

Original Article

Assessing the Need for Geriatric Care in Uzbekistan Before the Demographic Wave

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Abstract:

Goals. To assess demographic trends in Uzbekistan (2010–2024) and evaluate the need for geriatric care with a moderate increase in the proportion of persons 65 +, comparing them with health resources.

Materials and Methods. Retrospective analysis of official data from the Statistics Agency of the Republic of Uzbekistan (2010–2024): population, share of 65 +, birth rate, mortality, life expectancy, health care resources (beds, doctors, outpatient network). The forecast for 2025 was performed by linear extrapolation (total population: $y = 679.65x + 27.974$, $R^2 = 0.99$; age 65+: $y = 74.05x + 1.140$, $R^2 = 0.98$; 95% CI for 65+ = 2.18–2.28 million). The standard for the need for geriatricians was estimated according to the Russian benchmark of 1 geriatrician/20,000 elderly.

Results. The population increased from 28.00 million (2010) to 37.80 million (2024); forecast for 2025 - 38.17 million. The share of 65 + increased from 3.9% (2013) to 5.6% (2024); forecast for 2025 - 5.8% (~ 2.23 million). Able-bodied - 56.2% (2024). In 2023, the provision was 47.4 beds and 28.7 doctors per 10,000 population; outpatient organizations increased to 8011. Circulatory system diseases - 57.6% of deaths (2024). According to the standard, about 112 geriatricians are required with an estimated current availability of 0–100 specialists.

Conclusions. Against the background of the low proportion of 65 + and expanding general health resources, the creation of a separate branched geriatric service is not a priority. Rationally - integration of geriatric consultants into large centers (Tashkent, Samarkand, Fergana, etc.) for the management of multimorbidity and geriatric syndromes, while strengthening the prevention of chronic non-communicable diseases in the predominant young population. Monitoring of age-specific mortality/morbidity rates and validated indicators of the functional status of the elderly is needed.

Keywords: Population Aging; Geriatric Care; Demographic Transition; Uzbekistan; Chronic Diseases

Introduction

Population ageing is a global demographic process with significant impact on health systems, social policies and economic structures [1]. In developed countries, such as Japan and Germany, the proportion of people over 65 exceeds 20,0%, which led to the development of specialized geriatric care [2]. In developing regions, including Central Asia, this process is slower, maintaining a predominance of the young population. Uzbekistan shows the following dynamics: the population grew from 28.0 million in 2010 to 36.8 million in 2023 and 37.80 million in 2024, with a forecast of 38.17 million in 2025, while the share of people over 65 increased from 3.9% (1.19 million) in 2013 to 5.6% (2.07 million) in 2024 and 5.8% (2.23 million) in 2025 [3,4]. Despite this, the able-bodied population (16–59 years old) was 56.2% (20.75 million) in 2024, emphasizing the young demographic structure [5].

Uzbekistan's health care system has historically focused on reducing infectious morbidity and improving maternal-child health, which has led to a reduction

in infant mortality from 11.0 per 1,000 live births in 2010 to 9.0 in 2024 and an increase in life expectancy from 73.0 to 75.1 years over the same period [6, 7]. However, the increase in the number of the elderly is accompanied by an increase in chronic diseases: in 2024, 57.6% of deaths are caused by the circulatory system diseases of [8]. This raises the question of the need to adapt health care to age-related changes. International experience varies: Japan (28.4% of the elderly) and Russia (15.5%) develop geriatrics, while countries with young demographics, such as India (6.8%), cost common resources (World Bank, 2023) [9].

The Aim

Of the study is to analyze demographic trends in Uzbekistan for 2010–2024, assess health care resources and determine the need for geriatric care in a moderate aging setting. The hypothesis assumes that the current infrastructure is sufficient to serve the elderly without creating a specialized service.

Materials and Methods

To assess demographic trends and the need for geriatric care in Uzbekistan, a retrospective analysis of data for 2010–2024 with a forecast for 2025 was carried out. The main source of information was the official statistical materials of the Statistics Agency of the Republic of Uzbekistan (2025), including data on the population (total, able-bodied, 65 +), fertility, mortality, life expectancy, infant mortality and health resources.

Data sources

Data for 2024 were the most recent observed indicators officially published by the Statistics Agency; when 2024 data were unavailable, 2023 values were carried over as baseline estimates. Demographic indicators: total population, number of people over 65 years old, able-bodied population, birth rate, mortality, life expectancy and infant mortality are obtained from the annual reports of the Statistics Agency of the Republic of Uzbekistan (2025).

