among total skin tumors, it remains a significant concern due to its high risk of metastasis and rapid progression of the disease, which requires careful attention and monitoring.

Between 2012 and 2022, there was an average increase of 24% in the incidence of skin cancer. Peaks were observed in 2016 and 2015, with 5,051 and 4,448 cases, respectively. However, in the last six years from 2016 to 2022, the incidence decreased by 15%.

During the same period, the incidence of melanoma increased by 15%. In particular, a significant number of cases were reported in 2018, with 369 cases (see Figure 1).

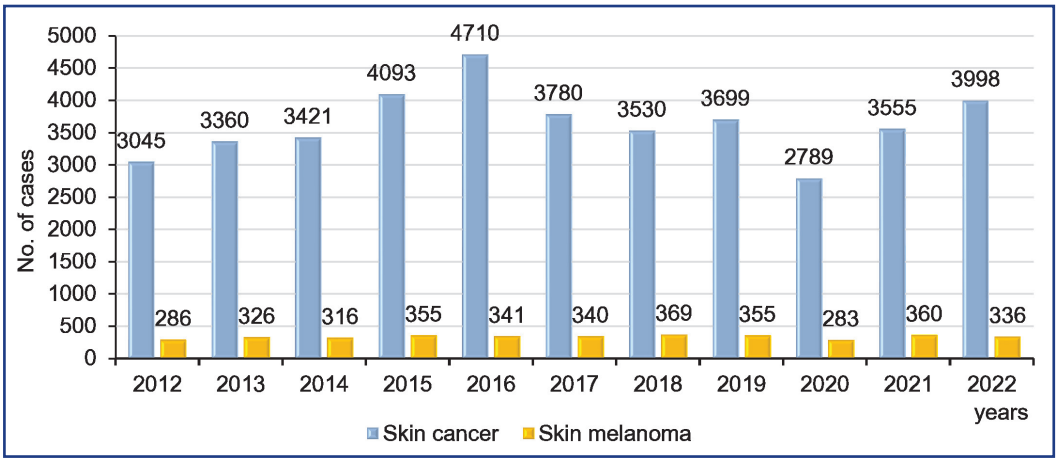

Figure 1 - Incidence of skin cancer and skin melanoma in Kazakhstan 2012-2022 (cases)

In 2022, the Republic of Kazakhstan recorded 32,572 new cases of malignant neoplasms. Among these, 3,998 cases were attributed to skin malignant neoplasms, accounting for 12% of the total. Furthermore, 336 cases of skin melanoma accounted for 1% of all cases of malignant neoplasms and 8% of cases of skin cancer. Skin cancer ranked second in cancer incidence structure, while skin melanoma ranked 21st. The prevalence of skin cancer was 20.0 per 100,000 people, while the prevalence of ski

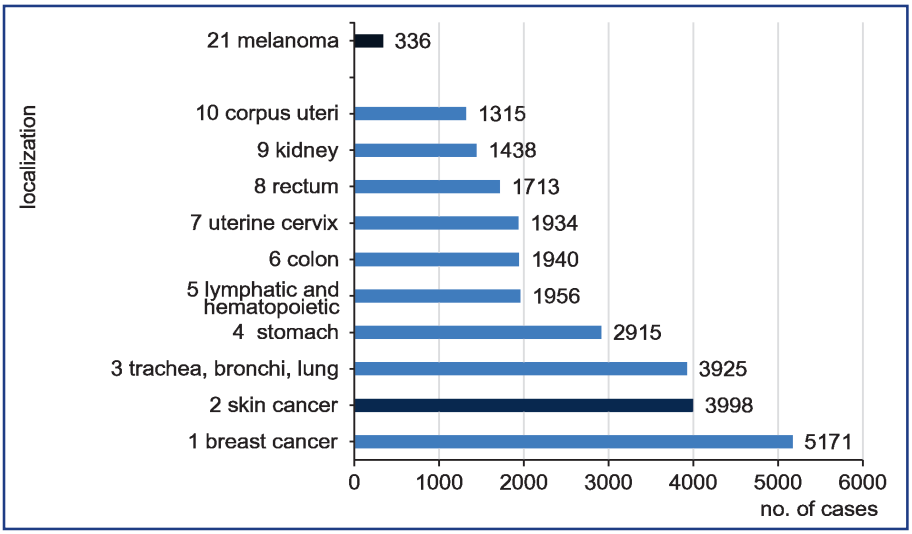

Figure 2 – Cancer incidence structure in Kazakhstan, 2022. (no. of cases)

Incidence statistics by sex, age, and place of residence

In 2022, the incidence of skin cancer in Kazakhstan was 24% higher among women than among men.

In 2022, skin malignancies were 17 to 60% more common among women in all age groups. Among all cases of non-melanoma skin cancer, 62% were reported in women, and only 38% in men. The highest incidence of skin cancer, regardless of sex, was observed at the age of 65 to 74, amounting to 36%. In the age groups of 55-64 and 75-84 years, the incidence was 18% and 26%, respectively. The incidence in those ages was higher in women, accounting for 42% in the age group of 75-84 years (see Figure 3).

