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SUICIDE ACROSS DIFFERENT AGE GROUPS

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Abstract

Introduction: Suicide remains one of the leading causes of death worldwide and has a significant impact on public health. In Kazakhstan, as in other countries, suicide rates vary depending on age group, gender, and socio-economic factors. The analysis of data on mortality from self-harm in the age groups 15-19, 20-24, 25-29, 30-34, 35-39 years and 40 years and older reveals the main trends and risk factors.

Aim: To analyze suicide mortality in Kazakhstan in various age groups, to identify gender differences and time trends.

Materials and methods: The study uses data from the Global Burden of Disease, GBD 2021, provided by the Institute for Health Indicators and Assessment (IHME). The data covers the period 2017-2021 and includes information on mortality by age group and gender. The analysis was carried out using a comparative statistical method, including an assessment of absolute mortality rates, the percentage of mortality and the dynamics of changes over the years.

Results: The analysis showed that the highest mortality rate from suicide is observed in the age groups of 25-29 and 30-34 years, while in younger and older age categories the indicators are lower. Men show significantly higher mortality rates than women, which is consistent with global data. Time trends show fluctuations in mortality associated with socio-economic changes and crises.

Conclusions: The highest suicide mortality rate was recorded among the age groups of 25-29 and 30-34 years. Men in Kazakhstan are significantly more likely to commit suicide than women. Time trends show fluctuations in the death rate, which requires further monitoring. Comprehensive measures are needed to reduce suicide rates, including the availability of psychological care and early intervention programs. The continuation of the study is necessary to analyze trends for 2022-2024.

Keywords: *suicide, mortality, Kazakhstan, age groups, mental health.*

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Резюме

СУИЦИД В РАЗЛИЧНЫХ ВОЗРАСТНЫХ ГРУППАХ

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Введение: Суицид остается одной из ведущих причин смертности во всем мире и оказывает значительное влияние на общественное здоровье. В Казахстане, как и в других странах, уровень самоубийств варьируется в зависимости от возрастной группы, пола и социально-экономических факторов. Анализ данных о смертности от

суицидов в возрастных группах 15–19, 20–24, 25–29, 30–34, 35–39 лет и 40 лет и старше позволяет выявить основные тенденции и факторы риска.

Цель: Анализ смертности от суицидов в Казахстане в различных возрастных группах, определение половых различий и временных тенденций.

Материалы и методы: В исследовании использованы данные Global Burden of Disease, GBD 2021, предоставленные Institute for Health Indicators and Assessment (IHME). Данные охватывают период 2017–2021 годов и включают информацию о смертности по возрастным группам и полу. Анализ проводился с использованием сравнительного статистического метода, включающего оценку абсолютных показателей смертности, процентного уровня летальности и динамики изменений по годам.

Результаты: Анализ показал, что наибольший уровень смертности от суицидов наблюдается в возрастных группах 25–29 и 30–34 года, тогда как в более молодых и старших возрастных категориях показатели ниже. Мужчины демонстрируют значительно более высокие уровни смертности по сравнению с женщинами, что согласуется с мировыми данными. Временные тренды показывают колебания смертности, связанные с социально-экономическими изменениями и кризисами.

Выводы: самый высокий уровень смертности от суицидов зафиксирован среди возрастных групп 25–29 и 30–34 года. Мужчины в Казахстане значительно чаще совершают суицид, чем женщины. Временные тренды показывают колебания уровня смертности, что требует дальнейшего мониторинга. Для снижения уровня суицидов необходимы комплексные меры, включая доступность психологической помощи и программы раннего вмешательства. Необходимо продолжение исследования для анализа тенденций за 2022–2024 годы.

Ключевые слова: *суицид, смертность, Казахстан, возрастные группы, психическое здоровье.*

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Түйіндеме

ӘРТҮРЛІ ЖАС ТОПТАРЫНДАҒЫ СУИЦИД

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Кіріспе: Суицид – бүкіл әлемде өлімнің жетекші себептерінің бірі болып қала береді және қоғамдық денсаулыққа айтарлықтай әсерін тигізеді. Қазақстанда, басқа елдердегі сияқты, суицид деңгейі жас топтарына, жынысына және әлеуметтік-экономикалық факторларға байланысты өзгеріп отырады. 15–19, 20–24, 25–29, 30–34, 35–39 жас және 40 жастан асқан жас топтарындағы суицид көрсеткіштерін талдау арқылы негізгі үрдістер мен қауіп факторларын анықтауға мүмкіндік ашылады.

