

## DYNAMIC ANALYSIS OF SUICIDE DEATH INDICATORS

**Zayniddin A.Giyasov<sup>1</sup>, Qulfiddinkhon A.Makhsumkhonov<sup>2</sup>,  
Ibrokhim I.Bakhriev<sup>3</sup>**

1 MD. Professor of the Department of Forensic Medicine,  
Tashkent medical academy, Uzbekistan

2 Associate professor of the Center for Development  
of Professional Qualification of Medical Workers, Uzbekistan  
E-mail: kmakhsum73@mail.ru

3 Associate professor. Head of the department of Forensic Medicine,  
Tashkent Medical Academy, Uzbekistan

### ABSTRACT

The article analyzes the dynamics of death rates from suicides in Uzbekistan in 1992-2019. The official reporting data of the forensic medical examination institutions in the country and the conclusions of the autopsy experts related to the assassination were retrospectively analyzed, some of the data were created and statistical processed on them. As a result of the tests, it was found that the dynamics of mortality from suicidality is characteristic of such characteristics as permanence and periodicity. And this requires a new bias in relation to the issue of the cause of the occurrence of self-destruct phenomena, risk factors and the profile of suicidality. After all, as already mentioned above, usually completed abuse is recognized as a multi-factor phenomenon, and in its occurrence it is emphasized primarily by the importance of economic, social and medical factors. However, the findings of this study make it possible to conclude that the causes and risk factors for suicid noted are generally relative and approximate in appearance.

**Key words:** forensic medical examination, completed suicidality, risk factors, indicators of death, dynamic change, preventive measures.

### INTRODUCTION

Autopsy of completed suicide-related corpses plays a significant role in the practice of forensic examination. In particular, according to the official report, suicide-related deaths in Uzbekistan account for 14% of all autopsy and 22% of violent deaths [1].

In this regard, the data of the forensic medical service is important as a source and tool for monitoring the health of the population.

Indeed, the systematic, periodic study of the causes of trauma, poisoning and deaths, the risk factors that are important in their occurrence, according to forensic materials, allows to determine and objectively assess the health status of the population, the number of deaths and their causes.

This, in turn, is undeniable in the development of targeted and effective preventive measures aimed at preventing violent deaths.

Consequently, as noted above, suicide deaths, which are considered a form of violent death, are also one of the factors that have a serious negative impact on demographic indexes in society.

### **The purpose of the study.**

The aim was to dynamically analyze suicide rates from suicides based on the materials of forensic medical autopsy conducted in the country in 1992-2019.

### **Examination materials and methods.**

In the study, suicide deaths were analyzed in absolute and relative terms. This analysis of suicide deaths was based on the results of a retrospective analysis of the official statistical report on the activities of forensic services in 1992-2019. Relative indicators were studied in relation to the absolute number of suicides, the total number of violent deaths and the total number of corpses in those years, as well as the ratio of suicides to the population per 100,000 population.

During the research years, data on the population of the country were obtained from the State Statistics Committee of the Republic of Uzbekistan. The distribution of the population by regions of the country, age and gender groups was studied.

