DOI: 10.7860/JCDR/2023/58861.18536

Original Article

Paediatrics Section

Profile of Acute Poisoning in Adolescents from Southern India: A Prospective Cohort Study

MR BHANUPRAKASH[1], K SHRUTHI[2], V SIVAKUMAR[3], SUSHMA VEERANNA SAJJAN[4], M LAKSHMI[5], MALLESH KARIYAPPA[6]

ABSTRACT

Introduction: Poisoning in children is an important paediatric emergency and a worldwide problem. Poisonings from intentional substance abuse, as well as unintentional toxic exposures, remain significant health concerns for hospital emergency admissions. Understanding the precipitating causes and providing timely counseling play a key role in preventing intentional poisoning in adolescents.

Aim: To study the profile of acute self-poisoning in adolescents and factors associated with poisoning.

Materials and Methods: A hospital-based prospective cohort study was conducted at Vanivilas Hospital, which is affiliated with Bangalore Medical College and Research Institute in Bengaluru, India. The study duration was from November 2018 to June 2020. The study included 100 adolescents, aged 10-18 years, who were admitted with a history of poisoning during the 18-month study period. Informed consent was obtained, and participants were followed-up until discharge. Data was collected using a proforma that included demographic details, information about poisoning, examination findings, investigations, and treatment given. The data was analysed using descriptive statistics, and the Chi-square test was used to determine associations between variables.

Results: The mean age of the study participants was 15.48 years. The maximum number of cases, 53 (53%), were seen in the 13-16 years age group, followed by 36 (36%) in the age group of 17-18 years, and 11 (11%) in the age group 10-12 years. There were 33 (33%) male children and 67 (67%) female children. In the present study, 43 (43%) children belonged to the insecticide group, 30 (30%) to the drugs group (most of them were in combination), 14 (14%) to the household group, 4 (4%) belonged to both the plant and unknown group, and 2 (2%) belonged to the corrosive, and 1 (1%) each for herbicide, hydrocarbon, and metal groups. A total of 87 (87%) cases were discharged after completion of treatment, 8 (8%) cases were discharged against medical advice, and the mortality rate was 5 (5%). The majority of the cases, 79 (79%), consumed poison as an impulsive act secondary to conflicts among family members.

Conclusion: The present study found that acute poisoning in adolescents is mostly intentional, with insecticides being the most commonly implicated agents.

Keywords: Childhood emergencies, Insecticides, Suspected suicides

INTRODUCTION

Worldwide, intentional poisoning is one of the important causes of mortality and morbidity [1]. Exposure to agrochemicals, medicines, and environmental agents is the major cause of poisoning. Acute poisoning in children is a ubiquitous problem and an important paediatric emergency. According to a report published by the World Health Organisation (WHO), 13% of total poisoning cases were reported among paediatric and adolescent age groups [2]. Poisoning accounts for 1-6% of bed occupancy in children's hospitals and 3.9% in Paediatric Intensive Care Units (PICU) in India [3,4]. Poisoning is predominantly accidental, particularly in children under five years old, but it might be increasingly self-inflicted in older children [5].

In recent times, there has been a shift in the trend of poisoning among adolescents, with the rise of suicidal poisoning compared to accidental poisoning. This is a matter of serious concern. Common reasons for intentional poisoning include distress due to relationship failures, conflicts with intimate partners or parents, examination stress, emotional disturbances, and chronic diseases [6]. The WHO estimates that 0.3 million people die every year due to various poisoning agents [7]. Acute pesticide poisoning is one of the most common causes of intentional deaths worldwide [8].

High doses of analgesics, tranquilizers, and antidepressants are commonly used agents for intentional poisoning in industrialised countries [9]. In middle- and low-income countries, including the Asian region, agricultural pesticides are commonly used for self-poisoning, particularly in rural areas, due to their easy availability. The fatality range for such cases is 10-20% [10]. Pesticides are readily available and commonly used by individuals to end their lives in stressful situations [11].

