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# THE SIGNIFICANCE OF SUICIDE CASES IN FORENSIC MEDICAL PRACTICE

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**Abstract**

The cultural environment, the presence of suicidal thoughts and intentions, easy access to means of suicide, and similar factors influence the choice of suicide method. At the same time, the gender paradox plays a significant role: parasuicidal behavior is more frequently observed in women, whereas men tend to resort to more lethal methods of carrying out their suicidal intentions, such as using firearms, drowning, or hanging, which are characteristic of completed suicide. Intentional self-poisoning, in contrast, is more typical of suicide attempts.

**Keywords**

Suicide, forensic medical examination.

It has been established that women often resort to drug overdoses when attempting suicide, as such cases less frequently lead to a fatal outcome. Women are more often diagnosed with depression, as their suicide attempts exceed the number of completed suicides. In most countries, the rates of completed suicide are significantly higher among men. Suicide by poisoning among women accounts for 1⁄4 of the global rate, while in Finland, Iceland, England, and Scotland, it accounts for almost 1⁄2 of all suicide cases.

Different countries exhibit various methods of substance use in self-poisoning. In Uzbekistan, according to the Department of Scientific and Clinical Toxicology of the Republican Scientific Center for Emergency Medical Care, most suicide attempts were made using tricyclic antidepressants (amitriptyline) and neuroleptics (clozapine). Medications affecting the cardiovascular system (bisoprolol, enalapril, nifedipine, nitroglycerin) ranked second in frequency of use in suicide attempts. The proportion of suicide attempts using highly toxic chemicals was 11.5%.

According to current legislation, completed suicide is one of the cases requiring mandatory forensic medical examination as a form of violent death. Consequently, examinations related to suicide constitute a significant portion of forensic medical practice. Since 1993, a special table dedicated to suicide cases has

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been included in the annual report of the Republican Forensic Medical Examination Service, and the data from this official document show a continuous increase in this problem. Specifically, while 1,227 cases of completed suicide were investigated in 1993, this figure rose to 2,080 in 2002.

In studies conducted by forensic medicine specialists based on forensic medical examination data, the epidemiology of completed suicides in specific countries or regions, significant social, medical, and climatic factors contributing to their occurrence, forensic medical examinations related to these cases, as well as the problems of their organization and implementation were analyzed (G.A. Botezatu, G.L. Mutoy, 1983; B.A. Voysehovich, A.N. Redko, 1991; A.S. Lessovoy, V.I. Khomenko, 1980).

These studies noted the structure of death types in cases of completed suicides and their differentiation by age, sex, and residential areas of suicide victims.

In particular, studies conducted in Hannover (Feiguth F. et al., 1997) recorded the following structure of suicide methods: poisoning - 28.1%, hanging - 25.3%, gunshot wounds - 17.2%, jumping from a height - 9.7%, and drowning - 7.6%. These indicators differed significantly depending on the sex of the suicide victims. Specifically, poisoning (37.4%), jumping from a height (17.6%), and hanging (17%) were more common among women, while hanging (29.7%), gunshot wounds (24.3%), and poisoning (23.1%) predominated among men.

According to E. Osuna et al. (1997), suicide victims aged 65 and older mainly committed suicide by jumping from a height (63.6%), and these figures did not differ by sex.

While suicide by poisoning was prevalent in Paris, hanging was more common in the surrounding areas (Lecomte D. et al., 1995). The latter pattern was also observed in studies conducted in the Russian Federation (V.L. Proshutin, E.M. Koldudarova, 1994; V.A. Spiridonov, 1994) and in Kazakhstan (A.N. Samoylichenko, V.N. Tofimov, A.E. Kirnos, 1991). Indeed, 65-70% of all completed suicides in these regions were committed by hanging.

When analyzing suicide victims by gender, almost all authors acknowledge that the majority are men. Some authors attribute this to the fact that men have significantly lower suicidal tolerance and are less likely to seek help compared to women (G.A. Botezatu et al., 1989).

The numerical prevalence of suicide among men is especially noticeable in the younger age group, and this difference tends to decrease with age. Specifically, the ratio of suicides among men and women under 45 years of age was 6:1, in the age group 46-60 years - 2.5:1, and in the age group over 60 years, women committed suicide 1.5 times more often (N.I. Brovina, I.I. Kutko, 1991).