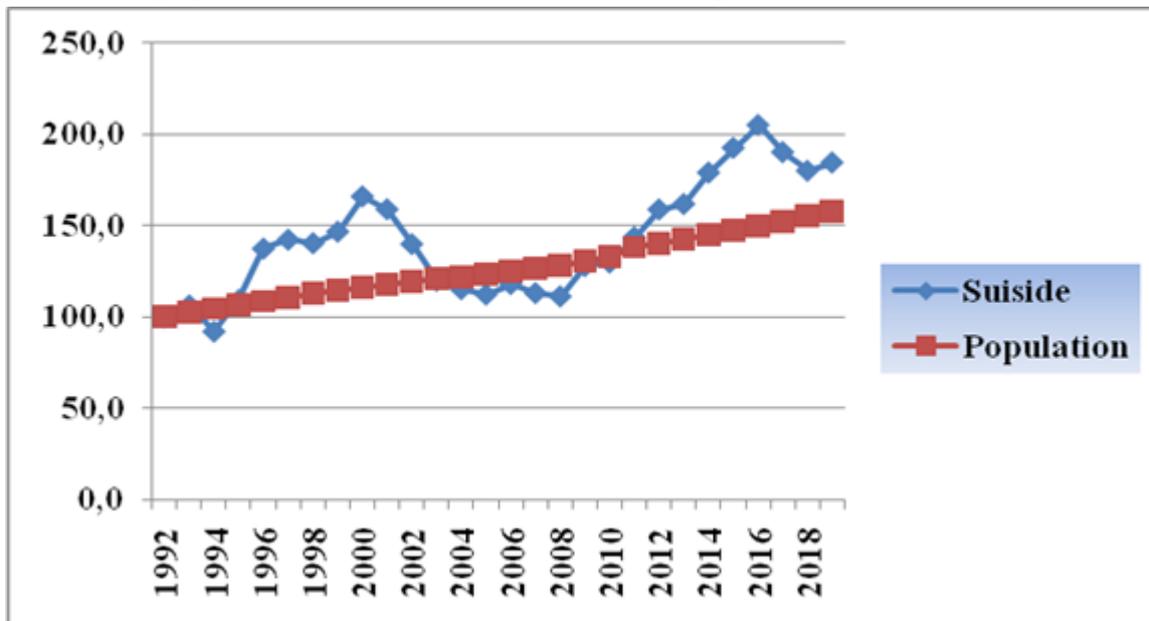
As a result of the research, a database was created on a computer using a special program and statistical processing was performed using Microsoft Office Excel package programs.

### **Examination results:**

#### **1. Mortality rate in absolute numbers.**

1.1. During the years of research, a total of 49,924 suicide-related corpses were examined in Uzbekistan. When the distribution of the mortality rate over the years of the study was studied, it was found that the dynamics of death from suicide had a wavy appearance. This feature was manifested in the fact that an increase in the number of events replaced them periodically with a decrease. In particular, the number of deaths from the 1,253 suicides first recorded in 1992 was considered to be conditionally 100%. In 1994 (n = 1157), this figure was 92%, a decrease of 8%. The dynamics of increasing suicide intensity from suicide, which began in 1995 (n = 1373), continued until 2000 (n = 2080). Indeed, the increase in mortality in the last year compared to 1992 was 166%. The dynamics of decline,

which began in 2001 (n = 1988), continued until 2008 (n = 1397). In the last year, the mortality rate was 111% higher than in 1992. The second period of rise, which began in 2009 (n = 1604), peaked in 2016 (n = 2576). This year, the suicide rate was 205% higher than in 1992 ( $P \leq 0.001$ ) (Figure 1). Of course, the absolute number of deaths will be directly related to changes in the population of the region. In particular, the population of Uzbekistan in 1992 was 21,106,213, while in 2019 this figure was 33,255,538. In other words, the population growth in the country has been constant and consistent, averaging 2.0-2.3% per year. During the years of research, the population of Uzbekistan increased by 57%.