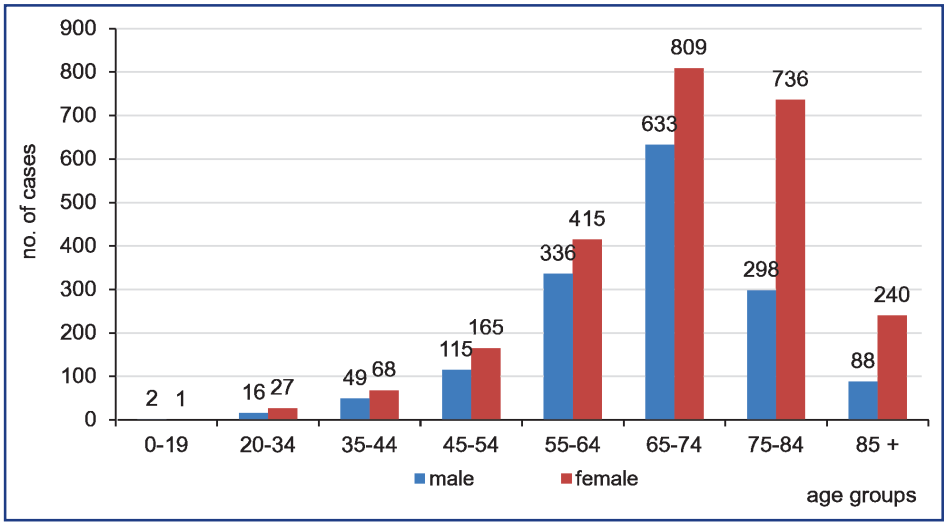

Figure 3 – Incidence of skin cancer in Kazakhstan by sex, age, and place of residence, 2022 (no. of cases)

In the same year, the incidence of melanoma was markedly higher among women, surpassing that among men by 26%.

Skin melanoma incidence was higher among women by 19 to 70% in all age groups. At that, 63% of all skin melanoma cases were reported in women, with men only making 37%. The highest incidence of skin melanoma in 2022 was registered in the age groups of 55-64 (24%) and 65-74 (25%) years. The incidence in those ages was 29% higher in women. In the younger group of 45-54 years, the incidence was 14% (see Figure 4).

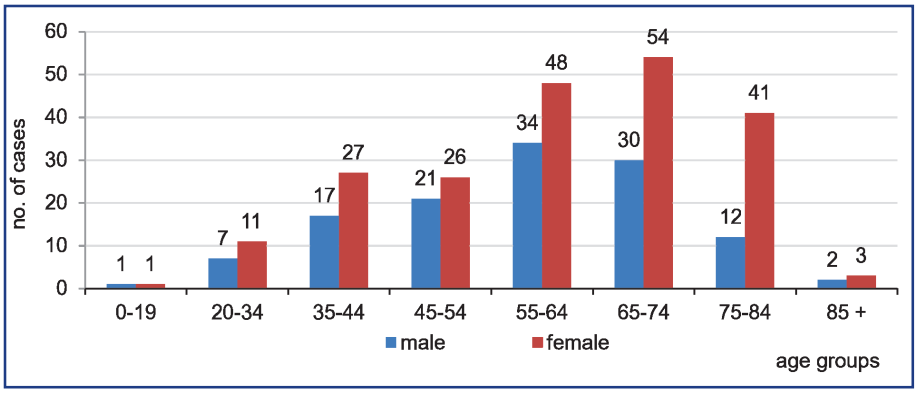

Figure 4 – Indicators of melanoma skin incidence in Kazakhstan by sex, age, and place of residence, 2022. (no. of cases)

Incidence statistics by stage and histological type

In the first stage of skin cancer, 81% of cases are detected, showcasing a commendable rate of early diagnosis. This high rate of early detection is a positive aspect in terms of treatment effectiveness and overall survival rates. However, in the second stage of skin cancer, only 13% of cases are detected. Furthermore, in the third stage, skin cancer is established in only 1% of cases.

In the case of skin melanoma, 43% of the cases were detected at stage I of the disease, while 40% of the cases were identified at stage II. This means that more than half of melanoma cases are diagnosed early, which supports more efficient treatment. Only 8% of skin melanoma cases are detected at stage III. These statistics highlight the relatively low prevalence of advanced melanoma (see Figure 5).

In 2022, basal cell cancer emerged as the most prevalent histological type of skin cancer, accounting for 85% of all cases of malignant skin neoplasms. Characterized by slow growth and relatively low level of metastasis, basal cell cancer is often manageable with appropriate treatment.

Squamous cell cancer, on the other hand, accounted for 13% of all skin malignancies. This type of skin cancer typically affects the surface layer of the skin and can exhibit more aggressive behavior compared to basal cell cancer.

