

7-1-2021

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### Recommended Citation

Ermatov, Nizom; Mamarizaev, Khayrullo; and Isakov, Erkin (2021) "SOME AGE-AND-GENDER MORTALITY PECULIARITIES OF ADOLESCENT AND ADULT POPULATION OF FERGANA REGION," *Central Asian Journal of Medicine*: Vol. 2021 : Iss. 2 , Article 6.

Available at: <https://uzjournals.edu.uz/tma/vol2021/iss2/6>

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## **SOME AGE-AND-GENDER MORTALITY PECULIARITIES OF ADOLESCENT AND ADULT POPULATION OF FERGANA REGION**

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### **ABSTRACT**

This article covers some age and gender peculiarities among various social groups of the population in the Fergana region in dynamics from 2010 to 2019. The growth rate and the level and structure of mortality of the population of the Fergana region has been analyzed. The level of prosperity of the population and the dynamics of the causes of death were taken into account.

According to the report of the statistics management of the Fergana region, the method of statistical observation of a continuous retrospective study of the mortality rate of the Fergana region was copied from the reporting data of Tables C42, C45, C51. In the process of processing the material, intense, extensive levels of performance and time series were used. Analysis of the results shows that the mortality rate from diseases of the circulatory system, accidents, poisoning, injuries, respiratory diseases, diseases of the digestive system in the elderly and young people has decreased over the years. Thus, the mortality rate for men in all age groups is higher than for women. However, in recent decades, the decline in male mortality compared to female mortality in rural areas has been faster than in urban areas.

**Key words:** level and structure of mortality, cause of death, growth rate, mortality tendency, mortality dynamics, teenage, able-bodied, elderly and senile age.

### **INTRODUCTION**

**Relevance:** In all developed countries, the health of the population is one of the main needs of society. The level of health reflected within the mortality rate is seen as an integral marker; the quality of life in a specific locale, being a basis not as it were of economic advance, but moreover of the degree of social maturity of society [1, 4, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21]. A number of interesting

works have been published on the issues of population maturing and mortality within the elderly and senile age groups, as well as on the ponder of health-related quality of life in various population groups [2, 3, 5, 13, 14, 15].

For a point-by-point definition of the tasks of the struggle for a further diminishment within the mortality rate of the populace, it is vital to analyze the death of the populace in totally different periods of human life. Changes within the age structure of the population that has been taking put within the world for more than a decade - a decrease within the extent of children in the add up to populace and an increment within the extent of older individuals - have an ever-increasing impact not only on statistic dynamics but also on socio-economic development.

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On the off chance that the 20th century was a century of population growth, then the 21st century can become a century of population aging. It is vital to understand the patterns of improvement of this process, to realize its conceivable results, and take them under consideration when creating a statistic procedure in different regions of the nation. 445 There may be growing mindfulness around the world that building a society in which all individuals can anticipate to live long, healthy lives is a major challenge. Without a clear understanding of the patterns within the elements of maturing and mortality of the population, it is inconceivable to create an adequate social arrangement that gives for the creation of an effective framework of social security for the elderly. Be that as it may, the issues of mortality of the grown-up population of Uzbekistan, in specific the Fergana region, have not been sufficiently examined. In this respect, the study of mortality is of theoretical interest and practical significance. Consequently, the study of mortality and the development of scientifically based measures aimed at strengthening the health status of the population are of particular relevance.

**Materials and methods:** A persistent review study of the mortality rate of the population of the Fergana locale was carried out by the method of nonstop statistical observation (a copy from the reporting data of tables C42, C45, C51) based on the materials of the statistics department of the Fergana region. In the

process of handling the material, seriously, extensive indicators of the levels of the time series were determined.

Introduction. Interestingly the mortality rate of adolescents and adults, as in 2019 it was 94.6% of the total number of people who died. At the same time, the proportion of men 50.8% in the composition of the deceased 1.6% is higher than women 49.2%.

The study of the dynamics of mortality allowed us to state the fact that the proportion of the deceased adult population from 2010 to 2019 increased from 90.5% to 94.6%, which can be explained by a decrease in the proportion of the deceased child population.

An interesting fact is that during the study period (2010-2019), the rate of increase in mortality of the entire population became slightly lower (by-8.4%), also the mortality of the adolescent and adult population decreased. It is important to note that the mortality rate in men is significantly higher than in women (Table 1).

