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# STUDY TO ASSESS PHARMACOLOGICAL PROFILE OF NON ORGANOPHOSPHOROUS POISONING CASES IN CHILDREN ADMITTED TO TERTIARY CARE CENTER- A RETROSPECTIVE OBSERVATIONAL STUDY

Paediatric Medicine

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## ABSTRACT

**Introduction** Childhood poisoning represents a widespread concern globally and stands as a critical pediatric emergency. It serves as a common and preventable factor contributing to childhood morbidity and mortality. **Methods** A retrospective observational study was conducted for a duration of 6 months at a tertiary care center located in a city in Southern India. The aim of the research was to analyze the pharmacological characteristics of poisoning incidents in children aged between 5 to 18 years. **Results** Total 72 (N) children were admitted with poisoning during the study period of 6 months. Among the total cases 43 (59.72%) were males and 29 (40.27%) were females. 18 children (25%) were in the age group of 1-5 years, 23 children (31.94%) were in the group of 5-10 years and 31 (43.05%) children were in the group of 11-18 years. Mode of poisoning was ingestion in 69 cases (95.83%), while 3 cases (4.16%) had significant history of inhalational poisoning. Accidental poisoning was seen in 31 children (43.05%) and suicidal poisoning was noted in 41 cases (56.94%). Acitamenophen (Paracetamol) poisoning accounted for majority of non insecticidal poisoning cases among children accounting for 12.5%, followed by Paint thinner consumption seen in 7 cases (9.7%). Out of the 72 children 15 children succumbed accounting for 20.83% mortality. **Conclusion** Paracetamol poisoning and paint thinner poisoning were the predominant substances associated with hospital admissions due to poisoning. The assessment of adolescents' mental health and provision of counseling are also pivotal in the prevention of poisoning.

## KEYWORDS

Poisoning, childhood, adolescent, prevention

## INTRODUCTION

Childhood poisoning is a global issue and a significant pediatric emergency. It is a frequent and avoidable cause of childhood illness and death. The characteristics and prognosis of pediatric poisoning patients varied globally, and in any given area, the prevalence of social, professional, economic, and cultural practices, as well as the accessibility and standard of medical facilities, all have an impact. Therefore, epidemiological monitoring unique to each nation and region is required to ascertain the scope and nature of the issue, from which relevant preventative actions can be implemented.

The majority of child poisonings are unintentional. In children's hospitals, poisoning accounts for 1-6% of bed occupancy; in pediatric intensive care units in India, it accounts for 3.9%.[1]

Children are naturally interested and use all of their senses to investigate their environment, most frequently by mouthing, which makes poisoning during childhood a typical occurrence, according to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).[2] Toddlers are more likely because of their developing motor skills and inquisitive minds. It is a frequent reason for youngsters to die in an unusual way. It ranks as the second most frequent cause of harm that sends kids younger than five years old to the hospital.[1]

Although reliable data from India is few, studies carried out in various regions of the country have revealed admission rates ranging from 1 to 7.6% and fatality rates from 0.6% to 11.6% as a result of acute poisoning in children.[3,4,5]

Acute poisoning has different patterns and outcomes depending on the type of exposure, the poison's composition, dose, and demographics. Drug poisoning is more common in developed countries and urban areas. On the other hand, domestic drugs are important factors in rural and low-income areas.[6] According to certain research, hospital admissions for poisonings occur more frequently in rural than in metropolitan regions. On the other hand, a number of other studies show that children from metropolitan regions are more frequently admitted for poisoning.[7]

The present study is aimed to determine the pharmacological profile of non organophosphorous poisoning in children admitted to tertiary care center in a city in Southern India. As there is increasing trend of poisoning seen among adolescents, this study plays an important role in the present period.

## MATERIALS AND METHODS

Source of Data: Vani Vilas Hospital, Bangalore Medical College and Research Institute

## METHOD OF COLLECTION OF DATA:

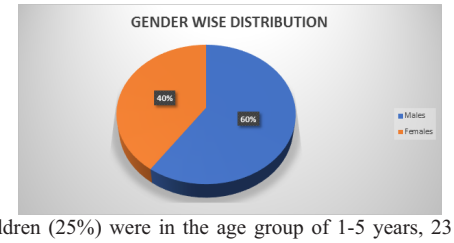
Data was collected from children admitted with poisoning in the age group of 1 years to 18 years

A. Design of study: Retrospective observational study
B. Place of study: Department of Pediatrics, Vani Vilas Hospital, BMCRI, Bangalore

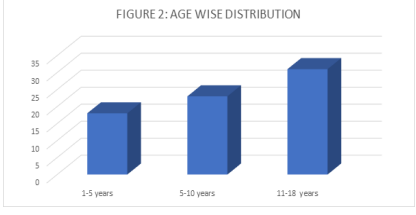
## RESULTS:

Total 72 (N) children were admitted with poisoning during the study period of 6 months. Children between the age group of 1-18 years were included in the study.