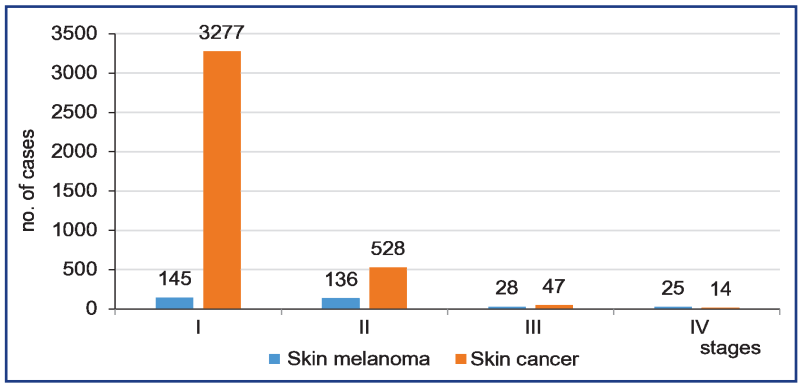

Figure 5 – Incidence of skin cancer and skin melanoma by stage in the Republic of Kazakhstan, 2022. (no. of cases)

Metatypical cancer, although less common, represents 1% of all skin malignancies. This histological type may be relatively rare and requires specialized treatment to address its unique characteristics (see Figure 6).

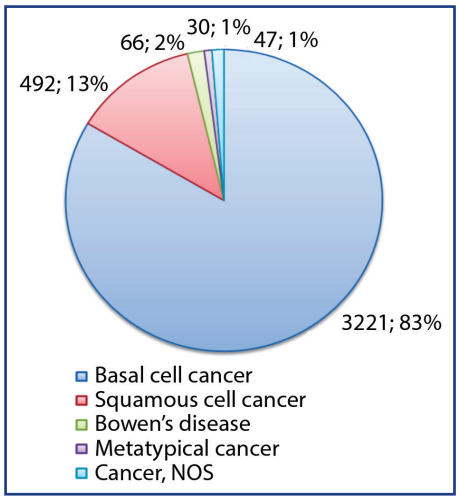

Figure 6 – Incidence of skin malignancies by histological type in the Republic of Kazakhstan, 2022 (no. of cases; %)

Incidence by ethnicity

Among skin cancer cases, 56% were reported among Russian women. Kazakh women accounted for 21% of skin cancer cases, while Ukrainian women represented 8% of cases. Furthermore, 5% of skin cancer cases were registered among women from other nations, including various ethnic groups (see Figure 7).

Skin cancer occurred in 54% of cases among Russian men, while Kazakh men accounted for 26% of skin cancer cases among men. Ukrainians developed skin cancer in 7% of cases. Additionally, 13% of skin cancer cases among men were reported in other nations, including various ethnic groups (see Figure 8).

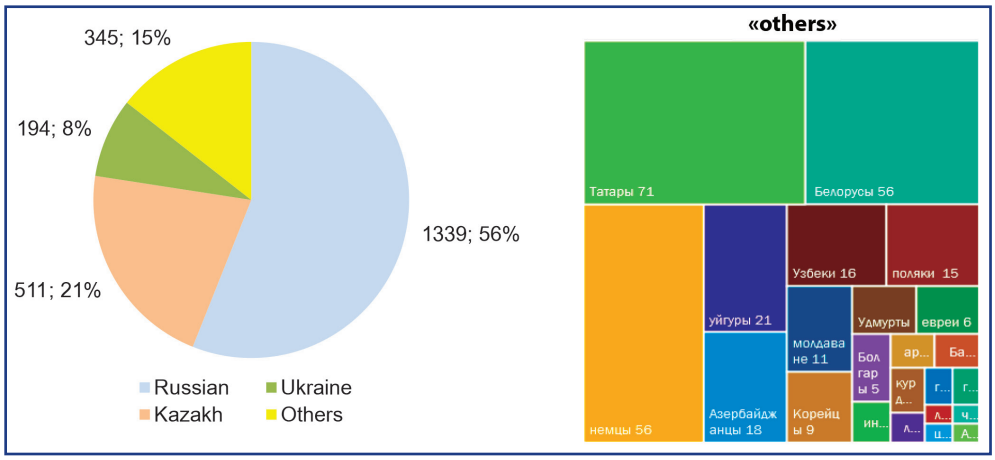

Figure 7 – Incidence of skin malignancies ethnicity among women in the Republic of Kazakhstan, 2022 (no. of cases; %)

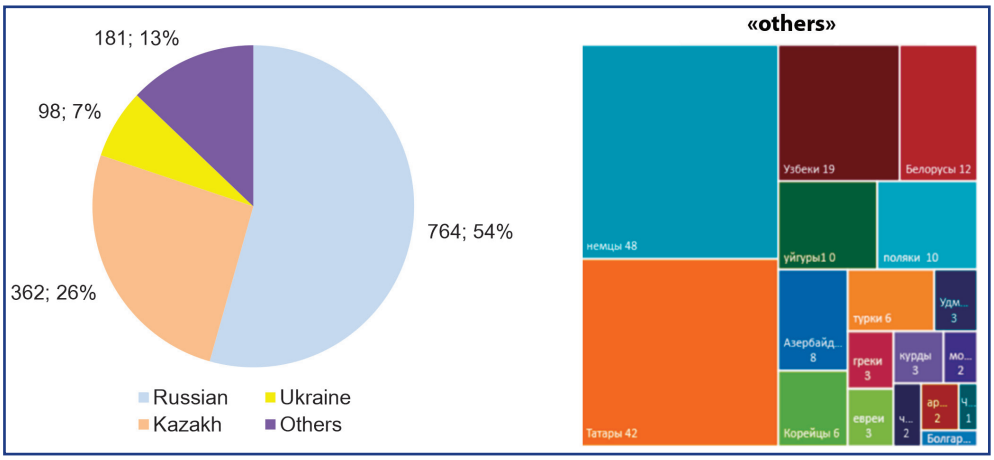

Figure 8 – Incidence of skin malignancies by ethnicity among men in the Republic of Kazakhstan, 2022 (no. of cases; %)

Among women, skin melanoma occurred in 75% of cases among Russian women, while Kazakhs accounted for 13% of cases of skin melanoma among women. Ukrainians suffered from skin melanoma in 7% of the cases. Additionally, 15% of the cases of skin melanoma among women belonged to representatives of other nations (see Figure 9).

