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ANALYSIS OF MORTALITY AND MORBIDITY STRUCTURE OF THE POPULATION AGED 60+ IN THE SOUTHERN REGION OF KAZAKHSTAN AS A BASIS FOR ASSESSING THE NEEDS FOR MEDICAL AND SOCIAL CARE



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Abstract. To analyse the structure of mortality and morbidity among the population aged 60 years and older in the city of Shymkent and Turkestan Region over the period 2015-2024, and to identify priority directions for organising medical and social care for older adults.

A retrospective analysis of official statistics (2015-2024) was conducted, covering mortality data (Form No.32) by sex, age group, and ICD-10 cause of death; registered morbidity data from Form No.12; and demographic estimates for the population aged 60+. Rates were calculated per 100,000 population of the corresponding age-sex group. Statistical processing employed descriptive methods and trend analysis.

Cardiovascular diseases (I00-I99) were the leading cause of death among persons aged 60+, accounting for 45–52% of total mortality; neoplasms (C00-D48) ranked second (12-18%), followed by respiratory diseases (J00-J99) at 8-15%. Men died predominantly at ages 65-74 (ischaemic heart



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disease peak), while women died predominantly at ages 80+ (cerebrovascular diseases and dementia). Respiratory mortality rose by 40-60% in 2020-2021, correlating with COVID-19. Diabetes mellitus (E10-E14) prevalence was 18-24 per 1,000 among persons aged 60+, trending upward in the 75+ subgroups. Dispenserisation coverage reached 78.4% for cardiovascular diseases but only 52.3% for diabetes.

The findings confirm a high burden of chronic non-communicable diseases in the Southern Region. Priority directions for developing medical and social care for older adults include: 1) strengthening primary geriatric care with emphasis on hypertension control and secondary stroke prevention; 2) integrating palliative and long-term care for persons aged 80+; 3) optimising care pathways for diabetes management; 4) expanding telemedicine services to improve access in rural areas of Turkestan Region.

Keywords. Mortality; Morbidity; Aged; Geriatrics; Long-Term Care; Cardiovascular Diseases; Diabetes Mellitus; Kazakhstan; Public Health; International Classification of Diseases.

QOZOG'ISTONING JANUBIY HUDUDIDA 60 YOSH VA UNDAN KATTA AHOLI O'RTASIDA O'LIM VA KASALLANISH TUZILMASINI TIBBIY-IJTIMOYI YORDAMGA BO'LGAN EHTIYOJNI BAHOLASH ASOSI SIFATIDA TAHLIL QILISH

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Annotatsiya. Shymkent shahri va Turkiston viloyatida 2015-2024 yillar davomida 60 va undan yuqori yoshdagi aholi o'limi va kasallanishi tuzilmasini tahlil qilish hamda keksa yoshdagi aholini tibbiy-ijtimoiy yordam bilan ta'minlashning ustuvor yo'nalishlarini asoslash.

2015-2024 yillar rasmiy statistikasi retrospektiv tahlil qilindi: 32-shakl bo'yicha o'lim ma'lumotlari (jins, yosh guruhlari, IXK-10 sabablari); 12-shakl bo'yicha kasallanish ma'lumotlari; 60+ yoshdagi aholi demografik ko'rsatkichlari. Ko'rsatkichlar 100 000 aholiga hisoblab chiqildi. Tavsifiy usullar va trend-tahlil qo'llanildi.

Qon aylanish tizimi kasalliklari (IXK-10: I00-I99) umumiy o'lim tuzilmasining 45-52% ini tashkil etadi; yangi o'simtalar (C00-D48) – 12-18%, nafas olish organlari kasalliklari (J00–J99) – 8-15%. Erkaklar asosan 65-74 yoshda (YuIK cho'qqisi), ayollar esa 80+ yoshda (serebrovaskular kasalliklar va dementsiya) vafot etadi. 2020-2021 yillarda nafas olish kasalliklaridan o'lim 40-60% ga oshdi (COVID-19 pandemiyasi). Qandli diabet tarqalganligi 1 000 aholiga 18-24 holat, 75+ kichik guruhlarda o'sish tendentsiyasi kuzatiladi. Dispanserizatsiya qamrovi: qon aylanish kasalliklari bo'yicha – 78,4%, qandli diabet bo'yicha – atigi 52,3%.

Olingan ma'lumotlar surunkali yuqumli bo'lmagan kasalliklarning Janubiy mintaqa sog'liqni saqlash tizimiga yuqori yukini tasdiqlaydilar. Tibbiy-ijtimoiy yordamni rivojlantirishning ustuvor yo'nalishlari: 1) arterial gipertenziya nazorati va insultning ikkilamchi profilaktikasiga urg'u bergan holda birlamchi geriatrik yordamni mustahkamlash; 2) 80+ yoshdagi shaxslar uchun palliativ yordam va uzoq muddatli parvarishni integratsiya qilish; 3) qandli diabet bilan kasallangan bemorlarning marshrutizatsiyasini optimallashtirish; 4) Turkiston viloyati qishloq hududlarida yordamga kirishni yaxshilash uchun telemeditsina xizmatlarini rivojlantirish.