Мақсаты: Қазақстандағы әртүрлі жас топтарында суицидтен болған өлімді талдау, жыныстық айырмашылықтар мен уақыттық тенденцияларды анықтау.

Материалдар мен әдістер: Зерттеуде Global Burden of Disease, GBD 2021 деректері қолданылды, оларды Institute for Health Indicators and Assessment (IHME) ұсынған. Деректер 2017–2021 жылдар аралығын қамтиды және өлім көрсеткіштері жас топтары мен жынысы бойынша бөлінген. Талдау салыстырмалы статистикалық әдістерді қолдану арқылы жүргізілді, оған өлімнің абсолюттік көрсеткіштерін бағалау, өлім деңгейінің пайыздық мөлшерін анықтау және жылдар бойынша динамикалық өзгерістерді талдау кірді.

Нәтижелер: Талдау нәтижелері көрсеткендей, ең жоғары суицид деңгейі 25–29 жас және 30–34 жас аралығындағы топтарда байқалады, ал жасөспірімдер мен егде жастағы топтарда көрсеткіштер төмен. Ер адамдар әйелдерге қарағанда айтарлықтай жоғары суицид деңгейін көрсетеді, бұл жаһандық деректермен сәйкес келеді. Уақыттық трендтер әлеуметтік-экономикалық өзгерістер мен дағдарыстарға байланысты өлімнің ауытқуын көрсетеді.

Қорытындылар: Суицидтен болған ең жоғары өлім 25–29 және 30–34 жас топтарында тіркелді. Қазақстанда ер адамдардың суицид деңгейі әйелдерге қарағанда айтарлықтай жоғары. Уақыттық трендтер өлім деңгейінің

ауытқуын көрсетеді, бұл тұрақты мониторингті қажет етеді. Суицид деңгейін төмендету үшін кешенді шаралар, соның ішінде психологиялық көмекке қолжетімділікті арттыру және ерте араласу бағдарламалары қажет. 2022–2024 жылдардағы тенденцияларды талдау үшін зерттеуді жалғастыру қажет.

Түйінді сөздер: *суицид, өлім, Қазақстан, жас топтары, психикалық денсаулық.*

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Introduction

Suicide remains one of the leading causes of mortality worldwide, exerting a significant impact on public health. According to the World Health Organization (WHO), more than 700,000 people die by suicide annually, surpassing the number of deaths caused by wars and violence [7]. In recent decades, attention to this issue has increased, as suicide rates remain consistently high in many countries despite preventive measures and mental health support programs [8]. Age groups demonstrate considerable variability in suicide mortality rates. According to WHO research, the most vulnerable age categories include young people aged 15–19, 20–24, 25–29, 30–34, 35–39, and 40 years and older [7]. Each of these groups is affected by specific risk factors influencing suicide mortality [5, 1]. Among those aged 15–19, the primary causes of suicidal behavior include mental disorders, peer pressure, cyberbullying, and family conflicts [7, 20]. Young adults aged 20–24 face challenges related to job searching, unstable relationships, and the transition to independent living [9, 14]. In the 25–29 age group, economic factors, debt obligations, and workplace-related issues become more prominent [10, 22]. For individuals aged 30–34, suicide rates remain high due to a combination of professional burdens, family responsibilities, and chronic stressors [11, 24]. Those in the 35–39 age group experience additional challenges such as health issues, emotional burnout, and career dissatisfaction [12, 16]. Individuals aged 40 and older often encounter midlife crises, depression, family problems, and a perceived loss of life prospects [19, 25]. Suicide rates among the elderly also remain high, particularly among men over 70 years old [18, 21]. Research indicates that elderly individuals who are single, suffer from physical illnesses, chronic pain, social isolation, and the loss of loved ones are at a significantly higher risk of suicide [18, 26]. Limited access to medical and psychological care, as well as the stigma surrounding mental illness, also play a crucial role. Differences in suicide rates are influenced by a complex interplay of factors, including socioeconomic conditions, mental health status, healthcare accessibility, and cultural characteristics [3, 27]. In high-income countries, suicide mortality rates tend to be higher among men, whereas in low- and middle-income countries, women are at greater risk of attempting suicide [7, 28]. Gender differences in suicidal behavior can also be attributed to the methods used in suicide attempts and societal expectations imposed on men and women across different cultures [2, 6].

