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# EPIDEMIOLOGICAL ASPECTS OF CHILDREN DEATHS THROUGH TRAUMATISM

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## *Abstract*

*The authors studied the traumatic pathology of the child for a period of 10 years, focusing on traffic accidents, falling from heights and falling at the same level. During all the years of study trauma victims were predominantly boys, the risk being 1.8 times higher compared to girls. During 2003 and 2012, the incidence of accidents by falls from the same level was significantly higher than other types of trauma, and the incidence of injuries produced by falls from height was significantly higher than traffic accidents. During the studied period, 169 deaths were recorded out of the 3671 trauma, resulting in the lethality of 1.60%. Index of lethality related to road accidents was 2.32%, while for injuries by falling from heights or falls from to the same level the index was 1.58% and 0.70%, respectively.*

**Keywords:** trauma, children, fallings, traffic accidents.

## INTRODUCTION

Pediatric traumatology represents a chapter of great importance amongst childhood pathology, with direct implications for the children physical and neuropsychological health, but also with consequences on child mortality.

However, epidemiological and exhaustive demographic studies were rarely conducted on pediatric population groups, and significant biostatistical analysis of collected data lacked.

## OBJECTIVES

Assessment of the value of pediatric traumatology particularities in Bihor County over a decade.

## MATERIAL AND METHOD

The authors analyze the traumatisms recorded between 2003 and 2012 on Bihor County territory, focusing on traffic accidents, falling from heights and same level fall injuries. 3671 trauma were registered. Demographic data were collected, together with medical records, forensic and judicial inquiries, familial and environmental background.

## RESULTS AND DISCUSSIONS

1. Trauma-related mortality in children

*Table 1*

Deaths due to same-level falls – share of forensic examination on cadaver

| Period | Total autopsies | Traumatisms | % | Minors deceased | % |
|---|---|---|---|---|---|
| 2003-2012 | 7132 | 3888 | 54,51 | 169 | 4,35 |

During 2003-2012 period, Laboratory of Forensic Medicine conducted 7132 autopsies; 3888 cases (54.51%) were trauma-related deaths. Of these, 169 cases were minors (4.35%).

*Table 2*

Trauma-related mortality in children during 2003-2012 period

| Year | No. | % | Lethality index (%) | Mortality ($^0/_{0000}$) |
|---|---|---|---|---|
| 2003 | 23 | 13,61 | 5,52 | 21,23 |
| 2004 | 17 | 10,06 | 4,36 | 16,15 |
| 2005 | 16 | 9,47 | 3,65 | 15,59 |
| 2006 | 16 | 9,47 | 3,74 | 15,81 |
| 2007 | 17 | 10,06 | 7,17 | 17,09 |
| 2008 | 16 | 9,47 | 4,06 | 16,28 |
| 2009 | 12 | 7,10 | 3,83 | 12,32 |
| 2010 | 16 | 9,47 | 5,16 | 16,52 |
| 2011 | 15 | 8,88 | 4,10 | 15,50 |
| 2012 | 21 | 12,43 | 5,56 | 21,84 |
| **Total** | **169** | **100,00** | **4,60** | **16,86** |

During analyzed period, from 3671 trauma produced, 169 resulted in deaths, leading to a lethality of 1,60%.

Of the 169 deaths, most cases were recorded in 2003 (13.61%) and 2012 (12.43%).

Lethality index (percentage of trauma related deaths by all traumatisms) between 2003 and 2012 was 4.60%, with the highest level recorded in 2007 (7.17%), while the minimum was in 2005 (3.65%).

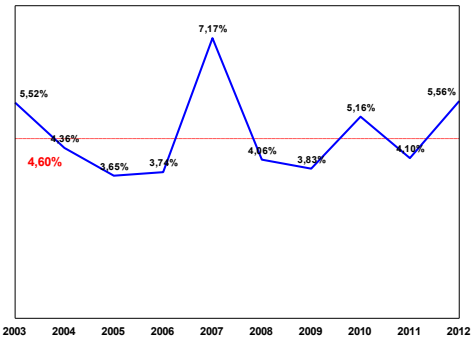


Chart 1. Traumatisms lethality index

Trauma-related mortality encountered a maximum 2012 (21,84$^0/_{0000}$), followed by 2003 (21,23$^0/_{0000}$), whilst minimum was noted 2009 (12,32$^0/_{0000}$).

1a. Mortality according to gender

*Table 3*

Mortality according to gender

| Gender | No. | % | Lethality index (%) | Mortality ($^0/_{0000}$) |
|---|---|---|---|---|
| Male | 110 | 65,09 | 4,57 | 21,39 |
| Female | 59 | 34,91 | 4,67 | 12,09 |

Most cases of deaths occurred in boys (65.09%), deaths among girls representing only 34.91%.

Lethality index was insignificant higher among girls (4.67% vs 4.57%) (p = 0.841).

Gender did not influence the risk for trauma-related deaths in children (RR=1,021).

Mortality was significantly higher among boys (21,39$^0/_{0000}$ vs 12,09$^0/_{0000}$) (p=0,004).