KALIT SO'ZLAR



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O'lim ko'rsatkichi; kasallanish; keksa yoshdagi shaxslar; geriatriya; uzoq muddatli parvarish; qon aylanish tizimi kasalliklari; qandli diabet; Qozog'iston; jamoat salomatligi; kasalliklarning xalqaro tasnifi.

АНАЛИЗ СТРУКТУРЫ СМЕРТНОСТИ И ЗАБОЛЕВАЕМОСТИ НАСЕЛЕНИЯ В ВОЗРАСТЕ 60 ЛЕТ И СТАРШЕ В ЮЖНОМ РЕГИОНЕ КАЗАХСТАНА КАК ОСНОВА ДЛЯ ОЦЕНКИ ПОТРЕБНОСТЕЙ В МЕДИКО-СОЦИАЛЬНОЙ ПОМОЩИ

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Аннотация. Проанализировать структуру смертности и заболеваемости населения в возрасте 60 лет и старше в городе Шымкент и Туркестанской области за период 2015-2024 гг. для обоснования приоритетных направлений организации медико-социальной помощи пожилым людям.

Ретроспективный анализ официальной статистики за 2015-2024 гг.: данные о смертности (форма №32) по полу, возрастным группам и причинам смерти по МКБ-10; данные формы №12 о заболеваемости; демографические показатели населения 60+. Расчёт показателей – на 100 000 населения соответствующей возрастно-половой группы. Применены описательные методы и тренд-анализ.

Ведущей причиной смерти лиц 60+ являются болезни системы кровообращения (I00-I99) – 45-52% от общей структуры смертности; второе место занимают новообразования (C00-D48) – 12-18%, третье – болезни органов дыхания (J00-J99) – 8-15%. Выявлен гендерный дисбаланс: мужчины умирают преимущественно в 65-74 года (пик от ИБС), женщины – в 80+ лет (цереброваскулярные болезни и деменция). В 2020-2021 гг. смертность от болезней органов дыхания возросла на 40–60% вследствие пандемии COVID-19. Распространённость сахарного диабета (E10-E14) среди лиц 60+ – 18–24 случая на 1 000 населения, с тенденцией к росту в подгруппах 75+. Охват диспансерным наблюдением по болезням кровообращения составляет 78,4%, по сахарному диабету – лишь 52,3%.

Структура смертности населения 60+ в Южном регионе Казахстана определяется доминированием хронических неинфекционных заболеваний. Приоритетные направления развития медико-социальной помощи: 1) укрепление первичной гериатрической помощи с акцентом на контроль артериальной гипертензии и вторичную профилактику инсульта; 2) интеграция паллиативной помощи и долгосрочного ухода для лиц 80+; 3) оптимизация маршрутизации пациентов с сахарным диабетом; 4) развитие телемедицины для повышения доступности помощи в сельских районах Туркестанской области.

Ключевые слова. Смертность; заболеваемость; пожилые люди; гериатрия; долгосрочный уход; болезни системы кровообращения; сахарный диабет; Казахстан; общественное здравоохранение; МКБ-10.

Introduction

Demographic ageing is reshaping the pattern of healthcare needs worldwide, confronting health systems with fundamentally new challenges. For Kazakhstan this trend is particularly significant: according to the Agency for Strategic Planning and Statistics of the Republic of



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Kazakhstan (RK), the proportion of persons aged 60 years and older in the Southern Region rose from 11.2% to 14.8% between 2015 and 2024, consistently exceeding the national average [1]. Two interrelated processes underlie this dynamic: a sustained increase in life expectancy at birth (reaching 73.2 years in 2024) and a long-term decline in fertility, whose combined effect is placing mounting pressure on the medical and social care infrastructure [2].

The Southern Region of Kazakhstan – Turkestan Region and the Shymkent city – is characterised by several structural features that materially affect the organisation of care for older adults: a substantial rural population share (up to 65%), active internal migration, and a pronounced territorial disparity in access to specialist geriatric services between urban and rural areas [3]. These factors collectively make a rigorous analysis of mortality and morbidity patterns among older persons an indispensable tool for evidence-based resource planning and for identifying priority directions of regional health policy.

Study objective: Because of an analysis of trends and structures in mortality and morbidity among the population aged 60+ in the Southern Region of Kazakhstan for 2015-2024, to identify priority “stress points” and to formulate recommendations for optimising medical and social care for older adults.

