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INTERVENTIONS AND NURSING CARE OF ACUTE POISONING PATIENTS IN THE FIRST 24 HOURS OF HOSPITALIZATION AT THE CENTER OF EMERGENCY AND POISON CONTROL, VIETNAM NATIONAL CHILDREN'S HOSPITAL IN 2020

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ABSTRACT

Background: The early detection and prompt treatment of acutely poisoned patients are not just important; they are critical. The medical community, including healthcare providers, researchers, and emergency medicine professionals, play a vital role in improving the chances of survival and recovery in these cases.

Objective: To describe the healthcare and treatment provided to patients with acute poisoning within 24 hours of admission to the Center of Emergency and Poison Control, Vietnam National Children's Hospital, in 2020.

Methods: A cross-sectional epidemiological study was conducted on 60 children admitted with poisoning to the Center of Emergency and Poison Control of the National Children's Hospital from June to July 2020.

Results: Most children were under 5 years old (77%), with 53.3% male. Poisoning was primarily caused by food/drinks (46.7%), followed by incidents related to parents (35%). The most common poisons were chemicals (46.7%), drugs (15%), food/insect venom (10%), and opium/methadone (6.7%). Regarding emergency interventions, 21.7% required oxygen, 5% needed endotracheal intubation and mechanical ventilation, 5% received blood transfusions, 78.3% required intravenous electrolyte replacement, and 2 cases needed cardiac arrest resuscitation. Detoxification treatments included gastric lavage in 10% of cases, combined gastric lavage and activated charcoal in 3%, increased diuresis in 10%, and hemodialysis in 2 children. Specific detoxification drugs were used in 21.7% of cases. For care, 38.3% of children had gastric tubes, 8.3% had urinary tubes, 16.7% required sputum suctioning, and 100% were monitored using monitoring machines. In the first 24 hours, 10% had vital signs monitored 12 times or more, and 36.7% were observed 6-11 times.

Conclusion: Most pediatric poisoning cases involved children under 5, with food/drink poisoning and parental involvement as critical causes. Ordinary treatments included intravenous fluids, oxygen, and gastric lavage. However, the key to successful treatment and recovery lies in timely monitoring in the first 24 hours, underscoring the vital need for ongoing emergency and poisoning care training for healthcare providers.

Keywords: poisoning, emergency care, first 24 hours, pediatric poisoning, treatment, monitoring.

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1. INTRODUCTION

Poisoning and suspected poisoning are common in young children, accounting for over half of all poisoning cases in several countries. Poisoning is the fourth leading cause of accident-related deaths in children, with a mortality rate of 1.8/105. individuals. Low- and middle-income countries report a mortality rate four times higher than high-income countries. According to the WHO Global Burden of Disease Project, poisoning caused over 345,000 deaths worldwide in 2004, including approximately 45,000 children and adolescents under 20 years old.

In Vietnam, data from the National Children's Hospital shows that acute poisoning accounts for 1.25% of pediatric hospital admissions, while Saint Paul Hospital reports a rate of 0.1% [1]. Although the proportion of acute poisoning cases among all hospital patients is relatively low, the mortality rate can be high if emergency and intensive care management is inadequate [1]. Poisoning was among the top five causes of death in young children in Vietnam in 2006 [2]. The National Children's Hospital lacks precise statistics on pediatric poisoning incidence, causes, and mortality rates. However, our hospital continues to receive a significant number of poisoning and suspected poisoning cases for treatment every month.

Given these considerations, this study aims to describe the care and treatment of Patients with acute poisoning during the first 24 hours of admission at the Emergency and Poison Control Center, Vietnam National Children's Hospital, in 2020.

2. SUBJECTS AND METHODS

2.1. Subjects

Patients with poisoning who received emergency care at the Emergency and Poison Control Center, National Children's Hospital. Since the study population is children, only patients whose parents or guardians consented to participate in the evaluation survey were included.

2.2. Time and location

The study was conducted from June 2020 to July 2020 at the Emergency and Poison Control Center at the National Children's Hospital.

2.3. Study design

A descriptive cross-sectional epidemiological study.

2.4. Sample Size and Sampling Method

We collected data from all Patients with poisoning who received emergency care at the Emergency and Poison Control Center, National Children's Hospital, during June-July 2020. The final sample size was 60.

2.5. Data Collection Method

After obtaining consent from the patient's guardian, the Emergency and Poison Control Center staff conducted interviews and, based on the medical records, completed the pre-designed survey questionnaire.

2.6. Data Analysis and Processing

The data was cleaned, entered into Epidata 3.1 software, and analysed using SPSS 26.0 software.

2.7. Ethical Considerations

The study was conducted in compliance with all principles of biomedical research ethics.

