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## Acute poisoning in children; changes over the years, data of pediatric clinic department of toxicology

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### ABSTRACT

**Objective:** To present the frequency, etiology, changes over the years of acute poisoning in children admitted to Pediatric Clinic of Pristina and to determine the extent and characteristics of the problem, according to which related preventive measures can be taken. **Methods:** Retrospectively we have analyzed the epidemiology of accidental and suicidal poisonings in children hospitalization in Pediatric Clinic Department of Toxicology during the year 2012. Our data we compared with data from previous studies on acute poisoning in children in the Pediatric Clinic conducted during the years 1976–1985 and 2001. **Results:** During the year 2012, in Pediatric Clinic of Pristina 5 723 children were hospitalized, 136 of them or 2.3% were treated due to acute poisoning in Department of Toxicology, 82 of them was boys and 54 was girls, rate boys girls was 1.5:1. The majority of cases 101 or 74.2% were under five years with peak age three and 35% or 25.7% were over five years. The most of the cases was accidentally 97% and only 2.9% was suicidal and all of them were over the age of ten. Drugs were the most common agent causing the poisoning 71 (52.2%) followed by house cleaning products 38 (27.9%), food 10 (5.8%), pesticides 7 (5.14%), rare agent that caused poisoning were: narcotic substances, plant, heavy metals, alcohol, carbon monoxide, carburant. Poisoning occurred mostly in spring and the peak was observed in May, (1.17% of all patients). January was the month of lowest rate of poisoning. During the years 1976–1985, in Pediatric Clinic of Pristina 900 children were hospitalized due to acute poisoning, 44.11% were from drugs, 15.88% from pesticides, 65 (7.2%), while during 2001 in the unit care intensive were hospitalized 66 children due to acute poisoning, among them 51.5% were poisoning from drugs, 30.03 from pesticides, 12.2% from cleaning products. **Conclusion:** In our study drugs and house cleaning products are the most frequent agents causing accidental poisoning in children less than 5 years–old, this age of children is the most susceptible in terms of morbidity. Compared with the previous studies in Pediatric Clinic of Pristina, drugs are still the most frequent cause of acute poisoning in children; the number of poisoning with pesticides has fallen but has increased the number of poisoning with cleaning products. All preventive measures against poisoning should be taken including preventive strategies of education at national level especially in drug and household product storage.

## 1. Introduction

Acute Poisoning in children is an important public health problem and represents a frequent cause of admission in Pediatric Clinic. The incidence of childhood poisoning in various studies ranges from 0.33% to 7.6%. Poisoning is most commonly observed at 1–5 years of age and these children constitute 80% of all poisoning cases[1].

The purpose of this study was to present the frequency, to determine the agents of poisoning in children admitted to Pediatric Clinic of Pristina to compare and see changes of our data from the data of previous study on acute poisoning

of children in our clinic and to determine the extent and characteristics of the problem, according to which related preventive measures can be taken.

## 2. Materials and methods

The present retrospective study describes the frequency, etiology of acute poisoning in children of a pediatric population with accidental and suicidal poisonings admitted to Pediatric Clinic of Pristina, in Department of Toxicology, during the year 2012. Acute food poisoning patients were included from those that were in toxicological department. The age and sex of the patients, place of residence, period of poisoning, manner of poisoning, poison agents, clinical manifestation were evaluated.

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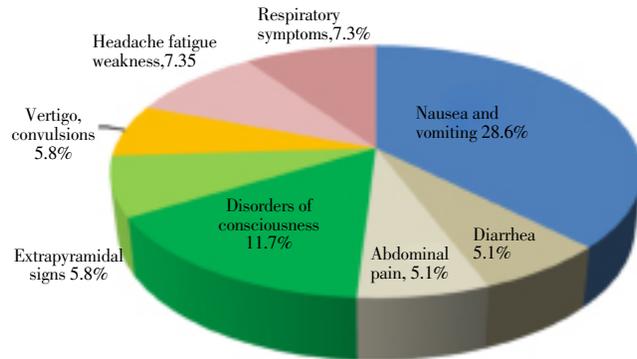
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### 3. Results

During the year 2012, in Pediatric Clinic of Pristina 5 723 children were hospitalized, 136 of them or 2.3% were treated due to acute poisoning in Department of Toxicology.

**Table 1.** Manner of poisoning according to age groups.

Age groups	Accidental n(%)	Suicidal n(%)	Total
0–4	101(74)	0	101(74)
5–9	17(12.5)	0	17(12.5)
>10	12(8.8)	3(2.9)	15(11)
Total	133(97)	3(2.9)	136(100)



**Figure 1.** Most frequent signs and symptoms of acute poisoning.

#### 3.1. Age and sex

The majority of cases 101 or 74.2% were under five years with peak age three and 35 or 25.7% were over five years. The patients consisted of 82 (60.25%) boys and 54 (39.7%) girls, rate boys girls was 1.5:1. Mode of Poisoning The most of the cases was accidentally 133( 97%) and only 3( 2.9%) was suicidal and all of them were over the age of ten.