The risk of trauma-related death was 1.8 times higher in boys than in girls (RR=1,769, RA=0,294).

1b. Mortality according to age

*Table 4*

Mortality according to age

| Age group | No. | % | Lethality index (%) | Mortality ($^0/_{0000}$) |
|---|---|---|---|---|
| Sugar | 2 | 1,18 | 1,25 | 3,18 |
| 1 - 3 ani | 18 | 10,65 | 4,85 | 14,32 |
| 4 - 6 ani | 36 | 21,30 | 5,96 | 19,25 |
| 7 - 10 ani | 55 | 32,54 | 4,30 | 21,62 |
| 11 - 16 ani | 58 | 34,32 | 4,61 | 15,58 |

Most deaths was recorded in children aged between 11 and 16 years (34.32%), in infants existing only 2 cases (1.18%).

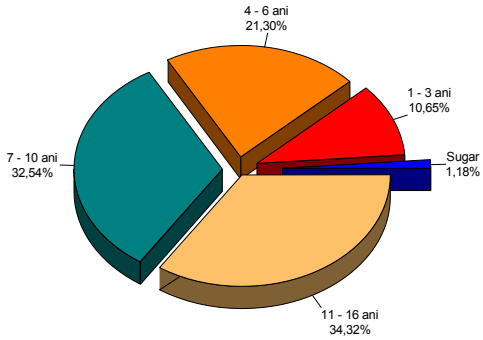


Chart 2. Deaths distribution according to age

A maximum lethality index was registered in the age group 4-6 years (5.96%), significantly higher than in the other age groups: 4.85% in the age group 1-3 years (p = 0.026), 4.61% in the age group 11-16 years (p = 0.005), 4.30% in the age group 7-10 years and 1.25% in infants (p <0.001).

The risk of pediatric trauma-related deaths was 1.4 times higher in children aged between 4-6 years than in the other children (RR = 1.374, R = 0.016).

Mortality was highest among children aged between 7-10 years ($21,62^0/_{0000}$), followed by the age group 4-6 years ($19,25^0/_{0000}$). Infantile mortality was at $3,18^0/_{0000}$.

The risk of trauma-related deaths was 1.4 times higher between the ages of 7-10 years than in the other children (RR = 1.418, R = 0.175).

1c. Mortality according to habitation

*Table 5*

Mortality according to habitation

| Habitat | No. | % | Lethality index (%) | Mortality ($^0/_{0000}$) |
|---|---|---|---|---|
| Urban | 75 | 44,38 | 3,40 | 16,56 |
| Rural | 94 | 55,62 | 6,40 | 17,11 |

Most deaths occurred among children from rural areas (55.62%), the ratio of rural / urban was 1.25: 1.

Trauma-related lethality index was significantly higher in rural areas than in urban areas (6.40% vs. 3.40%, p <0.001).

Trauma-related mortality in urban areas was $16,56^0/_{0000}$, insignificant lower than in the rural areas ($17,11^0/_{0000}$) (p=0,833).

1d. Mortality according to the trauma type

*Table 6*

Mortality according to trauma types

| Trauma type | No. | % | Lethality index (%) | Mortality ($^0/_{0000}$) |
|---|---|---|---|---|
| Same-level falls | 26 | 15,38 | 0,71 | 2,59 |
| Falls from height | 58 | 34,32 | 1,58 | 5,79 |
| Traffic accidents | 85 | 50,30 | 2,32 | 8,48 |
| **Total** | **169** | **100,00** | **4,60** | **16,86** |

Most deaths were noted among children from rural areas (53.85) with ratio rural / urban of 1.2: 1.

Lethality index was 0.71% for same level falls type, 1.58% for falls from height and 2.32% in road accidents.

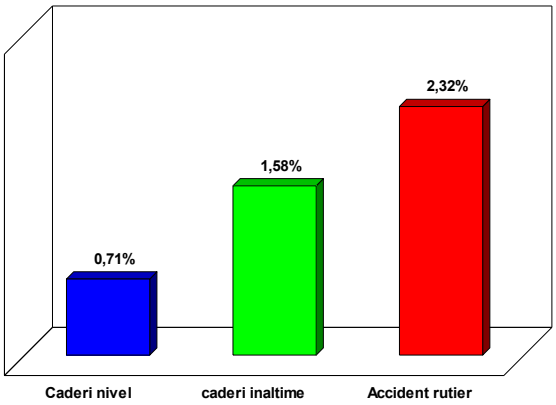


Chart 3. Lethality index according to trauma type

Mortality related to same level fall trauma type was significantly lower than for falling from height type ($2,59^0/_{0000}$ vs $5,79^0/_{0000}$, $p<0,001$), which was significantly lower than in case of traffic accidents ($5,79^0/_{0000}$ vs $8,48^0/_{0000}$, $p<0,001$).

## CONCLUSIONS

Analysis of pediatric traumatology in the light of certain demographic and epidemiological modern concepts determines an accurate understanding of the logic and structure of these phenomena.

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