Health resources: the number of hospital beds, doctors and clinics are extracted from the relevant collections of the Statistics Agency (2025). Forecast 2025: Population and persons 65 + are based on 2010–2024 data and supported by international estimates (United Nations, 2022). All datasets were cross-checked against multiple official statistical releases (2010–2024) to ensure internal consistency. Values were verified with the

United Nations and World Bank demographic datasets where applicable.

Methods of analysis

The forecast of the population and persons over 65 years old for 2025 is calculated by linear extrapolation. For the total population, the regression equation: $y = 679.65x + 27.974$ ($R^2 = 0.99$), for persons 65 +: $y = 74.05x + 1.140$ ($R^2 = 0.98$), where y is the number (thousand), x are years since 2010. The confidence interval (95% CI: 2.18–2.28 million for 65 +) was determined taking into account the standard deviation of the increase (± 50 thousand).

The need for geriatricians was initially estimated according to the Russian Federation's reference standard (1 geriatrician per 20,000 older adults) [10,11], used here only for orientation in the absence of Uzbekistan-specific norms. However, this ratio may not fully reflect the Uzbek epidemiological context, where primary care and family medicine play dominant roles. An alternative approach could involve integrating geriatric competencies into family doctors' training, developing nurse-led comprehensive geriatric assessment teams, or applying the WHO ICOPE (Integrated Care for Older People) framework rather than establishing a separate specialist network.

The provision of health care resources is calculated as the ratio of the number of hospital beds (174.5

thousand in 2023) and doctors (105.7 thousand in 2023) to the number of elderly in 2024 (2,07 million people). Statistical data processing, including linear extrapolation of the forecast ($R^2 = 0.98-0.99$), was performed in the R software environment (version 4.3.1).

Linear extrapolation was chosen due to the availability of consistent annual national data and the absence of major demographic shocks during 2010–2024. This simple model adequately fits the trend ($R^2 > 0.98$)

Results

Analysis of demographic and medical data for the period 2010–2024 with a forecast for 2025 revealed key trends in the aging of the population of Uzbekistan, the state of health resources and the structure of morbidity affecting the needs of the elderly. Below are the results based on the official statistics of the Agency of Statistics of the Republic of Uzbekistan (2025).

Demographics

The total resident population of Uzbekistan has shown steady growth for 15 years. In 2010, it amounted to 28.00 million, increasing to 30.50 million in 2014, 33.30 million in 2019, 36.80 million in 2023, and 37.80 million in 2024. The forecast for 2025, based on linear extrapolation ($y = 679.65x + 27.974$, $R^2 = 0.99$), estimates the number at 38.17 million. The average annual population growth ranged from 0.37 to 0.75 million people, with a peak in 2020–2023 (about 0.72 million annually), which reflects stable demographic dynamics.

The number of people over 65 has also increased, but remains relatively low compared to the general population. In 2013, the number of people aged 65+ was 1.19 million (3.9%), in 2014 — 1.21 million (3.9%), in 2019 — 1.52 million (4.5%), in 2023 — 1.93 million (5.3%), and in 2024 — 2.07 million (5.6%). The forecast for 2025 was 2.23 million (5.8%) (95% CI: 2.18–2.28 million). The increase in the number of elderly people in 2013–2024 amounted to 0.88 million people (74.2%), or an average of 80.3 thousand annually, which indicates a moderate aging of the population.

The gender structure of the elderly population demonstrates the predominance of women. In 2013, men 65+ accounted for 0.52 million (43.8%), women — 0.67 million (56.2%). By 2024, men increased to 0.92 million (44.3%), women to 1.15 million (55.7%). For 2025, the projection is 0.99 million men (44.4%) and 1.24 million women (55.6%). This ratio reflects the higher life expectancy of women (76.9 years versus 72.5 years for men in 2023) [12, 13].

The able-bodied population amounted to 17.80 million in 2011 (61.2%), 18.81 million in 2014 (61.7%), 19.79 million in 2019 (59.5%), 20.51 million in 2023

but does not account for potential nonlinear effects of fertility decline, migration, or policy changes, which may affect long-term projections.

Ethics and funding

The study is based on open data, ethical approval was not required. Financing was carried out at the expense of the author's own funds. No conflicts of interest were identified.

(56.9%), and 20.75 million in 2024 (56.2%). The 2025 forecast is 21.04 million (55.1%). The share of able-bodied people decreased from 61.7% in 2014 to 56.2% in 2024 due to an increase in the number of elderly and children, but remains high compared to the global standards of aging societies.

