

## PARTICULARITIES OF VIOLENT DEATHS AMONG CHILDREN, IN THE COUNTY OF IASI

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**Keywords:** violent death, paediatric trauma, particularities, prevention

**Abstract:** Violent death is a medico-legal form of death that involves both social and medical issues. The objective of the research is the analysis of the particularities of 274 violent deaths among children, registered in the county of Iași, in a period of five years (2004-2009). The identified profile was: 9-year old child, male, rural, who suffered a violent trauma at the end of the week, in the summer (the highest probability in July), at home, the death occurring before the arrival of the emergency medical services. The study has a descriptive character and can be considered as a basis for the elaboration of strategies of primary, secondary and tertiary prevention

**Cuvinte cheie:** moarte violentă, traumă pediatrică, particularități, prevenție

**Rezumat:** Moartea violentă este o formă medico-legală a morții, cu implicații medicale și sociale. Scopul cercetării de față este de a evidenția particularitățile celor 274 de decese violente la copii, înregistrate în județul Iași pe un interval de cinci ani (2004-2008). Profilul identificat a fost următorul: copil în vârstă de nouă ani, de sex masculin, din mediul rural, care a suferit un traumatism violent la sfârșit de săptămână, vara (cu mare probabilitate în luna iulie), la domiciliu, decesul survenind înainte de sosirea serviciilor medicale de urgență. Studiul are un caracter descriptiv și pe baza sa se pot elabora strategii de prevenție primară, secundară și terțiară.

### INTRODUCTION

Death is a phenomenon that has raised many questions to all civilizations. Violent death is a medico-legal form of death that involves both social and medical issues. Indication of the aetiology of violent death in childhood has difficulties in separating intentional suicidal injuries of those accidental. Emotional, relational problems, school difficulties, but also professional difficulties, consumption of toxics may cause an aggressive behaviour or even violence. The suicide is a conscious act of self deprivation of life but most often it interferes with accidents and murders. Therefore, the complexity of this issue may influence the statistics. Victim's family often tries to conceal, for various reasons, the real cause of death. The economic crisis, the social disorganization affects the individual's capacity to adapt to social changes and implicitly, it increases the suicidal risk. According to the national statistics, in the recent years, there has been observed an obvious dramatic increase of the violent deaths (> 60% of expertised corpses).(1) In the top of these reports there is the death by accident, and the most frequent cause are the traffic accidents, in accordance with the European and entire world reports. WHO's estimates envisage a dynamic increase of deaths by traffic accidents, (3) a warning sign of violent events that can be prevented through the intervention on the risk factors. (4,5) The emergency therapy, outside the hospitals, is also affected by the socio-economic conditions of the geographical region. Primary assessment and treatment according to the predetermined protocols becomes imperative, its implementation having as a purpose the improvement of violent trauma prognostic, no matter of aetiology, a decline in the overall violent death rate.(6,7)

### MATERIAL AND METHOD

The purpose of this research is to emphasize the features of violent deaths among children, registered in the

county of Iași, in a period of five years (2004-2008). The study has a descriptive character and aims at identifying the following characteristics:

- personal (age, gender, residence area, consumption of alcohol);
- temporal (variations in the number of death during the days of the week and during the months of the years as well);
- spatial (the place where the trauma occurred, the place of death)

The analysis of these data allows the elaboration of a profile of the deceased child by violence, on whose foundation, protective measures regarding accidents and traumas could be developed, in order to reduce complications, but mainly to prevent other deaths. The data source was represented by the medico-legal files of the corpses, the files belonging to the Medico-Legal Institute of the city of Iași.

The database was developed in EXCEL programme, a part of the Microsoft Office 2007 package and the statistical analysis was done in EPIINFO 2004. Kolmogorov Smirnov test and chi square test were used to compare the results. The value of p, which reflects the probability that the difference between the analyzed variables to be random, was considered higher than 0.05.

### RESULTS AND DISCUSSIONS

According to the evidence of the Medico-Legal Institute, in the interval 2004-2008, there were registered 274 deaths in children aged 0-18 years.

#### Personal characteristics:

The distribution by age shows that approximately one quarter of cases are adolescents 16-18 years old, while the proportion of deaths in children between 4-6 years old is lower than 10% of total. (Table no. II)

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**Table no. 1. Distribution of deaths in children, 2004-2008**

YEAR	Nr.	%
2004	69	25,18
2005	48	17,51
2006	44	16,05
2007	68	24,81
2008	45	16,42
<b>TOTAL</b>	<b>274</b>	<b>100,00</b>

**Table no. 2. Distribution of violent deaths by age**

Age group (years)	No.	%
< 1	28	10,22
1-3	47	17,15
4-6	26	9,48
7-9	36	13,15
10-12	35	12,77
13-15	38	13,87
16-18	64	23,36
<b>Total</b>	<b>274</b>	<b>100,00</b>

The average age for the registered group was  $9,8 \pm 6,04$  years, fact that highlights an asymmetric nongaussian type of distribution,

The median age calculated was 9 years.

The distribution by gender was as follows:

- male deaths: 164 (59,85%)
- female deaths: 110 (40,15%)

So, the male/female calculated ratio is 1,5/1, consistent with the results of other researches.(3)

The analysis of residence area shows that more than two thirds of deaths occurred in rural areas (70,81%), the urban/rural ratio being 1/ 2,4.