**Table 2.** Place of residence rural areas and urban areas.

Place of residence	n(%)
Rural areas	69(50.7)
Urban areas	60(44.11)

#### 3.2. Place of residence and monthly distribution

Regarding the place of residence, 69(50.7%) cases were coming from the rural areas, while 60 (44.11%) cases were coming from the urban areas. Poisoning occurred mostly in spring and the peak was observed in May, (1.17% of all patients). January was the month of lowest rate of poisoning.

#### 3.3. Agents involved

Drugs were the most common agent causing the poisoning 71(52.2%) followed by house cleaning products 38(27.9%), food 10(5.8%), pesticides 7(5.14%), hydrocarbons 5(3.6%), rare agent that caused poisoning were: plant, heavy metal, carbon monoxide, alcohol, narcotic substances. Due to fast industrialization and the urban way of living, more frequent usage of drugs, household cleaning tools has contributed that acute poisoning in children from those products is increased.

**Table 3.** Types of poisoning according to agents of poisoning.

Agents	n (%)
Drugs	71 (52.2)
Cleaning products	38 (27.9)
Food	10 (5.8)
Pesticides	7 (5.4)
Hydrocarbons	5 (3.6)
Other	5 (3.6)

**Table 4.** Manner of poisoning according to way of poisoning.

Manner of poisoning	n(%)
Digestive tract (ingestion)	111(81.6)
Skin	15(11.0)
Respiratory tract (inhalation and nose mucosa)	10(7.35)

#### 3.4. Clinical manifestations

Rate of poisoning on the basis of the presence of clinical manifestations were moderate to severe 76(55.8%) cases, while mild to asymptomatic in 60 (44.11%) cases. Gastrointestinal manifestations with nausea and vomiting were present in 39(28.6%), diarrhea 7(5.1%), abdominal pain 7(5.1%) cases. Neurological manifestations with disorders of consciousness 16 (11.7%), extrapyramidal signs 8(5.8%), vertigo, convulsions 7(5.1%) cases. Respiratory symptoms and signs: headache, fatigue, weakness 10(7.35).

**Table 5.** Number and type of acute poisoning of children in the Pediatric Clinic of Pristina based on years poisoning.

Year	1976–1985	2001	2012
Total number	900	66	136(2.3)
Drugs n(%)	397(44.11)	34(51.5)	71(52)
Pesticides n(%)	143(15.88)	20(30.03)	7(5.4)
Cleaning products n(%)	65(7.2)	8(12.2)	38(27.9)

**Table 6.** Clinical classification of poisoning on the basis of the clinical manifestations.

Clinical manifestations	n(%)
Moderate to severe	76 (55.8)
Mild to asymptomatic	60 (44.11)

### 4. Discussion

WHO reports estimate poisoning as one of the most common causes of increased morbidity and mortality rate world-wide[2]. Acute poisoning accounted for 2.3% of the cases treated in Department of Toxicology. Poisoning has been reported to range from 0.21%–6.2% in Turkey[3]. In western countries, the percentage of pediatric emergency service admission for poisoning was 0.28% to 0.66%[4,5]. According to these findings it is suggested that poisonings are still an important issue in Kosovo. The majority of cases 74.2% were under five years since children in this age group are more curious leading to injury, the male/female ratio was 1.5:1 probably as a result of the higher activity of male children and other unknown causes. Negligence or unawareness

from the parents and caretakers is one of the main factors in making the environment of the child favorable for poisoning. Various agents such as drugs, house cleaning products, pesticides, are cause of accidental and suicidal poisoning in different countries.

During the years 1976–1985, most frequent agents of poisoning in children treated in Pediatric Clinic of Pristina were drugs (44.11%) followed by pesticides (15.88%), house clinging products (7.2%) (Table 6). In the year 2001 drugs (51.5%) followed by pesticides (30.03) also were most frequent agents of poisoning. In our retrospective study during the year 2012 the most frequent agents of poisoning were also drugs (52%), followed by house cleaning products (27.9%) while the number of poisonings with pesticides is decreased (5.4%).