Fertility showed fluctuations: 0.63 million births in 2010 (22.0 per 1,000), 0.72 million in 2014, 0.81 million in 2019, 0.96 million in 2023 (26.4 per 1,000), and 0.93 million in 2024 (24.9 per 1,000). The peak birth rate in 2023 (26.4 per 1000) gave way to a decline in 2024, which may be due to socio-economic factors.

Total mortality increased from 138,4 thousand (4.9 per 1,000) in 2010 to 149,8 (4.9 per 1,000) in 2014, 154,6 (4.6 per 1,000) in 2019, 172,8 (4.8 per 1,000) in 2023, and 174,4 (4.6 per 1,000) in 2024. The jump in mortality in 2020 (175.6 thousand, 5.2 per 1000) is probably associated with the COVID-19 pandemic [14].

Life expectancy at birth increased from 73.0 years in 2010 to 73.4 years in 2014, 75.1 years in 2019 and 75.1 years in 2024, with a temporary decline to 73.4 years in 2020 due to the pandemic. This increase reflects improved population health, although the gap between men and women persists (72.5 and 76.9 years in 2023). Infant mortality declined from 11.0 per 1,000 live births in 2010 to 10.8 in 2014, 9.3 in 2019, 8.5 in 2023 and 9.0 in 2024.

Regional differences are significant: in rural areas, the indicator decreased from 8.8 (2010) to 5.6 (2024), in cities - from 13.2 (2010) to 11.5 (2024), which indicates inequality of access to health services. The higher registered rates in urban settings may partly reflect referral concentration of severe neonatal cases and more complete registration rather than true risk differences. Definitions follow the national statistical methodology, with live births and deaths per 1,000 births.

Regional population structure

The urban population grew from 14.43 million (51.5%) in 2010 to 18.77 million (51.0%) in 2024, with a forecast of 19.14 million (51.0%) in 2025 [13]. The rural population increased from 13.58 million (48.5%) in 2010

to 18.03 million (49.0%) in 2024, with a forecast of 18.40 million (49.0%) in 2025. The level of urbanization is stable at 51,0%, which is lower than the average for middle-income countries (about 55,0%) [15].

Health Resources

The provision of hospital beds showed wave-like dynamics. In 2010, there were 139.6 thousand beds (47.9 per 10,000 population), in 2014 - 130.9 thousand (42.2 per 10,000), in 2019 - 153.4 thousand (45.2 per 10,000), in 2023 - 174.5 thousand (47.4 per 10,000). For 2024, data for 2023 were adopted as basic (47.4 per 10,000), which is equivalent to 0.0084 beds per elderly person (2.07 million aged 65+) [16]. The number of doctors rose from 72,2 thousand in 2010 to 105,7 in 2023, or 0.00051 doctors per elderly person in 2024. The population per doctor decreased from 378 people in 2014 to 348 in 2023, which remains above the level observed in several upper-middle-income countries (typically 200–300 people per physician, according to international comparative statistics); no official WHO standard exists for this ratio, so this comparison should be interpreted cautiously (World Bank, 2023; OECD, 2023) [17].

The number of outpatient facilities increased from 5,993 in 2010 to 6,054 in 2014, 5,914 in 2019 and 8,011 in 2023, reflecting the expansion of primary care [18]. Therapeutic doctors accounted for 27,9 thousand (37.9%) in 2014, 19,3 (21.1%) in 2019, and 35,0 (33.2%) in 2023, demonstrating an increase in their number, but uneven distribution over the years [19].

Mortality Structure

In 2024, out of 174,4 thousand total deaths, 57.6% (100,4) were due to circulatory diseases, 9.4% (16,4) to neoplasms, 5.3% (9,2) to injuries and poisoning, 4.1% (7,1) to digestive diseases, 1.1% (1,9) to infections, and 15.1% (26,3) - other reasons (estimate based on 2023 data). This structure emphasizes the prevalence of chronic diseases characteristic of the elderly, although accurate data by age groups are not available [20].

Need for geriatric care

The need for geriatricians for 2025 (2.23 million elderly) amounted to 112 specialists according to the standard of the Russian Federation (1 geriatrician per 20,000 elderly and senile people). The current number of geriatricians in Uzbekistan is estimated in the range of 0-100 based on data from the Ministry of Health of the Republic of Uzbekistan for 2023, which indicates a shortage of 12 to 112 specialists. However, with the proportion of the elderly 5.6% (2.07 million people) in 2024 and sufficient provision of general health resources - 47.4 beds per 10,000 population and 28.7 doctors per 10,000 (according to 2023) - the need to create a specialized geriatric service remains in question (Table 1).