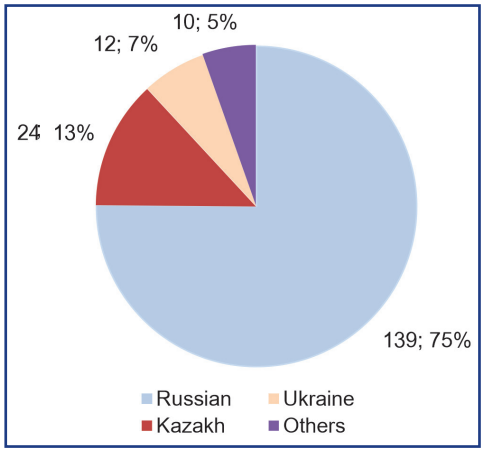

Figure 9 – Incidence of skin melanoma by ethnicity among women in the Republic of Kazakhstan, 2022 (no. of cases; %)

Dynamics of mortality from skin cancer and melanoma in the Republic of Kazakhstan in 2012-2022

In 2022, the Republic of Kazakhstan witnessed a total of 13,037 deaths attributed to malignant neoplasms. Among these, 63 people (0.4%) succumbed to skin cancer, while 92 people (0.7%) died from melanoma. Despite the notable incidence of skin cancer, ranking second after breast cancer, skin cancer mortality occupies the 23rd position in the causes of cancer mortality in both sexes, whereas melanoma mortality ranks 21st. The mortality from skin cancer and melanoma was 0.5 and 0.7 per 100,000 population, respectively (see Figure 10).

Among men in 2022, skin melanoma was more common in Russians, accounting for 53% of cases, followed by Kazakhs at 27%, Ukrainians at 7%, and other nationalities at 13% (see Figure 11).

Figure 12 presents data on the distribution of skin cancer diagnoses in 2022 by localization.

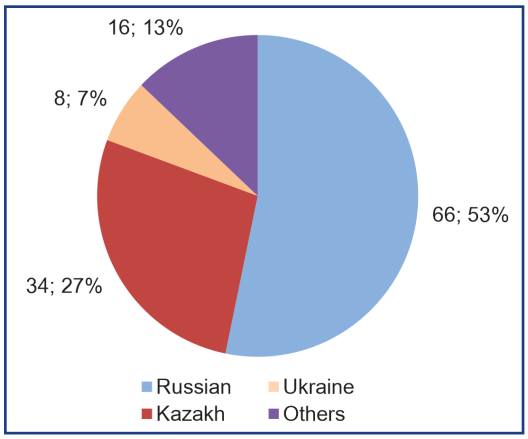

Figure 10 – Incidence of skin melanoma by ethnicity among men in the Republic of Kazakhstan, 2022 (no. of cases; %)

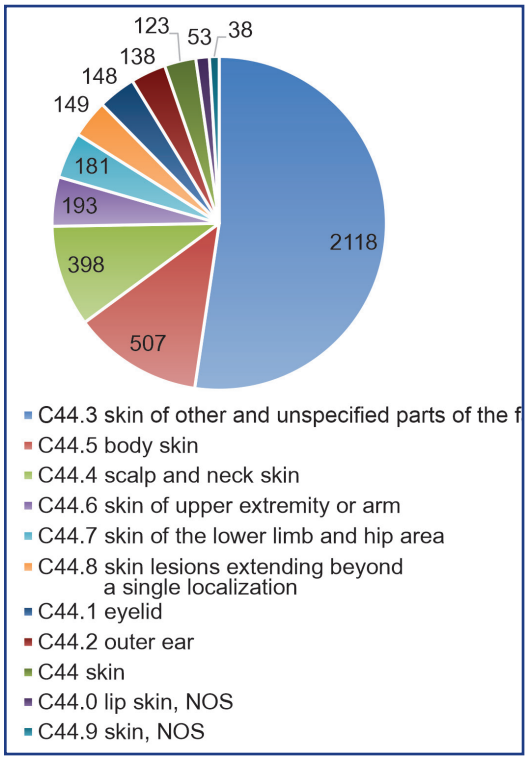

Figure 11 – Incidence of skin cancer by localization according to ICD 10 in the Republic of Kazakhstan, 2022 (no. of cases)