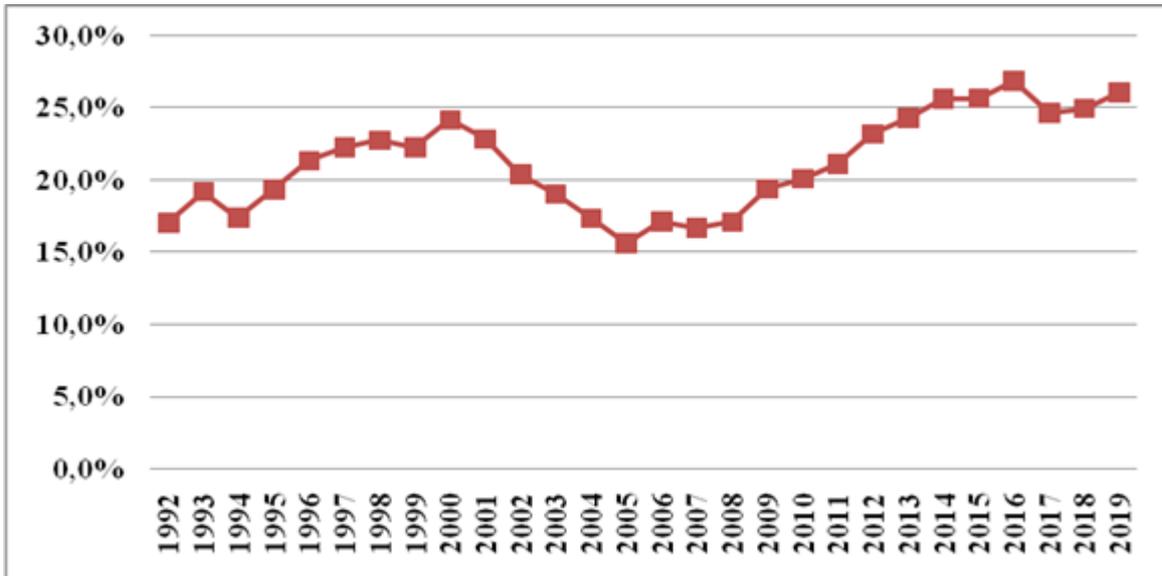
**Figure 1. Comparative analysis of the dynamics of suicide mortality and relative population growth.**

## 2. Relative mortality rates.

As noted above, the relative rates of suicide deaths were studied in relation to the total number of corpses and violent deaths in the country over the years of the study, as well as the mortality rates per 100,000 population.

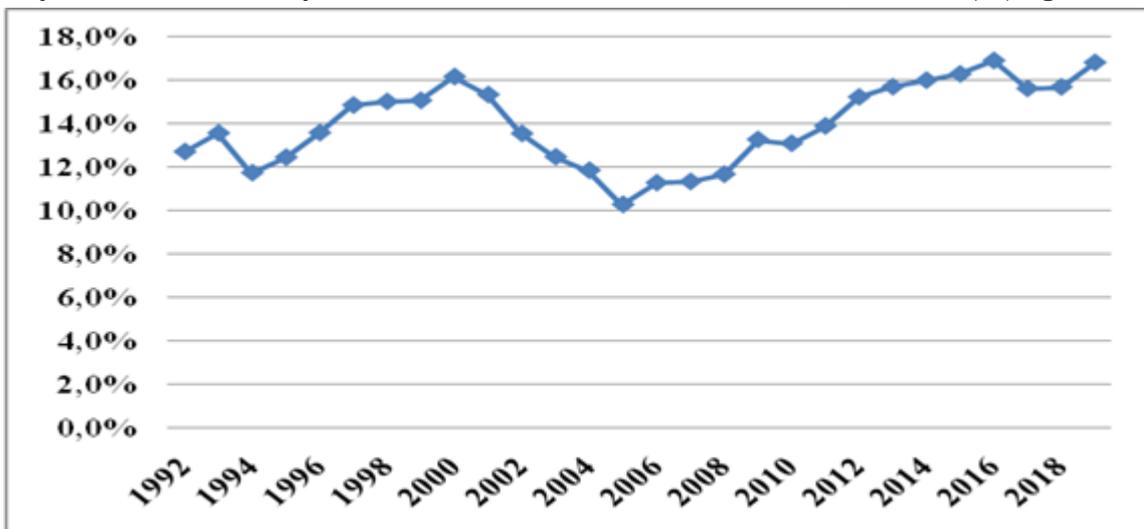
2.1. Autopsy related to suicide deaths accounted for an average of 21.4% of all violent deaths during the study years, and 14.1% of corpse examinations. These indicators differed from each other when studied over the years of the study and showed some specific features. In particular, suicide deaths in 1992 accounted for 17% of all violent deaths recorded this year. Since 1994 (17.4%), suicidal intensity has been on an increasing trend, and in 2000, the maximum rate was recorded over the interval of research years. This year, nearly  $\frac{1}{4}$  (24.2%) of all violent deaths were related to suicide autopsy. Since 2001, there has been a downward trend in suicide intensity, and this process continued uninterrupted until 2005 (15.6%). In 2006 and 2007, the mortality rate was close to this figure, i.e. 17.1% and 16.7%,