In European countries, suicide mortality among adolescents aged 15–19 varies but remains a significant concern. For example, in Lithuania, Hungary, and Russia, suicide rates among young people exceed the regional average [28]. The primary contributing factors include mental health disorders, family conflicts, and peer pressure. Young adults aged 20–24 are also at high risk. In Eastern European countries such as Poland and the Czech Republic, suicide rates in this age group are higher than in Western Europe [30]. The most significant risk factors include unemployment, social adaptation difficulties, and depression. The 25–29 age group faces additional challenges such as economic instability, labor market fluctuations, and family responsibilities. In countries such as Finland and Sweden, suicide rates in this age group remain relatively high [29]. Individuals aged 30–34 in European countries, particularly those with high-income levels, experience pressures associated with career advancement, mortgage obligations, and family commitments. In the Baltic States (Latvia, Lithuania, Estonia), mortality rates in this age group are notably high [28]. For those aged 35–39, suicide rates are particularly high in Eastern European countries, where social and economic factors such as unemployment and high alcohol consumption play a significant role. Finally, individuals aged 40 and older remain at risk. In Germany, France, and the United Kingdom, suicide rates in this age group have remained consistently high, particularly among men. Risk factors include midlife crises, depression, and chronic illnesses [28, 30].

East Asia, including countries such as China, Japan, South Korea, North Korea, Mongolia, and Taiwan, exhibits diverse trends in suicide mortality. According to WHO data from 2019, the suicide rate in the Southeast Asia region was 10.2 per 100,000 people, exceeding the global average of 9.0 per 100,000 [31]. The age structure of suicides in these countries varies, but certain age groups show increased vulnerability. In particular, adolescents and young adults (15–29 years old) are at significant risk. Contributing factors include academic pressure, unemployment, social isolation, and mental disorders [32]. For example, South Korea has a high youth suicide rate, often linked to intense educational stress and a highly competitive environment [33]. Among those aged 30–39, suicide rates remain high, particularly among men. Causes may include workplace stress, family obligations, and economic difficulties [34]. In Japan, middle-aged men frequently experience workplace pressures and societal expectations, which can lead to suicidal ideation and actions [35]. After the age of 40, suicide trends vary. Some countries observe a decline in suicide rates, whereas others, particularly among the elderly, report stable or increasing suicide mortality. In South Korea, for instance, older individuals frequently face poverty and

social isolation, contributing to high suicide rates in this demographic [36]. Gender differences also play a crucial role. In many countries, men die by suicide more often than women. However, in China, past statistics showed similar suicide rates among men and women, particularly in rural areas. In recent years, the gender gap has widened, with an increase in male suicides in urban areas [36]. Risk factors for suicidal behavior in the region vary and include mental disorders such as depression and anxiety, socioeconomic difficulties, cultural expectations, and the stigma surrounding mental illness. For example, in Japan and South Korea, strong societal pressure to conform to social norms can discourage individuals from seeking help for mental health issues [33]. Suicide prevention requires a comprehensive approach that considers the cultural, social, and economic characteristics of each country. Improving access to mental health services, educational programs to raise awareness of mental disorders, social support for vulnerable groups, and economic assistance can all contribute to reducing suicide rates [32]. The present study aims to analyze suicide mortality rates across different age groups in Kazakhstan, identifying key trends. The research utilizes data from international organizations, scientific studies, and national reports, providing an objective and comprehensive perspective on the issue.

Materials and methods

Data Sources and Study Scope

The analysis of suicide mortality prevalence is based on data from the Global Burden of Disease (GBD) 2021 study, provided by the Institute for Health Metrics and Evaluation (IHME) [4, 7]. The dataset includes suicide mortality indicators in Kazakhstan, disaggregated by age groups, gender, and observation years from 2017 to 2021 [6, 11].

Age Groups and Study Population

The study encompasses the following age categories: 15–19 years; 20–24 years; 25–29 years; 30–34 years; 35–39 years; 40 years and older [7, 9]. Data are presented separately for both genders (male and female), as well as in an aggregated format (combined for both sexes) [6, 13].

Methodology of Analysis

The analysis includes the following key components: assessment of absolute mortality counts, expressed in numerical values [4, 10]; determination of percentage mortality rates for each age group [5, 15]; calculation of confidence intervals to provide more precise estimations of data variability [12, 19]; trend analysis across years, based on available time series data [13, 23].