**Table 1**  
**Dynamics of mortality of the population of the Fergana region for 2010-2019.**

Population.	Mortality per 1000 population		
	2010	2019	Rate of growth (%)
All population	5,1	4,6	-8,4
Men	5,9	4,9	-0,1
Women	4,2	4,2	0
Teens and adult population	6,4	6,1	-13,2
Men	7,6	6,5	-3,3
Women	5,2	5,6	+27,4

Table 1 data indicate that the mortality of the entire adult population has decreased from 6.4% in recent decades from 6.4‰ to 6.1‰, the rate of decrease - 13.2%, among men during this period the indicator decreased from 7.6‰ to 6.5‰, the rate of decrease was 3.3%, and vice versa in women increased from 5.2‰ to 5.6‰ and the rate of increase was + 27.4%.

**Table 2**  
**Age and gender structure of teenage adult population death rate in the Fergana region (in% to the result)**

Age groups	Men		Women		Both	
	2010	2019	2010	2019	2010	2019
15-19	1,3	0,9	1,1	0,9	1,2	0,9
20-29	4,6	3,0	2,7	2,2	3,7	2,6
30-39	5,9	4,7	4,1	3,1	5,0	4,0
40-49	9,4	8,4	6,1	5,6	7,8	7,1
50-59	14,8	16,7	10,7	12,7	12,8	14,9
60 l. and <	64,1	66,3	75,3	75,5	69,4	70,5
<b>Total</b>	100,0	100,0	100,0	100,0	100,0	100,0

Table 2 presents the structure of the transmitted mortality of the adolescence and adult population depending on gender, from which it follows that the greatest share of deaths in 2019 belongs to 60 years old people and older, and, compared with 2010 it increased by 70.5% against 69.4%.

At the same time, the share of dead adolescent and adult population (from 15 to 60 years) by 2019 decreased and amounted to 29.5% compared with 30.5%. in 2010.

It should be noted that in women the share of the dead in the elderly and senile age is significantly higher (75.5%) than in men (66.3%) is due to a higher specific weight of this contingent of women in relation to men.

With an increase in age, the proportion of the dead increases, which is a completely natural process and this is evidenced by this table 3, from which it can be seen that the increase in total adult mortality rates occurs mainly due to the elderly population (60 years and older by 17.0%).

The clarification of the most affected mortality age is the interesting fact. We studied the mortality of the population of adolescent and adult contingents, and special attention was paid to its able-bodied part. This is due to the fact that in the total composition of the adult population, the prevailing part is the people in working age and all changes in this part of the population are reflected directly on labor resources.

According to table 3, it can be seen that in young working ages, the mortality in 2019 compared to 2010 in the age groups of 20-29 years decreased by 0.9‰ and 0.6‰, respectively. This process is more intense in men than in women.

**Table 3**

**Dynamics of total mortality of adolescence and adult population of the Fergana region on the gender and age for 2010-2019. (per 1000 population)**

Age groups	Men			Women			Both		
	2010.	2019.	Growth rate	2010.	2019.	Growth rate	2010.	2019.	Growth rate
15-19	0,5	0,6	+20	0,4	0,5	+25	0,5	0,5	0,0
20-29	1,2	0,8	-33,3	0,6	0,5	-16,6	0,9	0,6	-33,3
30-39	1,9	1,4	-26,3	1,2	0,8	-33,3	1,6	1,1	-31,3
40-49	3,9	3,2	-17,9	2,2	1,8	-18,2	3,0	2,5	-16,6
50-59	9,4	8,2	-12,8	5,7	5,1	-10,5	7,5	6,6	-12
60 l. and <	54,7	39,3	-28,2	47,8	33,3	-30,3	51,0	36,1	-29,2
<b>Total</b>	<b>6,9</b>	<b>6,5</b>	<b>-5,8</b>	<b>6,0</b>	<b>5,6</b>	<b>-6,6</b>	<b>6,4</b>	<b>6,1</b>	<b>-4,7</b>

In the average productive age groups of 30-49 and older working ages of 50-59 years, mortality has decreased and the rate of mortality is more intensively among women than in men. Special attention should be paid to the specified

peculiarity, because the loss of the population is in economically active age entailing a large economic damage, as the training, education, and the acquisition of professional experience has been spent greatly by the society.