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According to N.M. Zharikov et al. (1997), a higher frequency of suicide among elderly women is associated with their longer life expectancy compared to men.

S.E. Rhyne et al. (1995) analyzed a total of 4,117 completed suicides registered in Los Angeles, committed using 28 different methods, noting that the methods used in committing self-harming acts differ significantly by gender. In particular, it was found that men mainly use methods that are quick and have a high mortality rate, while women tend to use methods that last relatively longer and cause severe suffering.

S.V. Maltsev et al. (1994), studying cases of completed suicide by age groups, identified three peak periods. The first was observed at 20-35 years of age, the second, which was the main one, at 46-55 years, and the third, less intense peak occurred after 70 years. According to the authors, from a socio-economic and demographic perspective, the first two peak periods are extremely concerning.

In cases of suicide in Moscow, the majority of suicides occurred between the ages of 30 and 59, with an average age of 41.6 for men and 42.6 for women. Analysis of suicide cases by age groups revealed two peaks that differed by gender: for men at 36.8 and 49.2 years, and for women at 39.2 and 55.6 years (N.M. Zharikov et al., 1997).

The detection of alcohol in suicide victims differed by gender groups and was predominant in men. According to V.L. Proshutin et al. (1994), 55% of all men and 33% of women who committed suicide in Izhevsk were intoxicated. Moreover, these indicators differed depending on the location, with small differences between rural and urban areas. For example, in urban areas, 50% of all male suicide victims and 23% of female suicide victims were found to have ethanol in their blood, while in rural areas, these figures were 79% and 66% respectively.

Studies conducted in Kazakhstan (Petrov P.P. et al., 1991) showed that 61.7% of all men's and 30.2% of women's suicides occurred while intoxicated. When examining these indicators by age groups, the highest values were observed in the age range of 30-39 years (75.6% in men, 66.7% in women). The indicators tended to decrease in older age groups. 54.7% of alcohol-related suicide victims were moderately intoxicated. Alcohol was detected only in 15.8% of cases of parasuicide.

There is a significant body of work devoted to the study of completed suicides by hanging, which mainly focuses on the epidemiology of suicide. However, there are few studies dedicated to issues important for forensic medical practice, particularly the examination of morphological changes occurring in these cases depending on the sex and age of the person, as well as the type of hanging, the type of ligature, and its location on the neck (S.V. Borodin, V.E. Kuznetsov, 1984; F. Celis et al., 1994; P. Lilleng, I. Moridl, 1993).

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M.A. Elfawal et al. (1994) analyzed cases of suicide by hanging in Saudi Arabia, noting that the majority were committed by immigrants from Asian countries. They categorized hanging cases into two groups based on the material of the noose: elastic and semi-rigid/soft. In the first group, complete suspension of the body was most common, while in the second group, partial suspension was more frequently observed. The classical external signs characteristic of asphyxia were also more often seen in hangings from the second group.

A.V. Kodin (1974) noted that when studying neck injuries caused by blunt objects, there are certain correlations between the nature of injuries caused by hanging and the person's sex, age, as well as the type of hanging.

Suicide by ingesting toxic substances is extremely prevalent in developed Western countries, where acute poisoning ranks first among suicide methods, and there has been a tendency for this to increase in recent years (T. Sartori, C. Scivoletto et al., 1998).

Studies have shown that cases of acute poisoning were predominantly committed by female suicide attempters aged 15-30.

Regional characteristics varied depending on the type of substance used as poison. While acute acid poisoning predominates in developing countries, various medications are widely used in developed countries.

In cases of acute drug poisoning, various neuroleptics, barbiturates, sedatives, and antidepressants were primarily used.

Cases of suicide by ingesting phenol, kerosene, ammonia, and gasoline are also described in specialized literature (K. Harada et al., 1999).

Some authors suggest that the types of substances used as poisons differ not only across countries but also within a single region over time. For example, Indian researchers D.I.S. Singh and S. Tyagi (1999) analyzed mortality from acute poisoning in the Chandigarh region over 25 years and found that in 1972-1977, suicides were mainly associated with veronal (37%) and copper sulfate (22%); between 1977 and 1982, organic phosphides (46%) were most common; from 1982 onward, aluminum phosphide prevailed.