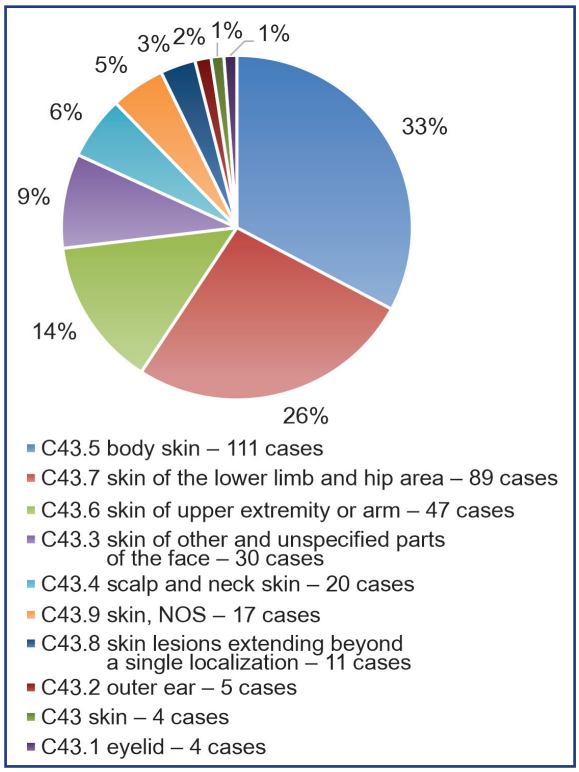

Figure 12 – Incidence rates of skin melanoma by localization in the Republic of Kazakhstan, 2022 (no. of cases)

Figure 13 presents data on the distribution of skin melanoma diagnoses in 2022 by localization.

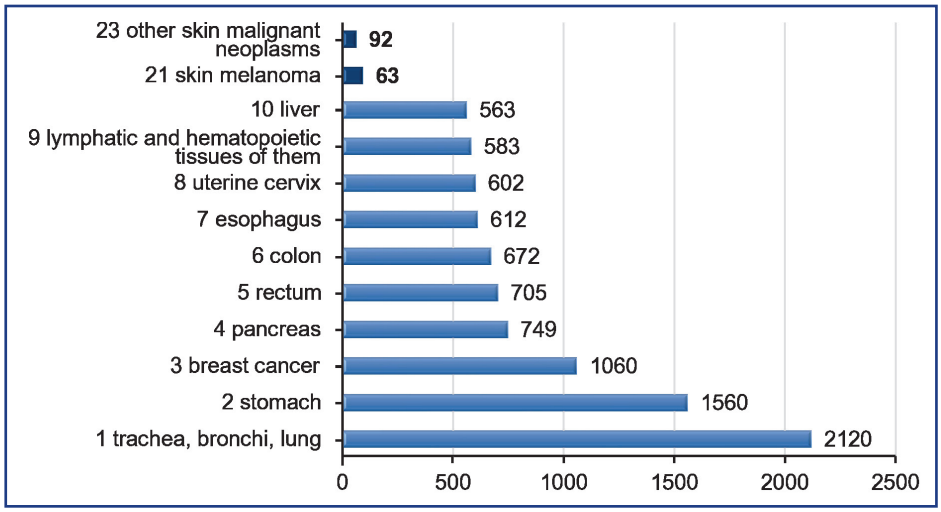

Figure 13 – Mortality from skin cancer and melanoma in both sexes in the Republic of Kazakhstan, 2022 (no. of cases)

Mortality statistics by sex, age, and place of residence

In age groups ranging from 45 to 74 years, mortality from skin cancer is 40-50% higher among men compared to women. However, in older age groups (75+ years), skin cancer mortality was higher in women by 26% and 80%, respectively. In particular, high mortality from skin cancer was registered in 2022 at the ages of 65-84, each accounting for 17% (see Figure 14).

In younger age groups, specifically 20 to 54 years, skin melanoma mortality was 38% higher in men compared to women. However, in older ages (65+ years), the mortality from skin melanoma was higher in women, reaching up to 38%. The mortality from skin melanoma in 2022 was particularly high at the ages of 45 to 54 (14%) and 35 to 44 (10%) years (see Figure 15).

In the Republic of Kazakhstan, 2022, notable skin cancer mortality rates were observed in the Zhambyl and Turkestan regions, each accounting for 10% of the total. Similarly, the Karaganda, Pavlodar, and Akmola regions each recorded significant rates of 8%. Regarding the mortality rates of skin melanoma, the Karaganda region dominated with a rate of 17%, followed by the city of Almaty (14%) and the Kostanay region (8%) (see Figure 16).

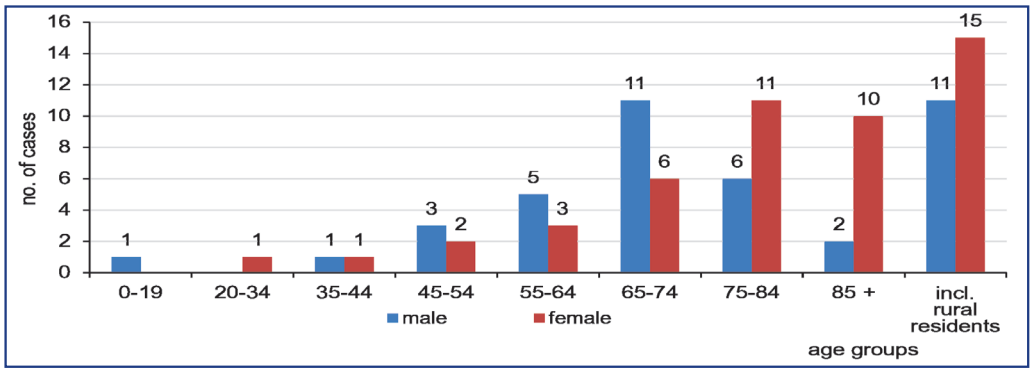

Figure 14 – Mortality from skin cancer in the Republic of Kazakhstan by sex, age, and place of residence, 2022 (no. of cases)