Methods

The study was conducted as a retrospective analysis of secondary data. The information sources were:

- **Mortality data:** Annual reports “Distribution of deaths by sex, age group and cause of death” for the city of Shymkent and Turkestan Region for 2015-2024 (source: Statistics Committee of the Ministry of National Economy of the RK, Form No.32). Data were aggregated by age group: 60-64, 65-69, 70-74, 75-79, 80-84, 85+ years, with detail by ICD-10 classes and sub-categories.
- **Morbidity data:** Form No.12 “Data on diseases registered among patients residing in the service area of a medical organisation” for 2018-2025 for the adult population aged 60+.
- **Demographic data:** Estimates of the population aged 60+ by single-year age group and sex (2015-2026), together with indicators of life expectancy at birth.
- **Healthcare resource data:** Registers of public and private medical organisations of Turkestan Region specifying the profile of activity and geographic location.

Analytical methods

- ✓ Calculation of overall and age-specific mortality rates per 100,000 population of the corresponding group;
- ✓ Determination of the cause-of-death structure (proportional contribution of each ICD-10 class);
- ✓ Comparative analysis of sex differences and territorial variation (Shymkent vs. Turkestan Region);
- ✓ Trend analysis of indicator dynamics over the 10-year period, with separate examination of the pandemic period (2020-2021);



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- ✓ Assessment of the correspondence between morbidity and mortality structures to identify gaps in care delivery.

Statistical processing was performed using MS Excel and R (version 4.3.0). Significance of differences was assessed by the χ^2 test at a significance level of $p < 0.05$.

Results

Demographic characteristics of the study population

The population aged 60+ in the city of Shymkent increased by 38.4% over the period 2015-2024 (from 89,200 to 123,500 persons), with the share of persons aged 80+ rising from 12.1% to 18.7%. In Turkestan Region the corresponding growth was 42.1%. Life expectancy at birth in the region increased from 70.8 to 73.2 years over the study period, with a persistent sex gap (women: 76.4 years; men: 69.8 years in 2024).

Mortality structure of the population aged 60+

Over the period 2015-2024, 28,417 deaths were registered among persons aged 60+ in the city of Shymkent and 61,284 in Turkestan Region. The dynamics of total deaths followed a wave-like pattern, with peaks in 2020 and 2021 (an increase of 22-35% relative to the 2019 baseline), corresponding to the COVID-19 epidemiological situation.

Analysis of the cause-of-death structure revealed the stable dominance of three ICD-10 classes (Table 1).

Table 1. Cause-of-death structure among the population aged 60+ in the Southern Region of Kazakhstan, 2015-2024 (mean values, %)

ICD-10 Class	Cause	Shymkent	Turkestan Region
I00-I99	Cardiovascular diseases	48.3	51.7
C00-D48	Neoplasms	14.2	12.8
J00-J99	Respiratory diseases	11.5	9.4
K00-K99	Digestive diseases	6.8	7.1
G00-G99	Nervous system diseases	5.1	6.3
Other	—	14.1	12.7
Total	—	100.0	100.0

Within cardiovascular diseases (I00-I99), the dominant sub-categories are:

- Cerebrovascular diseases (I60-I69) – 38-42% of all cardiovascular deaths;
- Ischaemic heart disease (IHD; I20-I25) – 28-33%;
- Hypertensive diseases (I10-I15) – 8-12%.

In men, the share of deaths from cardiovascular diseases is lower (44.1%), but the contributions of external causes (S00-T98) – 4.8% vs. 1.2% in women – and digestive-system



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neoplasms (C15-C26) are higher. In women, deaths from cerebrovascular diseases at ages 80+ predominate, reaching a 48% share within that subgroup.

The peak of IHD mortality in men occurs at ages 65-74, whereas in women it shifts to ages 75-84. Cancer mortality follows a bimodal distribution, with maxima in the 65-69 and 75-79 age groups.

Pandemic-period dynamics (2020-2021)

In 2020-2021, a statistically significant increase in the share of respiratory deaths (J00-J99) was recorded: from 9.8% in 2019 to 16.4% in 2020 ($p < 0.01$). Within this class, the principal contributor was influenza and pneumonia (J10-J18), whose proportional share grew 3.2-fold. A concurrent temporary decline in the share of cancer deaths was observed, possibly reflecting diagnostic delays during the period of restrictive measures.

Morbidity analysis (Form No.12 data)

According to Form No.12 data for 2018-2025, among persons aged 60+ in the city of Shymkent the most prevalent registered conditions are:

- Cardiovascular diseases: 342.5 ± 18.3 cases per 1,000 population;
- Diabetes mellitus (E10-E14): 21.4 ± 2.1 per 1,000;
- Chronic lower respiratory tract diseases (J40-J47): 18.7 ± 1.9 per 1,000.

The dispensary follow-up rate for cardiovascular diseases is 78.4%, indicating relatively high secondary-prevention coverage. For diabetes mellitus, however, this figure does not exceed 52.3%, pointing to potential gaps in the management of this patient cohort.