The widespread availability of substances used as poisons in everyday life and the ease of obtaining them are among the main factors contributing to the increase in suicides by this method.

The use of highly toxic substances in this method and their consumption in large quantities often precludes the possibility of treating suicide victims and saving their lives. From this perspective, according to C.L. Rich et al. (1998), preventive measures aimed at suicide prevention are more effective and beneficial in such cases than direct treatment.

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K. Worm et al. (1999) emphasize that the diagnosis of acute poisoning must be confirmed by forensic toxicology results, and the mere discovery of medication containers near the body is insufficient for such a diagnosis.

In specialized literature, there is also a substantial body of research dedicated to studying cases of suicide involving firearms.

In Belgium, suicide by firearms ranks second after poisoning among completed suicide cases (Boxho P., 1994). Consequently, the free trade of firearms in these countries and granting ownership rights to broad segments of the population creates a trend towards an increase in suicides by this method.

According to research conducted in Finland, 62% of all suicide cases were committed by self-inflicted gunshot. In 74% of these cases, specially licensed hunting rifles were used. 60% of suicide victims had their own hunting rifle. All of them were men aged 15-24, and 62% of incidents occurred in the victim's own home or in relatives' homes where weapons were stored (J. Hintikka, J. Lehtonen, H. Vinamaki, 1997).

T. Karlsson (1999), after analyzing 251 suicides and 45 murders committed with firearms in Solna (Sweden) between 1983 and 1992, proposed a set of distinguishing features for these cases. For instance, indicators that injuries were inflicted with homicidal intent include the presence of injuries other than gunshot wounds, bullets passing through clothing, entrance wounds located in areas other than the temporal region (primarily in the forehead area), as well as on the back and chest outside the cardiac area, and more frequently observed in women. Indicators of self-inflicted injury with suicidal intent include: the discovery of a firearm near the body, entrance wounds located in the oral cavity or temporal region, predominantly observed in men, previous suicidal thoughts, or the discovery of suicide notes. When this model was applied to 18 murders and 84 suicides that occurred between 1993 and 1995, positive results were obtained for all suicide cases and 16 of the murder cases.

Other researchers in their works also acknowledge that gunshot wounds inflicted with suicidal intent are located in "selected areas" of the body: the temple or oral cavity region, the heart area; these incidents are primarily committed by male suicide victims aged 15-30, most often using a hunting rifle.

M. Sanchez-Hanke et al. (1996), based on the analysis of self-immolation cases observed in Hamburg, emphasize that the burn surface area, its depth, location, and the amount of carbon monoxide in the blood are significant distinguishing factors in determining whether the burn was accidental or carried out with self-aggressive intent. In all these cases, death occurred within the first two hours due to burns or traumatic shock.

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P. Let and M. Harf-Madsen (1997) note that in recent years, there has been a trend towards an increase in self-immolation cases in Denmark. Specifically, out of 43 cases that occurred during the 10-year period (1980-1990), 11 were observed during the first five years, while the remaining 32 occurred in the second five-year period. Suicide cases did not differ significantly by gender (men:women, 23:20), with an average age of 43 years (ranging from 20 to 87). Most individuals had a history of suicidal behavior, all were local residents, and the incidents took place in their own homes.

C. Blohim and K. Pusghel (1998) analyzed the epidemiological aspects of suicide cases involving jumps from the Kohlbrand Bridge. Out of 56 suicides, the majority (47) were men aged 20 to 87. No causal relationship was found between these incidents and the seasons or times of their occurrence. When analyzing the bodily injuries sustained as a result of jumping from a height, they specifically noted that autopsies were performed in only 47 cases.

Analysis of specialized literature showed that cases of suicide by drowning have certain territorial characteristics and are more frequently observed near large bodies of water (T. Kondo, T. Ohshima, 1995).

According to L.G. Davis, a total of 267 drowning cases were recorded in Broward County (Florida) between 1994 and 1998, 25 of which were suicides, accounting for 2.86% of all suicide cases. When analyzing elderly people (over 65 years old) separately, they constituted 19.8% of the population, 27.4% of suicides, and 6.7% of drowning cases, with the majority being men.