3. RESULTS

3.1. General Characteristics

Table 1. General Characteristics of the Study Subjects

Characteristic		Number	Percent (%)
Age	Under 5 years old	47	77.0
	5- 11 years old	12	19.7
	Over 11 years old	1	1.6
Gender	Female	28	46.7
	Male	32	53.3
Address	Hanoi Capital	42	70.0
	Other Provinces	18	30.0
Situation of poisoning	By his/herself	28	46.7
	Due to parents/ caregivers	21	35.0
	Other	11	18.3
Type of poisoning	Stings	6	10.0
	Food poisoning	6	10.0
	Chemical poisoning	28	46.7
	Medication poisoning	9	15.0
	Herbicide and insecticide poisoning.	5	8.3
	Opiate/ methadone poisoning	4	6.7
	Other	2	3.3
Severity	Mild	21	35.0
	Moderate	25	41.7
	Severe	14	23.3

Among the 60 patients surveyed, the majority were children under 5 years old (77%), with 53.3% male and 70% residing in Hanoi. Poisoning due to ingestion accounted for 46.7%, while 35% of cases involved

parental actions (e.g., nasal washing). Among the types of poisoning, chemical poisoning accounted for 46.7%, followed by drug poisoning (15%), food poisoning and insect venom (10%), and opiate/methadone poisoning (6.7%). Children admitted with severe poisoning accounted for 23.3%, moderate cases made up 41.7%, and mild cases constituted 35%.

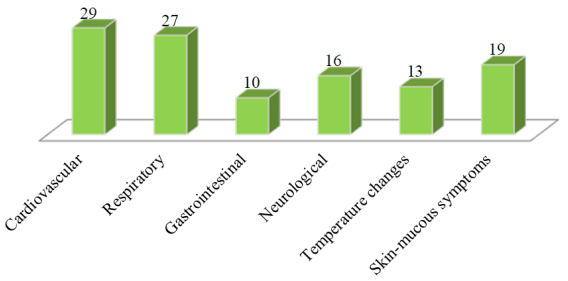

Figure 1. Distribution of Patients by Symptom Group

Figure 1 shows that 29 of the cohort had cardiovascular disturbances, 27 had respiratory symptoms, and 19 exhibited signs on the skin and mucous membranes. The group with the fewest cases was the gastrointestinal system, with ten children affected.

3.2. Treatment and Nursing Care Characteristics

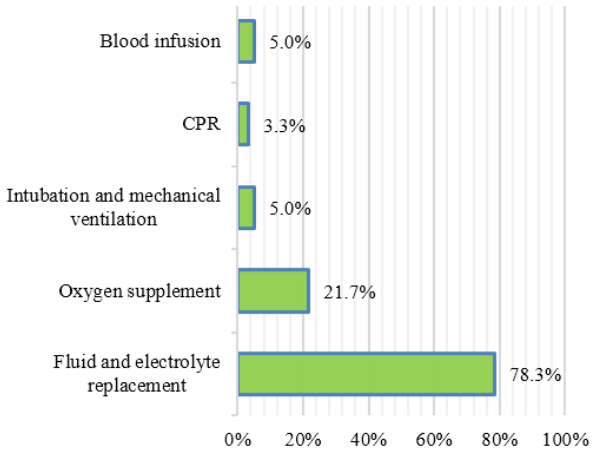

Figure 2. Emergency Intervention

Figure 2 shows that 3.3% of the patients required cardiopulmonary resuscitation, 5% required endotracheal intubation and mechanical ventilation, 21.7% required mask-assisted breathing, and 78.3% required fluid and electrolyte replacement.

Table 2. Detoxification Interventions for Patients

Interventions	Number	Percent (%)
Gastric lavage	6	10.0
Activated charcoal	3	5.0
Laxative therapy	1	1.7
Diuresis	7	11.7
Renal replacement therapy	0	0.0
Adsorption dialysis	2	3.3
Specific antidote therapy	13	21.7

Among the treatment measures used for poisoning in Patients at the Emergency and Poison Control Center, National Children's Hospital, 10% of children required gastric lavage, 5% were given activated charcoal, and 21.7% received specific antidote treatment. Notably, 3.3% of children needed hemoperfusion.

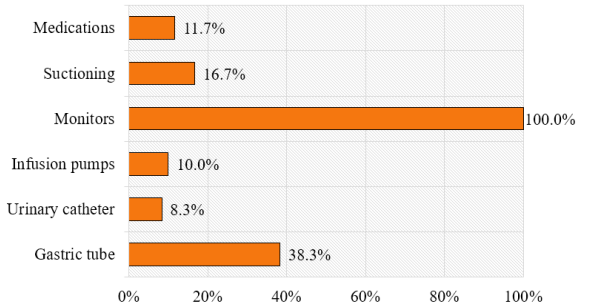

Figure 3. Care Characteristics of Patients

Figure 3 shows that 100% of the Patients used monitoring devices; 38.3% had gastric tubes inserted, 8.3% had urinary catheters, and 10% received medications via an infusion pump. Additionally, 11.7% of patients required hourly medication administration.