As a result of our research, it was established that the death rate of the population of the elderly and senile and age in recent decades in the republic has trends to decrease. If in 2010 the mortality rate of these age groups amounted to 50.9‰, then in 2019 it decreased to 36.1‰ of the rate of decrease was -29.1%.

Among the urban population, this figure amounted to 51.6‰ and in 2019, 34.6‰ of the rate of decrease in 2019 amounted to 32.9%. In rural population, respectively, 50.0% and 38.1‰, the rate of decrease accordingly amounted to -23.8%. Thus, in rural areas, the death rate of the elderly and senile age is less intensive than in urban settlements by 9.1% (Table 4).

According to the table, it can be seen that a decrease in mortality in 2019 in relation to 2010 is characteristic of all age groups of the elderly and senile age (60-64; 65-69; 70-74; 75-79; 80-84; 85 years and older), and since in 2019 the mortality rate of these age groups is lower compared to 2010, respectively - 17.9 and 14.5; 32.4 and 24.0; 50.9 and 36.5; 79.7 and 74.9; 115.9 and 98.7; 115 and 129.2.

Such regularity can be traced among the urban and rural population.

In general, for 2010, mortality of men exceeded the mortality of women by 6.9‰, and in 2019 the excess of this indicator was 5.4‰, therefore, in 2019, the male mortality decreased compared to 2010 to -21.7%. Indeed, in recent decades, the growth rate of women's mortality is more intensively compared to men if in 2010 and 2019. Among men, this figure was 54.7‰ and 39.8‰, respectively, and among women -47.8% and 33.3% of the rate of decrease was -27.2% and -30.3%. Thus, the rate of reduced mortality of men is higher than women by 3.17%.

In urban excess of mortality, men compared with women amounted to 2010 - 14.4% A, in 2019 -16.1%. In 2019, the exceeding male mortality in relation to 2010 decreased by 1.7%.

In rural areas, the death rate of men compared to women was in 2010 - 10.4% and in 2019 - 16.1%. Thus, in 2019, in rural areas, male mortality over the female people in relation to 2020 decreased by 5.7%.

Thus, in all age groups, the mortality rate of men exceeds the mortality rate in women. However, in recent decades, the pace of male mortality is more intensively in comparison with women in rural areas than in urban settlements, respectively, 1.7% and 5.7%.

**Table 4**  
**The dynamics of the death rate of the elderly and senile aged in the Fergana region for 2010 and 2019.**  
**(per 1000 population of the appropriate floor and age)**

Years	Age in years												Total	
	60-64		65-69		70-74		75-79		80-84		85 age. and <		60 age and <	
<b>Total population</b>														
2010	17,9		32,4		50,9		79,7		115,9		115,2		50,9	
2019	14,5		24,0		36,5		74,9		98,7		129,2		36,1	
Sex	M	W	M	W	M	W	M	W	M	W	M	W	M	W
2010	22,8	33,4	38,4	26,5	58,6	44,7	93,1	67,6	125,2	10,9	95,3	124,6	54,7	47,8
2019	17,9	11,5	29,1	19,6	41,1	32,6	82,7	68,5	118,3	82,3	122,0	13,4	39,3	33,3
<b>Urban population</b>														
2010	17,9		35,5		51,5		84,4		10,9		126,2		51,6	
2019	13,5		23,1		37,9		74,6		96,4		13,4		34,6	
Sex	M	W	M	W	M	W	M	W	M	W	M	W	M	W
2010	24,6	12,6	44,3	27,9	60,6	44,4	99,7	73,9	115,7	104,5	85,1	151,0	56,2	48,1
2019	16,7	10,5	27,2	15,6	47,4	30,7	86,3	66,0	112,3	85,5	114,4	148,7	12,9	52,3
<b>Rural population</b>														
2010	17,8		28,5		50,2		73,9		125,8		101,6		50,0	
2019	15,9		25,3		34,8		75,4		10,2		123,7		38,1	
Sex	M	W	M	W	M	W	M	W	M	W	M	W	M	W
2010	20,4	14,9	32,1	24,5	55,9	45,1	85,9	63,9	136,3	116,5	113,6	97,4	52,9	47,4
2019	19,2	12,8	31,4	19,7	34,4	35,3	79,1	71,8	124,9	84,9	130,8	119,0	41,6	34,9

For a more accurate characteristic of mortality, it is necessary to calculate the special indicators to find out what reasons are the lives of a large part of the adult population (Table 5).