respectively. The period of upsurge, which began in 2008, continued in a consistent manner until 2016. In the last year, the share of suicide in the structure of violent deaths was the highest (26.8%). Over the next three years, a more uneven downward trend was observed ( $P \leq 0.001$ ) (Figure 2).



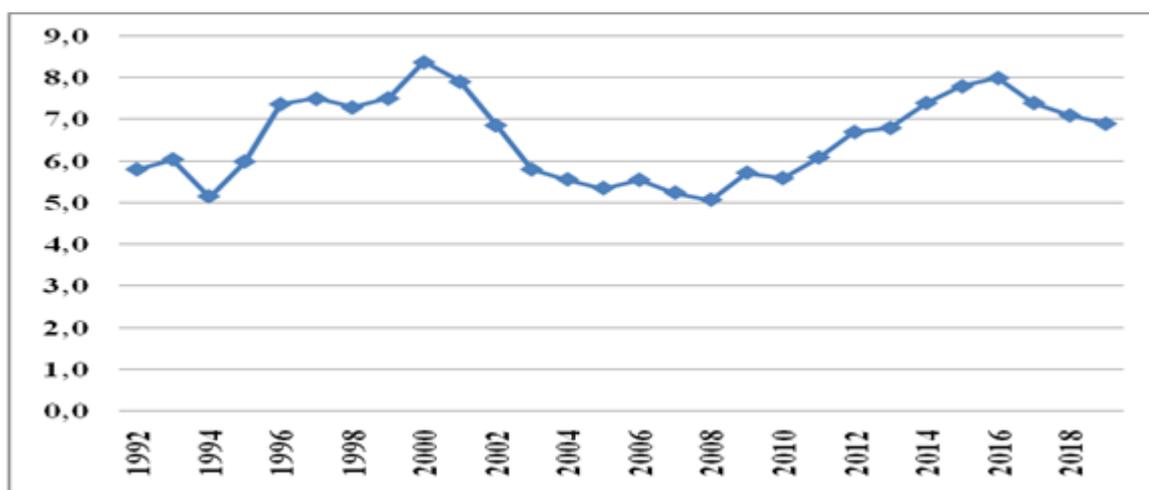
**Figure 2. Ratio of suicide rate to total violent death**

2.2. The same dynamics was observed in the distribution of the share of completed suicides in the total autopsy by years of study. In particular, in 1994, the share of suicide in autopsy was minimal and amounted to 11.7%. In subsequent years, the intensity of suicide increased and reached a maximum in 2000 - 16.2%. The share of suicides has been declining again since 2001 and continued unabated until 2005 (10.3%). After all, this year was the lowest in years of research. The second upswing period, which began in 2006, continued unabated until 2016. This year, the highest rate in terms of research years was recorded - 16.9%. In the last three years, the intensity of events was lower than in 2016 ( $P \leq 0.001$ ) (Figure 3).



**Figure 3. Ratio of suicide mortality to total autopsy**

2.3. During the study years, the average suicide rate per 100,000 population in Uzbekistan was 6.6. However, over the years of the study, this figure varied significantly. In particular, in 1994 the minimum rate from suicide was 5.0 deaths per 100,000 population. Since 1995, the dynamics of the increase in mortality has been observed, and this process continued unevenly until 2000. Last year, there were 8.4 completed suicides per 100,000 population. The dynamics of decline, which began in 2001, continued until 2008. In the last year, as in 1994, 5.1 suicides were reported. The second upswing dynamics began in 2009 and continued until 2016. Last year, there were 8.0 deaths per 100,000 population in the country. The downward trend, which began in 2017, continued in 2019 (Figure 4).