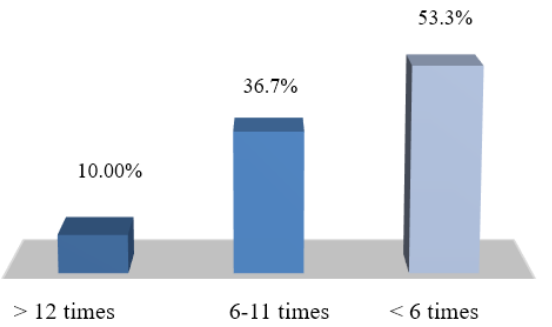

Figure 4. Frequency of Vital Sign Monitoring by Nurses in the First 24 Hours

In the first 24 hours of treatment at the Emergency and Poison Control Center, National Children's Hospital, nurses monitored 10% of the pediatric patients' vital signs and general condition 12 times or more. 36.7% were observed 6-11 times, while the remaining patients had fewer than six monitoring sessions.

4. DISCUSSION

In our study, most patients were children under 5 years old (77%), with 53.3% being male. The proportion of children under 5 years old who suffered poisoning was similar to the study by Soori and Manouchehrifar in Iran. At the Universitário de Maringá Hospital in Paraná, the poisoning rate for children aged 0-4 years was 81.0%, with 52.2% being male. Another study in Brazil in 2013 reported a poisoning rate of 72.5% in the 0-4 age group and 55% for boys. This highlights the challenges healthcare providers, especially nurses, face in managing care for these children.

Our study found that 46.7% of children were poisoned

due to ingestion of harmful substances. Among these, the most common poisonings were chemical poisoning (46.7%), drug poisoning (15%), and food poisoning or insect venom (10%). These findings are similar to a Brazilian study where 82.7% of poisonings were due to ingestion, with drugs (36.5%), chemicals, and cleaning agents (29.7%) being the most frequent causes [3], [4], [5], [6].

The treatment and management of poisoned patients depend on the child's condition, the nature of the poisoning, and the type of toxic substance involved. However, the initial focus is on stabilising the patient's vital functions before implementing detoxification measures. In our study, 3.3% of children required cardiopulmonary resuscitation, 5% needed endotracheal intubation and mechanical ventilation, and 21.7% required mask-assisted ventilation. Additionally, 78.3% of patients received intravenous electrolyte replacement.

Detoxification is as essential as maintaining vital functions and should not be delayed. Different types of poisons require different detoxification methods. In our study, 10% of children underwent gastric lavage, and 3.3% had both gastric lavage and activated charcoal. These cases involved poisoning due to ingestion, requiring gastric lavage to remove the toxic substances and activated charcoal to enhance the elimination of remaining toxins from the gastrointestinal tract. One case required a combination of gastric lavage, activated charcoal, and a laxative—this was a 13-month-old child who ingested mothballs. Diuresis was also used as a detoxification method, helping the body eliminate toxins through urine, with 11.7% of children receiving this treatment. These results are similar to the study by Gamze Gokalp in Turkey, where 25.6% underwent gastric lavage, 30.9% received activated charcoal, and 2% received specific antidotes [7].

At the Emergency and Poison Control Center, 13 (38.3%) children had gastric tubes placed. Besides using the tubes for gastric lavage, nurses also used them to monitor gastric content and administer feedings. Additionally, 5 (8.3%) children had urinary catheters, 16.7% underwent suctioning for mucus, and 100% were monitored using devices to measure vital signs and oxygen saturation. The hospital's well-equipped facilities help reduce the workload of healthcare providers and enable quick, accurate detection of abnormalities in patients.

11.7% of children received medications on an hourly schedule. Adhering to the correct drug indications, timing, and dosage is crucial for effective treatment for each patient. Some medicines are given as a single dose per day, others multiple times, but certain drugs require specific timing, which increases treatment effectiveness and adds to the workload of nursing staff.

The frequency of monitoring vital signs and overall condition depends on the patient's progression and condition. Severely ill patients typically have more frequent monitoring. In the first 24 hours of treatment at the Emergency and Poison Control Center, National Children's Hospital, 10% of children had vital signs and overall condition monitored 12 or more times, while 36.7% were observed 6-11 times. The remaining patients were monitored fewer than 6 times. On average, the number of times vital signs and overall condition were checked in 24 hours was 5.93 ± 2.96 times. The fewest monitoring sessions in the first 24 hours were 2, and the highest was 12.

5. CONCLUSION

Most pediatric poisoning cases involved children under 5, with food/drink poisoning and parental involvement as critical causes. Ordinary treatments included intravenous fluids, oxygen, and gastric lavage. However, the key to successful treatment and recovery lies in timely monitoring in the first 24 hours, underscoring the vital need for ongoing emergency and poisoning care training for healthcare providers.

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