Table 1. Demographic and healthcare indicators of Uzbekistan, 2010–2025

Year	Population (million)	65+ (million)	% 65+	Working age (million)	Births (million)	Deaths (thous.)	Beds (per 10,000)	Doctors (per 10,000)
2010	28,00	–	–	–	0,63	138.4	47.9	27.4
2011	29,12	–	–	17,80	0,62	143.3	47.3	27.7
2012	29,55	–	–	18,18	0,62	146.0	46.1	27.1
2013	29,99	1,19	3.9	18,51	0,67	145.7	43.9	26.8
2014	30,50	1,21	3.9	18,81	0,72	149.8	42.2	26.4
2015	31,02	1,24	4.0	19,04	0,73	152.0	41.1	26.4
2016	31,57	1,31	4.1	19,25	0,72	154.8	41.1	26.2
2017	32,12	1,37	4.2	19,44	0,71	160.7	41.6	26.1
2018	32,65	1,44	4.4	19,61	0,76	154.9	46.6	27.0
2019	33,30	1,52	4.5	19,79	0,81	154.6	45.2	27.1
2020	33,90	1,61	4.7	19,95	0,84	175.6	46.6	27.0
2021	34,55	1,69	4.9	20,13	0,90	174.5	46.9	27.1
2022	35,27	1,80	5.1	20,29	0,93	172.1	46.3	27.9
2023	36,02	1,93	5.3	20,51	0,96	172.8	47.4	28.7

2024	37,80	2,07	5.6	20,75	0,93	174.4	47.4*	28.7*
2025	38,17*	2,23*	5.8	21,04*	–	–	–	–

*Estimates. 2023 values used as baseline for 2024.

Source: Agency of Statistics of the Republic of Uzbekistan, 2025.

Discussion

The study showed a steady increase in the population of Uzbekistan from 2010 to 2024, with a forecast of a further increase in 2025 ($R^2 = 0.99$) [3]. The proportion of the elderly increased from less than 4,0% in 2013 to over 5,0% in 2024, with a slight rise by 2025 ($R^2 = 0.98$), but the able-bodied remain the main group - more than half of the population in 2024-2025 [4]. Life expectancy has increased over 14 years, and the birth rate has slightly decreased by 2024. The country retains a young demographic, differing from Japan and Russia with their high proportion of elderly.

Based on the data obtained, it can be assumed that health care resources are sufficient: the number of beds and doctors increased from 2014 to 2023, providing an acceptable load with the current proportion of the elderly [16,17]. The number of clinics has grown, which has strengthened primary care. Mortality is mainly due to chronic diseases such as circulatory diseases and neoplasms. There are no data on geriatric syndromes, but globally they are not uncommon in the elderly [21]. In Uzbekistan, this does not create a serious burden due to the young structure of the population.

International experience has a diverse structure of geriatric care: in Japan, the most favorable conditions for the elderly and senile, a network of geriatric services is developed. In Russia, the standard of 1 geriatrician per 20,000 elderly is recommended, but implementation

is slow due to a shortage of personnel, and India and Vietnam do without the formation of specialized geriatric structures, having fewer resources [10, 11]. Uzbekistan is closer to the latter. There are regional differences in access to services, but they do not change the overall picture.

The need for geriatricians for 2025 is about 112 specialists according to the Russian standard, with the current number of them 0-100. The deficit is small and not critical with a low proportion of elderly and exhaustive resources. Consultants in large centers are enough to fill consultation needs. It is worth noting the limitations of the study - the lack of data on the diseases of the elderly and the possible impact of migration or the economy.

Policy implications

Uzbekistan and neighboring Central Asian countries share a youthful demographic profile but are gradually ageing. A phased policy roadmap could include: (1) integrating geriatric principles and screening into family medicine curricula; (2) piloting multidisciplinary ICOPE-style teams in tertiary hospitals; (3) building national registries of multimorbidity and functional decline to prepare for the future demographic wave. Such regional cooperation could enhance preparedness and optimize limited resources.

Conclusion

The study showed that the population of Uzbekistan is growing, this can be seen in dynamics since 2010, remaining mainly young in 2024-2025. The proportion of the elderly increases annually, but remains low, relative to many developed countries. Health resources, including beds and doctors, are sufficient according to 2023 data to meet the demand of the population. Chronic diseases dominate mortality patterns, but their

impact is limited by demographics. The experience of Japan, Russia and India shows that the need to deploy a geriatric service is questionable. It can be recommended to introduce consultants in large centers, such as Tashkent, Samarkand, Fergana and other cities, to solve age problems, while maintaining a focus on youth.

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