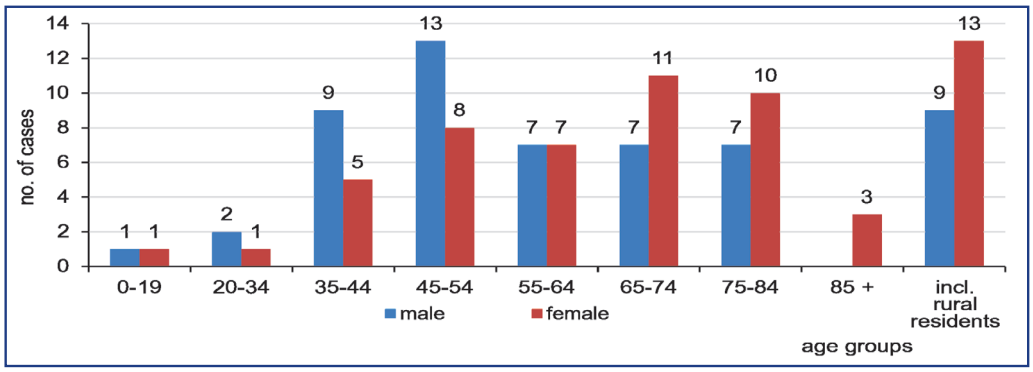

Figure 15 – Mortality from skin melanoma in the Republic of Kazakhstan by sex, age, and place of residence, 2022 (no. of cases)

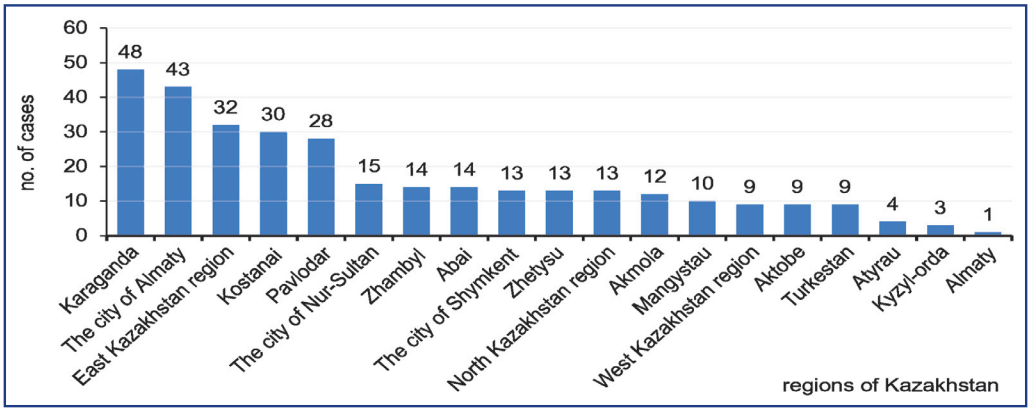

Figure 16 – Mortality from skin melanoma in the Republic of Kazakhstan by sex, age, and place of residence, 2022 (no. of cases)

In the Republic of Kazakhstan in 2022, the high incidence of skin melanoma is observed in the Karaganda region (14%), the city of Almaty (13%) and East Kazakhstan (9%) (see Figure 17).

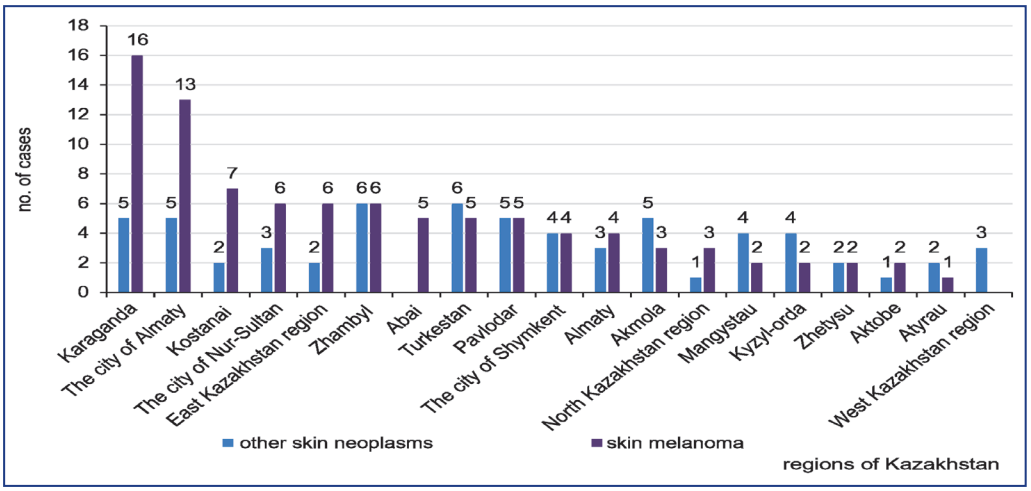

Figure 17 – Mortality from skin melanoma and other skin cancers by region in the Republic of Kazakhstan, 2022 (no. of cases)

Discussion: This article presents the statistics on the incidence and mortality of skin cancer and melanoma from 2012 to 2022 in the Republic of Kazakhstan, and the incidence and mortality of these diseases in 2022 across different demographics, tumor histological types, localizations, and regions in the RK.