Statistical Analysis

To evaluate the dynamics of suicide mortality across various age groups, a comparative analysis was conducted, including: comparison of mortality rates among different age groups [14, 22]; identification of gender-specific predisposition to suicide [15, 17]; detection of temporal trends (increase or decrease in suicide mortality over the study period) [16, 18].

Results

Comparison of Suicide Mortality Across Age Groups

The analysis of suicide mortality in Kazakhstan revealed significant variations among different age groups. The highest mortality rates were recorded in the 25–29 and 30–34 age groups, whereas younger age categories (15–19 years) exhibited relatively lower suicide mortality levels. As age progresses, mortality rates decline again after 40 years. These disparities may be attributed to social, economic, and psychological factors affecting stress levels and access to support systems at different life stages (Figure 1).

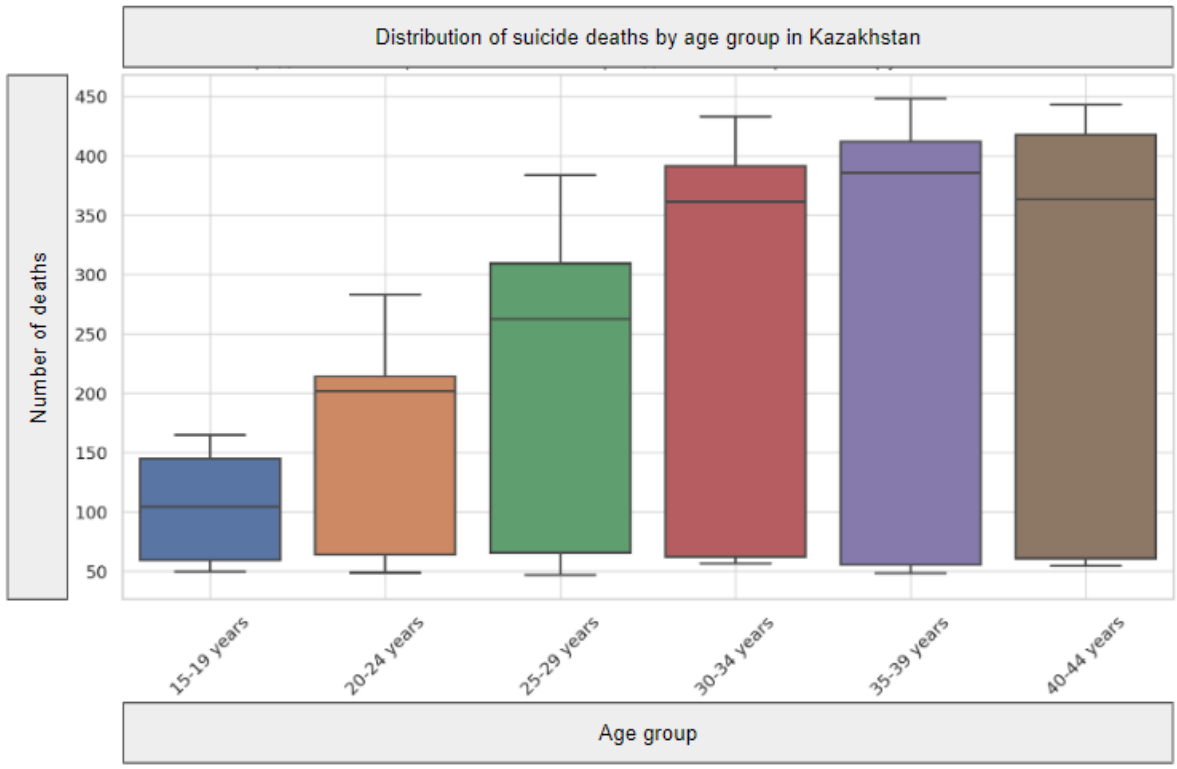

Figure 1. Comparison of mortality rates between age groups.

Gender Differences in Suicide Mortality

A comparative gender analysis indicated that men exhibit significantly higher suicide mortality rates than women. This trend aligns with global data, which suggest that men are more likely to die by suicide due to various factors, including social expectations, access to lethal means, and a lower propensity to seek psychological assistance (Figure 2).

Figure 2. Determining the gender with the highest predisposition to suicide.

Temporal Trends in Suicide Mortality

An analysis of multi-year data revealed fluctuations in suicide mortality rates over time. Certain age groups experienced increases in suicide mortality during specific periods, potentially linked to economic crises, changes in social policies, or other external influences. The most stable mortality trends were observed among individuals aged 15–19 years and 40 years and older, whereas age groups between 25 and 34 years exhibited more pronounced fluctuations (Figure 3).