Territorial differences: Shymkent vs. Turkestan Region

Comparative analysis revealed that in the rural districts of Turkestan Region:

- The proportion of deaths from ill-defined causes (R00-R99) is higher: 4.2% vs. 1.8% in Shymkent;
- The share of verified oncological diagnoses is lower (possible under-investigation effect);
- Later presentation for medical care is observed, as evidenced by a higher proportion of deaths at ages 85+ from complications of chronic diseases.

DISCUSSION

The mortality profile established for the population aged 60+ in the Southern Region of Kazakhstan broadly conforms to global patterns: according to the GBD 2021 Causes of Death Collaborators, cardiovascular diseases consistently lead mortality among older adults in both high-income and transitional-economy countries [4]. However, the regional features identified – the specific distribution of cerebrovascular and ischaemic components, a pronounced sex-age imbalance, and territorial heterogeneity in diagnostic coverage – constitute an independent policy agenda that does not yield to generic solutions [5].

Interpretation of key findings



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- *High share of cerebrovascular diseases* among women aged 80+ points to the need to develop rehabilitation and palliative services oriented towards post-stroke patients with cognitive impairment.
- *Sex disparity in age at death from IHD* calls for differentiated screening programmes: for men, the emphasis should be on the 55-65-year age window; for women, on the post-menopausal period.
- *Rise in respiratory mortality in 2020-2021* underscores the vulnerability of the older population to respiratory infections and justifies prioritising influenza and pneumococcal vaccination.

SWOT Analysis of the Medical and Social Care System for older Adults in the Southern Region

Strengths – Complete 10-year statistical dataset (2015-2024) – ICD-10 detail by sex and age group – Integration of mortality and morbidity data in one analytical frame – Registry of medical organisations for access assessment	Weaknesses – No functional status or comorbidity data in reporting forms – Limited information on quality of life and long-term care needs – Under-specification of cause of death in rural areas (high R00-R99 share) – Gap between registered morbidity and actual dispensary follow-up coverage
Opportunities – Telemedicine development to improve rural geriatric access – Digital medication-reminder and chronic-disease monitoring tools	Threats – Accelerating population ageing with a deficit of long-term care infrastructure – Rising primary-care burden from increasing multimorbidity – Risk of under-recording mental disorders and dementia in official statistics – Economic constraints on funding preventive programmes

Limitations

The present study has several methodological limitations that must be borne in mind when interpreting the results. First, the use of aggregate official statistics precludes accounting for individual socio-economic determinants of health (education level, household income, degree of social isolation), which substantially narrows the evidence base for recommendations targeting the most vulnerable groups. Second, documented changes in cause-of-death coding practice in 2020-2021 – in Kazakhstan as in most countries worldwide – necessitate a cautious approach to comparative analysis of pandemic-era trends. Third, the absence of comorbidity and functional-



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status data in the reporting forms used limits the capacity to assess the true burden of multimorbidity in the 60+ cohort.

CONCLUSION

The mortality profile of adults aged 60 and older in the Southern Region of Kazakhstan is predominantly shaped by chronic non-communicable diseases, with cardiovascular conditions accounting for 48-52% of all deaths. This epidemiological pattern underscores the critical need to strengthen secondary prevention and systematically manage modifiable risk factors. Distinct sex- and age-related mortality trajectories further necessitate a differentiated approach: for men, priority should be given to the early detection of ischemic heart disease and targeted interventions to reduce deaths from external causes, whereas women would benefit most from focused cerebrovascular risk management and programs designed to preserve functional independence beyond age 80. The recent COVID-19 pandemic also left a measurable imprint on this landscape by temporarily elevating respiratory-related mortality, reinforcing the need to maintain older adults in priority vaccination cohorts and bolster primary-care preparedness for future respiratory threats. Moreover, the persistent gap between registered morbidity and dispensary follow-up rates – particularly for diabetes mellitus – reveals systemic inefficiencies in long-term disease management. Considering these findings, targeted policy interventions are essential to translate epidemiological evidence into practice. Health authorities should establish a regional multimorbidity registry for individuals aged 60 and older to enable seamless care coordination across primary, inpatient, and social services. Simultaneously, expanding the network of geriatric offices within primary care, particularly in rural districts of the Turkestan Region, coupled with mandatory physician training in comprehensive geriatric assessment, will strengthen frontline clinical capacity. To bridge the follow-up gap and optimize patient pathways, a pilot telemedicine model should be introduced for older adults with chronic conditions, incorporating medication adherence support and remote monitoring of key clinical parameters. Finally, integrating functional-status and quality-of-life indicators into standard healthcare reporting will allow for more accurate, real-world assessment of medical and social care needs, ultimately fostering a more responsive, patient-centered system for the region's aging population.

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