**Figure 4. Dynamics of suicide mortality per 100,000 population**

### **Discussion of examination results**

According to E. Durkheim, suicide is a manifestation of a collective disease in which the tendency to suicide exists in a specific form in any human population; each nation has its own percentage of deaths from suicide, which is more stable than the overall mortality rate [7]. Completed suicide is described by researchers as an autoaggressive act committed consciously, purposefully, to deprive oneself of life. The main feature of this phenomenon is that the suicidal acted consciously, knowing the possible consequences, if he fully understood his actions. Also, completed suicide is studied by experts in these fields as a multifactorial social, economic, cultural, medical, legal, geographical, religious problem. Indeed, researchers distinguish between sociological, anthropological, and psychological manifestations of risk factors that are important in the occurrence of suicide. However, in the dynamic analysis of the data of forensic materials for different years, suicide mortality rates have manifested themselves as an event of internal

significance. The intrinsic nature of suicide was primarily manifested in the continuity and periodicity of these events over the years of investigation.

**The feature of permanence** is manifested in the constant presence of death from suicide for the country and society during the years of research. This feature of suicide applied equally to both absolute and relative indicators.

*In absolute terms.* During the study years, a total of 49,924 suicides were reported in the country, with an average of 1,849 incidents per year. The minimum was 1157 (in 1992) and the maximum was 2567 (in 2016).

*In relative terms.* Suicidal mortality rates were studied in relation to total violent deaths and autopsy, as well as mortality rates per 100,000 population.

According to scientific sources, autopsy of suicidal corpses accounts for a significant proportion of total corpses and violent deaths [9, 10]. In particular, studies in some regions of the Russian Federation have shown that suicide-related examinations account for 16-18% of total corpse examinations and violent deaths for 20-25% [2, 3].

In our study, autopsy related to suicidal ideation accounted for an average of 21.4% of all violent deaths. The lowest rate was observed in 1991 (17.1%) and the highest in 2016 (26.8%). Suicide-related autopsy accounted for 14.1% of the total autopsy in the study years. The minimum rate was recorded in 1992 (11.7%) and the maximum in 2016 (16.9%)

According to the WHO, the suicide rate is calculated per 100,000 people. According to the global standard indexes, the incidence of less than 9 suicides per 100,000 population is low, 10 to 19 are moderate, 20 to 30 are high, and more than 30 are high [4, 6]. According to the WHO, the average suicide rate in the world is 16 per 100,000 population [8].

In Uzbekistan, the average suicide rate during the survey years was 6.6. The minimum was recorded in 1994 (5.1 / 100000) and the maximum in 2000 (8.4 / 100000). In 2016, this figure was 8.0 / 100,000. This means that Uzbekistan was one of the regions with the lowest suicide mortality rates during the study years.

The absolute and relative death rates given above allow us to note that a completed suicide is a permanent occurrence for Uzbekistan. Suicide has also been identified as one of the social phenomena that negatively affects the demographics of the population, and is a significant part of violence and autopsy.

**Periodicity** is reflected in the dynamics of change in suicide mortality rates in absolute and relative terms over the years of the study. At the same time, the increase in suicides was reflected in the alternation of subsequent declines. Of particular note is the presence of a certain consistency, sequence, and periodicity in the intensity of change of indicators.

The scientific literature also notes that suicides and deaths are periodic. For example, in the Russian city of Ufa [5] it was found that the periods of decrease and increase of completed suicides in children and adolescents are interchangeable. In particular, in 2002-2005 there was a decrease in events (from 100,000 / 36 to 100,000 / 23.3), and in 2006-2008 there was an increase (from 100,000 / 30.5 to 100,000 / 38.6).