Among the total cases 43 (59.72%) were males and 29 (40.27%) were females.




18 children (25%) were in the age group of 1-5 years, 23 children (31.94%) were in the group of 5-10 years and 31 (43.05%) children were in the group of 11-18 years.




It is important to note the majority were adolecents. Significant history of familial disputes and broken family was noted in 22 children (30.55%).

Mode of poisoning was ingestion in 69 cases (95.83%), while 3 cases (4.16%) had significant history of inhalational poisoning. 12 (16.66%) ,15 (20.83%) ,27 (37.5%) and 18 (25%) cases belonged to Upper middle, Lower middle, Upper lower and Lower Socioeconomic class as per Modified Kuppuswamy Classification respectively.

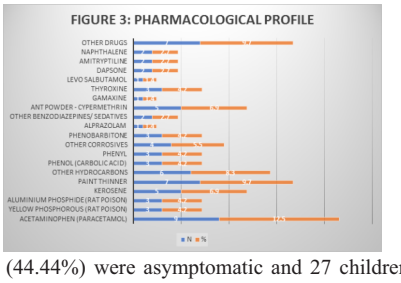
Accidental poisoning was seen in 31 children (43.05%) and suicidal poisoning was noted in 41 cases (56.94%).

Table 1 shows pharmacological profile of cases.

**TABLE 1: PHARMACOLOGICAL PROFILE OF CASES**

| PHARMACOLOGICAL PROFILE | N | % |
|---|---|---|
| Acetaminophen (Paracetamol) | 9 | 12.5 |
| Yellow phosphorous (Rat poison) | 3 | 4.2 |
| Aluminium phosphide (Rat Poison) | 3 | 4.2 |
| Kerosene | 5 | 6.9 |
| Paint thinner | 7 | 9.7 |
| Other Hydrocarbons | 6 | 8.3 |
| Phenol (Carbolic acid) | 3 | 4.2 |
| Phenyl | 3 | 4.2 |
| Other Corrosives | 4 | 5.5 |
| Phenobarbitone | 3 | 4.2 |
| Alprazolam | 1 | 1.4 |
| Other Benzodiazepines/ Sedatives | 2 | 2.7 |
| Ant powder - Cypermethrin | 5 | 6.9 |
| Gamaxine | 1 | 1.4 |
| Thyroxine | 3 | 4.2 |
| Levo salbutamol | 1 | 1.4 |
| Dapsone | 2 | 2.7 |
| Amitryptiline | 2 | 2.7 |
| Naphthalene | 2 | 2.7 |
| Other drugs | 7 | 9.7 |

It can be seen from Table 1 that, Acitamenophen (Paracetamol) poisoning accounted for majority of non insecticidal poisoning cases among children accounting for 12.5%, followed by Paint thinner consumption seen in 7 cases (9.7%). Other drugs of no pharmacological significance accounted for 9.7% of cases.




32 children (44.44%) were asymptomatic and 27 children (37.5%) required intensive care. Out of the 72 children 15 children succumbed accounting for 20.83% mortality.

## DISCUSSION

In a study titled Clinical profile of poisoning in children: A hospital based study, by Shruthi Jadhav et al. it was inferred that fifty cases of poisoning formed 1.3% of all paediatric admissions (3700 admissions). 94% of the incidents were unintentional. There were 84% of the youngsters in the 1–5 age range that were predominantly male. In this investigation, kerosene oil poisoning continued to be the most common accidental poisoning (32%). The second most prevalent poisoning (17.3%) was concentrated HCL poisoning, which is now a popular household product. This is an interesting development. Poisoning from different narcotics taken by adults residing in the residence ensued after this.[8]