Agriculture before 10 years were the prime profession for majority of people in rural areas so the possible reasons for decreased may be fast industrialization and rising the urban way of living during these years, more frequent usage of drugs and household cleaning tools. Raising the awareness of population for preservation and using pesticides through various campaigns of education that have been taken may be also factors that have influenced to decline the number of acute poisoning of children with pesticides. Several studies have reported that pesticides were the most commonly used agents for poisoning in Asia Pacific Regions[2]. An analysis of the files collected in the National Poison Information Centre reveals that drugs are the most frequent causes of acute poisonings (followed by pesticides and other chemical substances) not only in big cities but also in rural areas[6]. Medicines are used as poisoning agents for intentional poisoning in developed countries and urban areas[7].

In our study only three cases was suicidal and all of them were over the age of ten among children in puberty (in connection with the psychosocial issues in that period of life) and poisoning agents was medicines. In most of different study in others country the majority of cases were due to accidental poisoning. Accidental poisoning is a problem of huge magnitude[8] and a persistent cause of injury related morbidity and mortality worldwide. The clinical presentation of poisoning may be various and nonspecific. In our study the frequent manner of poisoning were from ingestion–digestive tract (81.6%) of poisoning agents with predominate of clinical manifestations from digestive tract like nausea, vomiting, diarrhea, abdominal pain.

The reason may be that small children are curious about the surrounding environment and prone to inserted in the mouth various things so here is important role of the parent for maintaining the medicines, house cleaning products and other toxic agents in countries where child may not have access in them. New research indicates that various social and demographic factors like family size, socioeconomic condition, attention to child as well as storage place of poison are important risk factors which significantly influence the acute household poisoning cases in children[9,10].

A large scale prospective multi–center study is recommended for further evaluating of etiology, geographic differences and other risk factors for acute poisoning in Kosovo, this is necessary to determine the extent and characteristics of the problem, according to which related

preventive measures can be taken.

In our study drugs and house cleaning products are the most frequent agents causing accidental poisoning in children less than 5 years–old, this age of children is the most susceptible in terms of morbidity. Compared with the previous studies in Pediatric Clinic of Pristina, drugs are still the most frequent cause of acute poisoning in children; the number of poisoning with pesticides has fallen but has increased the number of poisoning with cleaning products. All preventive measures against poisoning should be taken including preventive strategies of education at national level especially in drug and household product storage.

### Conflict of interest statement

We declare that we have no conflict of interest.

### References

- [1] Sabiha Sahin, Kursat Bora Carman, Ener Cagri Dinleyici. Acute Poisoning in Children; Data of a Pediatric Emergency Unit. *Iran J Pediatr* 2011; **21**(4): 479–484.
- [2] Jesslin J, Adepu R, Churi S. Assessment of prevalence and mortality incidences due to poisoning in a South Indian tertiary care teaching hospital. *Indian J Pharm Sci* 2010; **72**(5): 587–591.
- [3] Mutlu M, Cansu A, Karakas T, Kalyoncu M, Erduran E. Pattern of pediatric poisoning in the east Karadeniz region between 2002–2006: increased suicide poisoning. *Hum Exp Toxicol* 2010; **29**(2): 131.
- [4] Mintegi S, Fernández A, Alustiza J, Canduela V, Mongil I, Caubet I, et al. Emergency visits for childhood poisoning: a 2–year prospective multicenter survey in Spain. *Pediatr Emerg Care* 2006; **22**(5): 334–338.
- [5] Burillo–Putze G, Munne P, Duenas A, Pinillos MA, Naveiro JM, Cobo J, et al. National multicentre study of acute intoxication in emergency departments of Spain. *Eur J Emerg Med* 2003; **10**(2): 101–104.
- [6] Jaraczewska W, Kotwica M. Acute poisonings with drugs. A review of the data collected at the National Poison Information Centre during the period 1991–1995. *Przegl Lek* 1997; **54**(10): 737–740.
- [7] McClure GM. Suicide in children and adolescents in England and Wales 1970–1998. *Br J Psychiatry* 2001; **178**: 469–474.
- [8] Rodgers, Matyunas NC. In: Behrman RE, Kleigman RM, Jenson HB, editor. *Nelson text book of paediatrics*. Philadelphia: WB Saunders; 2000.
- [9] Nhachi Charles FB, Kasilo Ossy MJ. The pattern of poisoning in urban Zimbabwe. *J Appl Toxicol* 2006; **12**(6): 435–438. doi: 10.1002/jat.2550120612.
- [10] Mahdi AH, Taha SA, Al Rifai MR. Epidemiology of accidental home poisoning in Riyadh (Saudi Arabia). *J Epidemiol Community Health* 1983; **37**(4): 291–295.
- [11] Azemi M, Muje Shala me bashkpunetore. Univeristeti i Prishtinës, *Pediatrics*, 2010; 995–1037.
- [12] Tahirovic H, Malbasic Lj, B Boskovic. Akutna trovanja pesticidima. Zbornik radova. XIII Kongres Pedijataria Jugoslavije, 1987, Pristina; 371.