In our study, when the change in suicide mortality rates over the years of the study was analyzed, the course of events had a wavy pattern, in which the increase in mortality was replaced by a subsequent period of decline. Indeed, the alternation of these periods also took place in a certain sequence and periodicity

In particular, a period of decline was noted in the early years of the study (1992-1994). The first period of rise began in 1995, and this process peaked in 2000. The declining dynamics of the mortality rate, which began in 2001, continued in a consistent manner until 2008. The second rise period lasted from 2009 to 2016. The dynamics of the third decline in the intensity of suicide mortality in the last 2017-2019 years of the study was noted

The results of the study allow us to conclude that the periodicity, which is reflected in the increase and decrease in suicide deaths, is 15-16 years. It is noteworthy that this periodicity characteristic of the course of completed suicide was observed not only in absolute indicators, gender, age groups, but also in relative indicators: per 100,000 population, in groups of men, women and children, in total violence and corpse examinations. The results of the study, in particular the characteristics of the continuity and periodicity in the course of deaths from completed suicide, require a new approach to risk factors for the occurrence of suicides. Indeed, as noted above, researchers recognize the phenomenon of suicide as a multifactorial phenomenon and recognize that socio-economic and medical factors play a crucial role in its occurrence. However, the results of this study suggest that the reported causes and risk factors for suicide are generally relative, approximate.

Therefore, during the 27 years of this study, the age, gender and ethnic composition of the population of Uzbekistan have changed significantly. Also, during these years, significant changes have taken place in the political, social and economic life of the country. That is, favorable conditions have been created for an increase in the intensity of the most recognized suicidal events in scientific sources. However, these studies show that in 1992-1994, the suicide rate in Uzbekistan was minimal.

Indeed, the population of Uzbekistan has been growing steadily, and in the years of the study, the population growth rate was 57%. Correspondingly, in absolute terms, the suicide rate increased by 166% in 2000 compared to 1992, and

by 205% in 2016. However, as noted above, no significant change in suicide rates per 100,000 population has been reported in recent years. Indeed, no causal link was observed in the dynamics of relative suicide mortality rates with population growth in the country. Conversely, it is noteworthy that there is a downward trend in maximum performance. In particular, the figure was 8.4 / 1,000,000 in 2000 and 8.0 / 100,000 in 2016 (Figure 5).