The cases were registered, both in the county of Iasi (68, 62%) and in other counties of Moldova, as well (31, 38%). The cases transferred to a specialised clinic depended on the seriousness of injury and of the human and material resources. The pathology caused by the psychoactive substances consumption, abuse and addiction, including alcohol, has devastating social and economic effects. Toxicological tests are necessary when a toxic action on the body is suspected, or for tanatogenesis exclusion and for the confirmation in the body of a substance already known.(8) The test regarding alcohol consumption was performed in 126 suspected cases (45,99%). A number of 30 samples of these were positive, so approximately one in four tested children ingested alcohol (23,81%).

### Temporal characteristics:

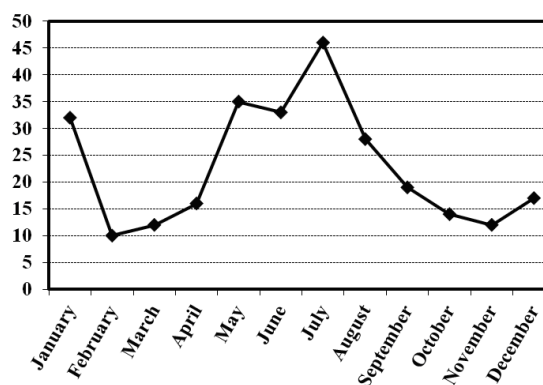
Starting from the premise that during one year, variations of the number of accidents/injuries can exist, which may result in death, we found that the fewest cases were recorded in February (3,65%), and the most in July (16,80%), as shown in picture no. 1.

These differences are explained by the fact that during winter time, children stay longer in the house and are supervised by parents, while in the summer time, during holidays, the children spend more time outside, near their homes or even away from their homes, with minimal supervision or even without the parents' consent. More, the summer day is longer, a favourable fact for outdoor activities comparable with the cold time.

Comparing the real distribution of cases over twelve months with an equal, hypothetical distribution, the results shows a significant difference ( $p=0.01$ ).

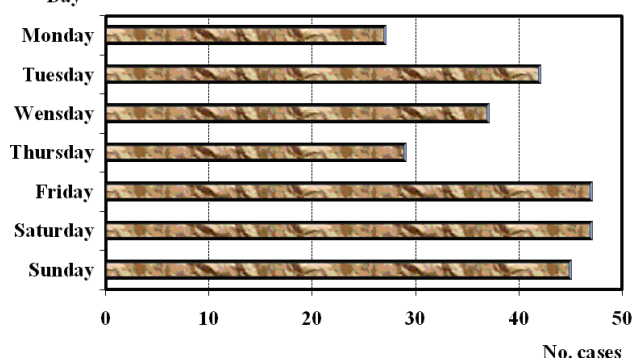
The study also includes an analysis by the day of the week, in which the tanatogenerator event occurred. So, the number of deaths varied from a minimum of 27 (9,85%) found on Mondays to a maximum of 47 (17,15%) found on Fridays, respectively on Saturdays (Picture no. 2).

**Picture no. 1. The number of cases registered per months.**  
Nr. cases



It is also mentioned that at the end of the week (Fridays, Saturdays, Sundays), half of the total number of deaths occurred (50, 72%). Comparing again the distribution of the days of the week, an insignificant difference has been found ( $p > 0,05$ ).

**Picture no. 2. Distribution of cases per week days**  
Day



### Spatial characteristics

The analysis of these variables has included the place of accident and, respectively, the place of death. About half of children (47,81%) suffered events at home that subsequently led to death. The second place in the hierarchy is taken by the injury recorded on the public highway as the traffic accidents (including railway accidents) (26, 64%), followed by cases in which death location was represented by rivers. (16,42%).

The analysis stratified by residence shows that both for urban and rural area, the most important three places where accidents/ injuries occurred are the same:

1. home
2. highway, railway
3. rivers

More than half of cases (56,56%) died at the place of accident, this fact outlining a maximum degree of seriousness. About one in three children (29,56%) died in the first hospital where they were transported. Moving the children to special services of higher hospitals was done in relatively few cases (13,88%), a situation explained by the natural evolution of the violent trauma (9), being known the fact that deaths caused by trauma occurred in three important moments:

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- first and the most important is registered in a few seconds to some minutes;
- the second is registered several minutes to several hours after the event (53% of cases);
- the third is registered some days to some weeks after, due to severe craniocerebral trauma and multiple organic dysfunction syndrome.

All these findings emphasized the importance of prehospital emergency medical care and of the safe and fast transportation to paediatric trauma services from a regional centre hospital care immediately after the event. The optimal functioning of paediatric emergency care could lead to a decrease and even to the elimination of the avoidable deaths, lowering thus the number of Romanian children who remain with disabilities.

Presently, in Romania, emergencies traumas are not delimited from those non trauma, probably because of the fact that the trauma care systems are very expensive and financed from the state budget. It should be noted that just two thirds (61, 90%) of alive children when the ambulance arrived, were transported, from the beginning, to a county or regional hospital, where they received the special care they needed.

### CONCLUSIONS

The analysis of personal, temporal and spatial characteristics for 274 registered deaths in the Medico-Legal Institute of the city of Iasi, in children between 0- 18 years, in a period of five years, 2004-2005, has pointed out the followings:

1. Profile: 9-year-old child, male, rural, who suffered a violent trauma at the end of the week, in the summer (the highest probability in July), at home, the death occurring before the arrival of the emergency medical services.
2. Regardless of deaths particularities, the lack of family supervision, even at home, is emphasized.
3. A campaign to prevent violent deaths in childhood should be based on the family's involvement and on the child's as well (age-appropriate responsibilities). A minimal exposure to risk factors and risk awareness has a decisive role.
4. Traumatized patient transportation should be done safely and quickly to a trauma paediatric centre.

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