**Table 5**

**Dynamics of adolescent mortality and adults according to reasons of death for 2010 and 2019 (per 100,000 population).**

Reason of death	2010.			2019.			Rate of increase		
	Total	M	W	Total	M	W	Total	M	W
<b>Total :</b>	421,5	364,0	502,6	392,1	377,6	410,9	-7,0	+3,7	-18,2
Including:									
Neoplasms	31,1	26,3	37,9	39,4	34,9	45,4	+26,7	+32,7	+19,8
Diseases of the circulatory system	321,9	275,1	388,0	288,0	266,3	316,0	-10,5	-3,2	-18,6
Diseases Breathing	12,3	12,2	12,4	12,7	13,4	11,7	+3,3	+9,8	-5,6
Diseases of digestive system	29,9	29,6	30,4	28,4	30,6	25,5	-5,0	+3,4	-16,1
Injuries and poisoning	26,3	20,9	33,9	23,6	32,4	12,2	-10,3	+55,0	-64,0

Knowing the main causes of death, their level and structure, health authorities can purposefully carry out therapeutic and preventive measures.

The mortality rate of adolescence and adults in 2019 from circulatory system diseases amounted to 288.0‰; from neoplasms 39.4‰; from the digestive system diseases 28.4‰; from accidents and poisoning injuries 23.6‰; and from the respiratory system diseases 12,7‰.

It is necessary to cancel that the mortality rate of the adolescence and adult population from the neoplasms and diseases of the respiratory diseases had a tendency to increase. The growth rate was 26.7% and 3.3% respectively. The rate of mortality growth from neoplasms and diseases of the respiratory organs is more intensively in men than in women, respectively, 13.2% and 8.9%.

From diseases of blood circulation organs, from diseases of the digestive system and from accidents of poisoning and injuries mortality had a tendency to decrease by 10.5%, respectively; 5.0%; 10.3%. The rate of decrease is more intensively in women, respectively, by 18.6%; 16.1%; 64.0%.

Individual causes of death affect the age groups of the working-age population in varying degrees (Table 6).

According to table 6, it can be seen that in young working age, men and women are more likely die from accidents, poisoning and injuries, they are followed by neoplasms, diseases of the circulatory system, etc.



**Table 6**  
**Mortality rate and its place among the leading causes of death for certain groups of the working-age population and retired people age in Fergana region for 2019. (per 100,000 population)**

Causes of death	In young able-bodied age 16-29			in average able-bodied age 30-49			In senior able-bodied age 50-59			In the elder and senile age 60 and <		
	Total	M	W	Total	M	W	Total	M	W	Total	M	W
Diseases of the circulatory system	5,7	7,0	4,8	44,1	57,9	30,4	403,7	407,5	396,7	2874,4	3094,4	2685,0
Neoplasms	7,4	7,6	7,2	27,8	23,7	31,9	158,5	109,5	248,9	199,3	239,7	164,4
Accidents of poisoning and injury	29,5	39,0	19,5	30,6	50,9	10,4	52,4	67,9	23,8	43,7	73,3	18,1
Diseases of the respiratory system	1,6	1,2	2,0	6,0	8,0	4,0	25,5	23,6	28,9	102,8	131,1	78,4
Diseases of digestive system	4,4	5,5	3,3	36,0	46,9	25,1	101,5	96,5	110,5	106,2	127,0	88,3

In the average able-bodied age groups, there is a slightly different order of causes of humility by classes of diseases: in the first place among men are diseases of the circulatory system; in women, neoplasms; on the second: in men accidents, poisoning and injuries, in women, diseases of the circulatory system; on the third: in men in women - diseases of the digestive system.

In the older working age, the leading position occupies mortality from diseases of blood circulation organs, in the second place-mortality from the neoplasms, then the disease of the digestive organs and others.

It is known that the structure of the causes of mortality in the population is intensively affected by the process of its aging, since with age increases the incidence of chronic non-epidemic diseases, which already now constitute the main causes of death in the population (Table 7).