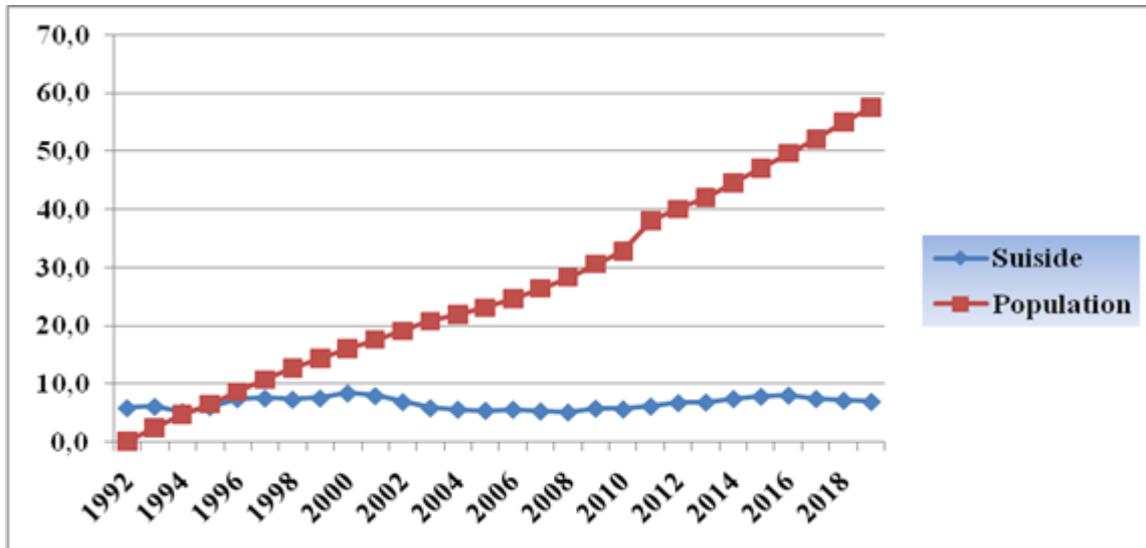


Figure 5. Suicide rate per 100,000 population and population change dynamics

## CONCLUSION

1. Suicide rates in Uzbekistan over the years of the study have proven to be intrinsic. The intrinsic nature of a completed suicide was first manifested in the continuity and periodicity of these events for the region and this society.

2. The persistence feature of completed suicide is that it is equally reflected in the absolute and relative rates of death from suicide, by gender, and in the group of children.

3. The periodicity of the completed suicide was manifested in an increase in suicidal mortality rates, alternating with subsequent periods of decline, and in a wavy pattern. Of particular note is the presence of a certain consistency and sequence in the intensity of change of indicators, i.e., the increase and decrease in the number of events. The average duration of one period was 15-16 years

4. Completed suicide is generally recognized as a multifactorial event. In particular, the importance of economic, social, legal, racial, cultural, religious factors in the emergence of suicidal behavior is emphasized. Nevertheless, the presence of a certain periodicity and consistency in the dynamics of suicidal death suggests that the role and importance of the above factors in the occurrence of autoaggressive actions are relative.

## REFERENCES

1. Giyasov Z.A., Maxsumxonov Q.A. Tugallangan suitsidning qiyosiy tahlili. //Biologiya va tibbiyot muammolari, - 2020, - №5.1.(123), - S. 289-294.
2. Mironets Ye.N., Petrov G.P. Mediko-statisticheskiy analiz zavershennix suitsidov v Chuvashskoy Respublike za 1992-1996gg. //Problemi ekspertizi v meditsine, - 2001, - №3, - S. 30-32.
3. Sushentsev A.I., Shadimov A.B. Analiz zavershennix suitsidov na materiale krupnogo majrayonnogo sudebno-meditsinskogo otdeleniya za 2008-2010gg. //Aktualnie voprosi sudebnoy meditsini i ekspertnoy praktiki, Barnaul-Novosibirsk, - 2011., - Vip. 17.
4. Xasanyanova S.V., Naydenova T.V. K voprosu o strukture smertnosti lits mujskogo pola trudosposobnogo vozrasta v Udmurtii za 2003-2004 gg. //Problemi ekspertizi v meditsine, - 2005, - №4 (19), - S. 22-24.
5. Valitova G.M. Mediko-sotsialnoe issledovanie suitsidov sredi detey i meropriyatiya po ix profilaktike. Avtoref. dis... kand.medits.nauk. - Moskva, 2010. - 24 s.
6. Zorastrov M.O. Suitsidi v g. Tyumeni i Tyumenskom rayone v period s 1999 po 2003 gg. //Problemi ekspertizi v meditsine, - 2005, - №2 (17). - S. 39.
7. Dyurgeym E. Samoubiystvo: Sotsiologicheskiy etyud. Per. s fr. s. sokr.; pod red. V.A.Bazarova. - M.: Misl, 1994. - 399 s.
8. Karbeyaz K, Akkaya H, Balci Y. Analysis of suicide deaths in a 15-year period in a Eskisehir, western Anatolia, Turkey and the determination of risk factors. //Ann Saudi Mad. 2013, - Jul-Aug; 33 (4):377-82.
9. Shrivastava P., Som D., Nandy S., Saha I., Pal P.B., Ray T.G., Haldar S. Profile of postmortem cases conducted at a morgue of a tertiary care hospital in Kolkata. //J Indian Mad Assoc., 2010 Nov; 108(11):730-3.
10. Benomran F.A. The medico-legal scene in Dubai: 2002-2007. //J Forensic Leg Med., 2009 Aug; 16(6):332-7.