Study by Subhash Poyekar with title Pattern and outcome of poisoning in children: A study from a rural teaching hospital, Western Maharashtra, India it was observed that 4.7% of all hospitalizations to the Pediatric Intensive Care Unit (PICU) were related to poisoning. The male to female ratio was 1:33, and 98 (87.5%) of the children were under the age of five. The most frequent cause of poisoning (n=55, 49.1%) was found to be organophosphorus chemicals, followed by kerosene (n=20, 17.9%). Thirty percent of the children spent fewer than 48 hours in the hospital. The study's overall survival percentage (n=103) was 91%.[9]

A retrospective study conducted by Nowneet Kumar Bhat et al. with title Profile of poisoning in children and adolescents at a North Indian tertiary care center it was noted that during the study period, 17 individuals presented with acute poisoning. Four years was the median age of our patients (range: 0.75 - 17.75). 60.68% of our patients were between the ages of one and six. The ratio of men to women was 1.4:1. Our patients were mostly from rural areas. Most commonly implicated agents were insecticides (37.61%), pharmaceuticals (25.64%), and kerosene oil (18.8%). In the age group of one to six years, almost all cases (97.2%) were accidental, while the majority (80.9%) in the group of twelve to eighteen years were suicidal. Thirty-six individuals (30.7%) stayed asymptomatic, while the remaining patients experienced symptoms linked to hazardous intake and necessitated either symptomatic or decisive intervention. Seven patients needed mechanical ventilation and intubation, while thirteen needed intensive care unit care.

Since OP compound and other insecticidal poisoning constituted majority of cases of poisoning admissions, our study focussed on compounds and chemicals other than insecticides. Pharmacological profile from our center showed that Paracetamol were most common poisoning, accounting for 12.5% of cases. Easy availability and over the counter availability are the most common reasons for raising trend of paracetamol poisoning. 2nd most common poisoning seen was with paint thinner vowing to its appearance similar to water (clear liquid) and hence causing accidental poisoning. Most of the pharmacological agents observed in the study are house hold items and drugs used by elders at home, thus accounting for accidental poisoning. Safety precautions to keep drugs and chemicals out of reach from children plays a significant role in prevention of accidental poisoning.

## CONCLUSION:

We infer that children under five years old were more likely to experience accidental poisoning. Paracetamol is the most common poisoning observed in the study. It may be possible to lower the incidence by taking preventive steps such closely storing common household products that have been linked to child poisoning, putting dangerous substances out of children's reach, and never leaving them unsupervised. Mental health assessment of adolescents and counselling also plays a significant role in prevention of poisoning.

## REFERENCES:

1. Aggarwal B, Rana SK, Chhavi N. Pattern of poisoning in children, an experience from a teaching hospital in northern India. JK Science.2014;16(4):174-8.
2. WHO-UNICEF. Children and poisoning: world report on child injury prevention. World Health Organization. 2008.
3. Siddiq AA, Suresh R, Balasankar S, Kuppusamy N, Rajkumar D. Analysis of the Profile and Outcome of the Ingested Poisoning Cases in Pediatric Intensive Care Unit of a Tertiary Care Urban Medical College Hospital in South Tamil Nadu. Int J Sci Stud 2020;8(9):36-40.
4. Mandal A, Pal AC, Das PK, Dutta AK. Clinico-epidemiological profile of poisoning in children in a rural based medical college and hospital. IOSR J Dent Med Sci 2016; 15:50-5.
5. Jadhav S, Rathi S, Biakthansangi B, Kondekar S. Clinical profile of poisoning in children. A hospital-based study. Int J Contemp Pediatr 2016; 3:709-12. [CrossRef]
6. Krishnegowda M, Yadav R. An observational study on acute poisoning in pediatric population in a rural medical college. International journal of Scientific Research, 2020, Vol 9(11):56-58. DOI: 10.36106/ijsr. [CrossRef]
7. Manzar N, Saad SM, Manzar B, Fatima SS. The study of etiological and demographic characteristics of acute household accidental poisoning in children-a consecutive case series study from Pakistan. BMC Pediatr. 2010; 10(1):28. [CrossRef] [PubMed] [PMC free article]
8. Jadhav S, Rathi S, Biakthansangi, Kondekar S.Clinical profile of poisoning in children: a hospital based study. Int J Contemp Pediatr2016;3:709-12.
9. Poyekar S. Pattern and outcome of poisoning in children: A study from a rural teaching hospital, Western Maharashtra, India. Pediatr Oncall J. 2022;19. doi: 10.7199/ped.oncall.2022.28