In the past 11 years (2012-2022), in conjunction with population growth, there has been a noticeable increase in the incidence of both skin cancer and melanoma. This increase can be attributed to various factors such as environmental changes, changes in lifestyle patterns, including increased exposure to ultraviolet radiation, and advances in disease diagnosis and reporting.

The longitudinal data that span from 2012 to 2022 in RoK underscore a direct correlation between population growth and the increasing incidence of skin cancer and melanoma. The substantial increase in the number of cases underscores the importance of addressing the issue of skin cancer in the country.

In the context of demographics of cancer patients in 2022, skin cancer ranked among the top three diseases, securing the second position, while skin melanoma occupied the 20th position. However, the aggressive nature of melanoma underscores the critical need for vigilance and the development of preventive measures, along with early diagnosis and treatment protocols for both skin cancer and melanoma in the Republic of Kazakhstan.

The incidence of skin cancer and melanoma in 2022 showed higher rates among women across all age groups, with the highest incidence observed at 65 to 74 years.

The Russians have led in the incidence of skin cancer and melanoma among both women and men in Kazakhstan.

Despite the high incidence of skin cancer, its mortality ranks 23rd, and melanoma mortality ranks 21st in the structure of oncosmortality causes for both sexes.

In 2022, skin cancer and melanoma were frequently diagnosed at an early stage, potentially attributed to periodic educational masterclasses on dermatoscopy among dermatologists in the country.

The incidence of skin cancer by region could not be identified as it was not included in the structure of the incidence of malignant neoplasm diseases in the population of Kazakhstan in 2022.

However, in 2022, the highest incidence of skin melanoma was recorded in the Karaganda region, the city of Almaty, and East Kazakhstan.

High skin cancer mortality was registered in the Zhambyl, Turkestan, Karaganda, Pavlodar, and Akmola regions. High mortality rates from skin melanoma were observed in the Karaganda and Kostanai regions, and the city of Almaty.

In the Republic of Kazakhstan, the mortality from skin cancer was high at the age of 65 to 74 years. Notably, the mortality was higher among men in younger age groups (44 to 74 years), and among women – at the age of 75+ years. A similar trend was observed for skin melanoma mortality, with higher rates in younger age groups (35 to 54 years) among men, and higher rates among women of 65 years and older.

These data provide significant insights into the dynamics of incidence of skin cancer and melanoma in Kazakhstan.

Conclusion: This study sheds light on significant aspects of the statistics of incidence and mortality related to skin cancer and melanoma in the Republic of Kazakhstan over the past 11 years. It provides a comprehensive analysis of data for 2022, considering various parameters including age, sex, ethnicity, region, and tumor type.

The conclusions drawn from this review are as follows.

There is a consistent and notable increase in the incidence of both skin cancer and melanoma, underscoring the gravity of this issue within the country.

Skin cancer ranks second among all oncological diseases, while skin melanoma holds the twentieth position.

The incidence of skin cancer and melanoma is particularly high among women of all age groups, with a pronounced prevalence observed between the ages of 65 and 74.

Among the various ethnic groups, individuals of Russian nationality exhibit the highest incidence rates of both skin cancer and melanoma.

Mortality rates from skin cancer tend to be higher in men within younger age groups, while among women, mortality rates are elevated in older ages.

It is crucial to note that in 2022, skin cancer and melanoma were predominantly diagnosed at an early stage, potentially attributed to educational events and masterclasses aimed at dermatologists.

These findings underscore the imperative for continued efforts to prevent, diagnose, and treat skin cancer and melanoma in the Republic of Kazakhstan. It is essential to recognize that many cases of skin cancer, including melanoma, can be prevented through simple precautions such as using sunscreen, avoiding prolonged exposure to ultraviolet rays, and undergoing regular medical checks with dermatologists and oncologists to facilitate early detection of any skin changes. Such proactive measures can significantly contribute to reducing the burden of these diseases and improving outcomes for affected individuals.