**Table 7**

**Dynamics of death mortality levels of elderly and senile age in the Fergana region for the main reasons of death In 2010 and 2019.**  
(per 100,000 population of relevant age)

Causes of death	2010.				2019.				Growth rate (in%)
	60-69	70-79	80 age and <	Total	60-69	70-79	80 age and <	Total	
Total of death	2322,5	6209,4	28680,7	5569,6	1802,1	5105,0	11197,5	3590,9	-35,5
Including:									
from the disease of the circulatory system	1562,8	5479,9	27658,2	4805,8	1118,9	4217,9	10478,6	2861,5	-40,5
from malignant neoplasm	188,3	192,3	133,4	186,5	199,9	221,8	148,6	198,4	+6,4
from accidents of poisoning and injury	49,7	51,8	168,9	58,1	43,9	44,0	39,8	43,5	-25,1
from the disease of the respiratory organs	78,3	121,3	346,7	112,8	50,9	173,2	273,2	102,3	-9,3
from the disease of the digestive organs	191,5	136,4	133,4	165,3	114,8	97,2	68,9	105,8	-35,9

According to the table, it can be seen that the death rate of the population of the elderly and senile age for the causes of death from diseases of the blood circulation organs, from accidents of poisoning and injury, from the disease of the respiratory system, from the disease of the digestion organs has tendencies to reduce, and on the contrary, the rate of mortality growth in 2019 relatively to 2010 has increased from the neoplasm and amounted to 186.5 ‰ and 198.4‰ respectively, and the rate of mortality from these reasons in 2019 compared to 2010 amounted to 106,3%. Consequently, increased more than 1,1 time.

**Discussion.** In all developed countries, public health is one of the main priorities of society. The level of health reflected in the mortality indicator is perceived as an integral indicator of the quality of life in a particular region, being a criterion not only of economic progress, but also of the degree of social maturity

of the society<sup>1,4,6,7,8,9,10,11,12,16,17,18,19, 20,21</sup> A number of interesting works have been published on the problems of population aging and mortality in the elderly and senile age groups, as well as on the study of the health-related quality of life of various population groups<sup>2,3,5,13,14,15</sup> of the twentieth century was a century of population growth, the twenty-first century may be a century of population aging. It is necessary to understand the patterns of development of this process, to understand its possible consequences and to take them into account when developing a demographic strategy in different regions of the country.

There is a growing understanding in the world that building a society in which all members can expect to live long and healthy lives is an essential task. Without a clear understanding of the trends in the dynamics of aging and mortality of the population, it is impossible to develop an adequate social policy that provides for the creation of an effective system of social protection for older people. However, the issues of adult mortality in Uzbekistan, in particular in the Ferghana region, have not been sufficiently studied. In this regard, the study of mortality is of theoretical interest and practical significance.

Therefore, the study of mortality and the development of scientifically based measures aimed at improving the health of the population are of particular relevance.

### **Conclusions.**

1. The death rate of the adolescence and adult population in 2019 was 94.6% of the total number of dead people. The proportion of men in the deceased (50.8%) is higher than women (49.2%) and the proportion of the deceased adult population from 2010 to 2019 increased from 90.5% to 94.6% what can be explained by a decrease in the specific gravity of the deceased children's population.

2. For the studied period (2010-2019), the rate of mortality growth in the entire population was somewhat lower (A-8.4%), including the mortality of the adolescent and adult population, also decreased. It is important to note that the mortality rate in men is significantly higher than that of women.

3. With an increase in the age, the proportion of the dead increases, which is a completely natural process and the increase in the overall indicators of adult mortality occurs mainly due to the elderly population (60 years and older by 17.0%).

4. In all age groups, men's mortality rate exceeds women's mortality. However, in recent decades, the rate of male mortality is more intensively in comparison with women in rural areas than in urban settlements, respectively, 1.7% and 5.7%.

5. Mortality of the population of the elderly and senile age from diseases of blood circulation organs, from accidents of poisoning and injury, from diseases of the respiratory system, from the disease of the digestion organs has a downward trend, and on the contrary, the rate of mortality growth in 2019 in relation to 2010 from the neoplasm increased and the growth rate of mortality from these reasons in 2019 compared to 2010 was 106.3%. And therefore, increased more than 1.1 time.

### **Conflict of Interest**

The authors declare that there is no conflict of interest.

### **Special Acknowledgement**

Author's acknowledges the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors /editors/ publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

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