Studies conducted in Japan have shown that people with intellectual disabilities more frequently use drowning as a suicide method. Specifically, autopsies of 64 individuals with mental retardation revealed that 32 of them had committed suicide, with the majority (65.6%) doing so by drowning (S. Rogde, T. Hilberg, B. Teige, 1990).

Suicide by inflicting injuries with sharp objects is also a widespread method of suicide.

In particular, V. Karger et al. (1999) examined the ability of suicide victims to move physically after injury in 12 cases where sharp objects were used in suicide attempts. The studies demonstrated that after cuts to the radial artery and jugular veins or after injuries to the liver and lungs, the physical ability to move was retained for several hours.

Analysis of suicide locations reveals that the majority of them were carried out in the homes of the suicide victims themselves or in the homes of their relatives.

S.V. Maltsev et al. (1994), as a result of their research, indicate that 2.4% of incidents occurred at the workplace, 4.7% on the street, 7.8% in garages and groves,

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and 6.6% of suicides took place in their homes. In 18.6% of cases, death occurred in medical institutions, which demonstrates that even in cases of actual suicide, death occurs after a certain period as a result of complications from the primary injury. Such cases are more characteristic of acute poisoning, falling from a height, and cutting of blood vessels.

It is recognized that in recent years, there has been an increase in the number of suicides among children and young people in all countries of the world.

In the United States, up to 8,000 completed suicides are committed annually by adolescents aged 15-19. For every case of suicide, there are 150 to 200 cases of parasuicide. Consequently, 50% of all car or motorcycle accidents involving young people are considered as hidden suicide attempts (E. Grollman, 2003).

C.J. Lee et al. (1999) analyzed completed suicide cases among children under 18 in South Carolina, noting that 68% of them were 16-17 years old, 84% were boys, 68% were white, and 78% used firearms.

In Paris, cases of suicide among children and young people were studied from socio-demographic, clinical, forensic medical, and toxicological perspectives. The majority of cases involved poisoning and jumping from heights. For self-harm, hunting rifles were used, while in cases of poisoning, tranquilizers, antidepressants, and barbiturates were more commonly employed (D. Lecomte et al., 1995). M. Obradovic (1990) noted that when analyzing completed suicides committed by minors in Belgrade, the pattern of methods for ending one's life differed from the one described above: hanging was more prevalent. Acute poisoning, in contrast, was observed less frequently.

The successful resolution of the questions posed to the examination largely depends on how well it is organized. In particular, it is recognized that the use of investigative materials is of great importance (M.D. Mazurenko, 1981; Kh.R. Khaydarov, 1998). However, it cannot be said that this issue has been sufficiently addressed in research on completed suicides.

In Uzbekistan, suicide cases based on forensic medical examination materials have not been systematically and scientifically studied. Only in the late 1990s were some sporadic works conducted, which do not fully reflect the scale of this problem.

In particular, according to an analysis of suicides committed by children under 15 years old in Uzbekistan from 1986 to 1989, they accounted for 2.7% of the total number of violent deaths among this age group, with these figures varying significantly across different regions of the country. Suicides were predominantly committed by children aged 11-14, with an average age of 12.5 years. The majority

of suicides were carried out by boys (69.5%), mainly through hanging (90%) (29, 30).

According to data from an official report, in 1999 alone, 83 forensic medical examinations related to completed suicides by children under 14 years of age were conducted in our Republic, which underscores the severity of this problem.

Analysis of specialized literature has shown that suicide cases have been thoroughly studied by specialists in various fields. Most of these studies focus on parasuicidal cases, where attempts were made to identify significant factors contributing to these events based on the results of clinical-anamnestic and retrospective examinations of suicide victims. However, despite this topic being the subject of research, the level of its study by forensic medical specialists cannot be considered sufficient. In particular, the epidemiology of completed suicides in Uzbekistan, significant risk factors for their occurrence, regional characteristics, the role of meteorological factors, as well as the organization of forensic medical examination services in these cases, and the development of measures for their further improvement by identifying existing errors and shortcomings, are among the issues requiring resolution.

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