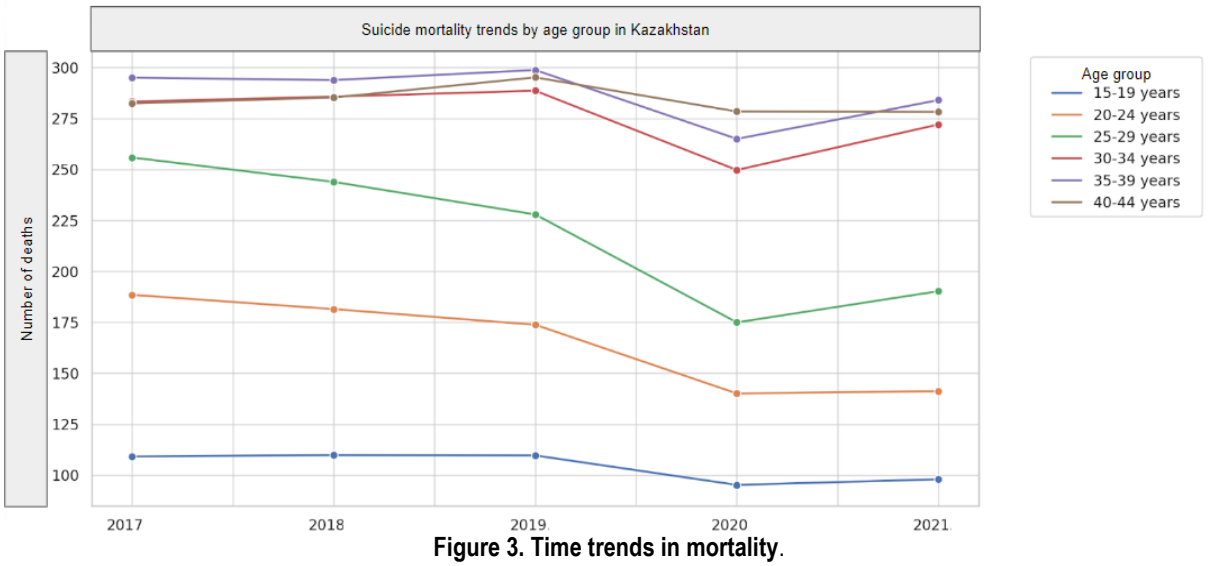

Figure 3. Time trends in mortality.

Discussion

The study results confirm significant variations in suicide mortality rates depending on age, gender, and temporal trends [2, 10]. High suicide mortality among young and middle-aged men necessitates a more detailed examination of risk factors, including unemployment rates, access to psychiatric care, alcohol consumption levels, and cultural attitudes toward mental health issues [5, 12]. A key aspect of this research is the comparative analysis with other countries in the region [3, 14]. For instance, Kazakhstan exhibits trends similar to some Central Asian countries, yet differs from East Asia, where female suicide mortality rates tend to be higher than in Kazakhstan [7, 20]. This discrepancy may reflect differences in social support

systems and cultural norms [9, 26]. The analysis of temporal trends highlights fluctuations in suicide mortality across various age groups, emphasizing the need for continuous monitoring of socioeconomic factors and the development of effective prevention strategies [8, 21]. Mental health policies should prioritize early identification of high-risk groups and improving access to specialized mental health services [6, 28].

Limitations of the study

This study is based on data from 2017 to 2021, as detailed age-group-specific data for 2022, 2023, and 2024 were not yet available [7, 11]. This limitation restricts the ability to analyze the most recent suicide mortality trends, highlighting the need for further research as new data become available [12, 27].

Conclusions

1. The highest suicide mortality rates are observed in the 25–29 and 30–34 age groups, highlighting the need for targeted support measures for this population.
2. Men are significantly more likely to die by suicide than women, aligning with global trends.
3. The analysis of temporal trends revealed fluctuations in suicide mortality, emphasizing the necessity for regular monitoring and adaptive prevention strategies.
4. Comprehensive mental health interventions are required, including early intervention programs, improved access to psychological support, and efforts to address social and economic risk factors.
5. Further research is needed to achieve a more precise understanding of the socioeconomic factors influencing suicide rates, as well as comparative studies with other countries.

Authors' Contribution

All authors contributed equally to the writing of this article.

Conflict of Interest

The authors declare no conflicts of interest.

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