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АҢДАТПА

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ 2012-2022 жылдарға АРНАЛҒАН ТЕРІ РАСЫНЫҢ ЖӘНЕ МЕЛАНОМАСЫНЫҢ ЭПИДЕМИОЛОГИЯЛЫҚ ЖАҒДАЙЫ

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Анықтама: *Тері қатерлі ісігі, оның ішінде меланома, денсаулықтың негізгі проблемасы және әлемдегі ең көп таралған қатерлі ісіктердің бірі болып табылады.*

Зерттеудің мақсаты *– жас, жыныс, ұлт, аймақ және ісік түрі сияқты әртүрлі параметрлерді ескере отырып, 2022 жылға арналған деректерді талдауды қоса алғанда, Қазақстан Республикасында 11 жыл ішінде тері обыры мен меланоманың толық эпидемиологиялық бейнесін алу. .*

Әдістері: *Зерттеуде 2012 жылдан 2022 жылға дейін Қазақстан Республикасының ұлттық онкологиялық реестрінде тіркелген пациенттердің деректері пайдаланылды. тері карциномасы және тері меланомасы диагнозымен (ICD-10 коды: C44-C43). Тері карциномасы мен меланома ауруларының саны 100 000 халыққа шаққанда абсолютті және өрескел көрсеткіштер ретінде берілген. Абсолютті стандартталған аурушаңдық пен өлім-жітім көрсеткіштері әлемдік стандартты (Әлемдік) пайдалана отырып есептелді.*

Нәтижелері: *2022 жылдың аяғында Қазақстан Республикасында «Тері обыры» және «Тері меланомасы» диагнозымен барлығы 19714 және 2689 науқас тіркелді. 2012 жылдан 2022 жылға дейін тері қатерлі ісігі 24%-ға, меланома 15%-ға өсті. 2022 жылы тері обыры мен меланома ауруы әйелдер арасында сәйкесінше 24% және 26% жоғары. Тері қатерлі ісігінен өлім-жітім 23 орында, меланомадан 21 орында.Тері обыры мен меланомадан өлім-жітім 100 мың халыққа шаққанда сәйкесінше 0,5 және 0,7 құрады. 2022 жылы тері қатерлі ісігінің ең жоғары деңгейі 65-74 жас тобында (36%), өлім 65-74 және 75-84 жас топтарында (әрқайсысында 17%) байқалды. Тері меланомасының ең жоғары деңгейі 2022 жылы 55-64 жас және 65-74 жас топтарында (24% және 25%), өлім 45-54 жас және 35-44 жас (14% және 10%) топтарында байқалды.).*

Қорытынды: *Тері қатерлі ісігі мен меланомамен сырқаттанушылықтың тұрақты өсуі тіркелуде, бұл елдегі осы проблеманың ауырлығын көрсетеді және Қазақстан Республикасында тері қатерлі ісігі мен меланоманың алдын алу, диагностикалау және емдеу бойынша одан әрі шаралар қабылдау қажеттігін атап көрсетеді. Тері қатерлі ісігінің көптеген жағдайларын қарапайым сақтық шаралары арқылы болдырмауға болатындығын есте ұстаған жөн.*

Түйінді сөздер: *эпидемиология, аурушаңдық, тері ісігі, меланома, өлім.*

АННОТАЦИЯ

ЭПИДЕМИОЛОГИЧЕСКОЕ СОСТОЯНИЕ РАКА КОЖИ И МЕЛАНОМЫ В РЕСПУБЛИКЕ КАЗАХСТАН ЗА 2012-2022 гг.

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Актуальность: *Рак кожи, включая меланому, является одним из распространенных видов рака в мире и представляет собой серьезную проблему здравоохранения.*

Цель исследования *– получение полной эпидемиологической картины по раку и меланоме кожи в Республике Казахстан (РК) за 11 лет, включая анализ данных за 2022 год с учетом различных параметров, таких как возраст, пол, этническая принадлежность, регион и тип опухоли.*

Методы: *Для исследования были использованы данные пациентов, зарегистрированных в национальном канцер-регистре РК с 2012 по 2022 гг. с диагнозом «карцинома кожи и меланома кожи» (код ICD-10: C44-C43). Количество случаев представлено в виде абсолютных и грубых показателей на 100 000 населения. Абсолютные стандартизованные показатели заболеваемости и смертности рассчитаны с применением мирового стандарта (World).*

Результаты: *На конец 2022 г. на учете в РК состояли 19 714 пациентов с раком кожи и 2 689 пациентов с меланомой. С 2012 по 2022 гг. заболеваемость раком кожи увеличилась на 24%, меланомой – на 15%. В 2022 г. заболеваемость раком кожи и меланомой была выше среди женщин – на 24% и 26%, соответственно. Смертность от рака кожи находится на 23-ем месте, от меланомы – на 21-ом. Показатели смертности от рака кожи и меланомы составили 0,5 и 0,7 на 100 тыс. населения, соответственно. Пик заболеваемости раком кожи в 2022 году наблюдался в возрастной группе 65-74 лет (36%), смертности – в возрастных группах 65-74 и 75-84 лет (по 17%). Пик заболеваемости меланомой кожи в 2022 году наблюдался в возрастных группах 55-64 лет и 65-74 лет (24% и 25%), смертности – в возрасте 45-54 лет и 35-44 лет (14% и 10%).*

Заключение: *Регистрируется стабильное увеличение заболеваемости раком кожи и меланомой, что свидетельствует о серьезности этой проблемы в стране и подчеркивает необходимость принятия дальнейших мер по профилактике, диагностике и лечению рака кожи и меланомы в Республике Казахстан. Следует помнить, что многие случаи рака кожи могут быть предотвращены с помощью простых мер предосторожности.*

Ключевые слова: *эпидемиология, заболеваемость, рак кожи, меланома, смертность.*

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