While there is data available from developed countries about the profile of poisoning in children, there are few studies from resource-poor countries such as India [12-14]. There are also only a few studies from Southern India [15-17]. Bangalore, a district in South India, has agriculture as the major occupation in rural areas. Bangalore Medical College and Research Institute is a tertiary care, multispecialty teaching hospital that caters to the health requirements of both urban and rural populations. Many rural patients are admitted to the emergency department of this hospital due to poisoning. Therefore, there was a need to understand the clinical, aetiological, and demographic background of poisoning in children, including the type of poison, manner of poisoning, duration between poisoning and presentation to the hospital, duration of hospital and Intensive Care Unit (ICU) stay, prereferral treatment, and treatment provided, in adolescent children admitted with poisoning in the paediatric emergency ward and PICU at Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India.

With this background, the present study was conducted to study the profile of acute poisoning in adolescents and associated factors that may help in prevention and treatment. The secondary objective was to evaluate the clinical outcomes of these children with respect to age, gender, ICU stay, and the use of antidotes.

MATERIALS AND METHODS

A hospital-based prospective observational study was conducted in the Department of Paediatrics at Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India, during an 18-month study period from November 2018 to June 2020. Approval and clearance were obtained from the Institutional Ethics Committee (IEC), and patients who met the inclusion criteria were enrolled in the study after obtaining written consent from parents or informed assent from children.

Inclusion criteria: Children aged 10-18 years with a history of acute poisoning, admitted to PICU and paediatric emergency department, were included in the study after obtaining informed written consent.

Exclusion criteria: Patients or caregivers who refused to give informed consent, cases of animal poisoning (such as snake bites, scorpion stings, and other poisonous bites), and food poisoning were excluded from the study.

Sample size: The sample size for the study was calculated using a proportion formula based on data indicating that adolescents constitute approximately 21% of the Indian population, with a 95% confidence level. A total of 100 samples were finally included in the study.

Formula: $Z^2 * P * (1-P)/d^2$

where n=sample size,

Z=statistic for a level of confidence (1.96 for a 95% confidence level),

P=expected prevalence or proportion, and

d=precision.

A total of 100 adolescents aged 10-18 years with a history of acute poisoning were included in the study.

Study Procedure

After obtaining approval and clearance from the IEC, the patients who fulfilled the inclusion criteria were enrolled in the study after obtaining their informed consent. A detailed clinical history was taken, and a physical examination was conducted for each study subject using a predesigned and prestructured proforma. Data were collected using a specially designed proforma that documented socio-demographic details, type of agent, route of exposure, reasons, and precipitating factors for suicide, time of arrival to the hospital after poison exposure, clinical presentation at the time of admission, treatment, immediate outcome, and associated psychiatric illness. Necessary investigations were performed based on the type of poisoning, including complete blood haemogram, renal function test, liver function test, chest X-ray, electrocardiography, echocardiogram, urine routine, ultrasound abdomen, cholinesterase level, Arterial Blood Gas (ABG) analysis, serum calcium, serum electrolytes. Treatment was administered according to the standard protocol, and outcomes were noted. The Modified Kuppusamy classification was used to determine the socio-economic status and educational status of parents [18]. All patients enrolled in the study were discussed with a qualified psychiatrist in the department, and the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) [19] standardised diagnostic interview was used to classify psychiatric disorders.

STATISTICAL ANALYSIS

The collected data was entered into Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) version 24.0. The data was statistically analysed using descriptive statistics, including mean, median, standard deviation, and Interquartile Range (IQR). Percentages, tables, and graphs were used where applicable. The Chi-square test was employed to determine the association between variables such as age, gender, type of poison, mode and cause of consumption, ICU stay, antidote, prereferral treatment, and outcome. A significance level of $p<0.05$ was considered statistically significant.

RESULTS

In this study, the maximum number of cases, 53 (53%), were seen in the 13-16 years age group, as depicted in [Table/Fig-1]. The minimum age was 11 years, and the maximum age was 18 years, with a Mean±SD age of 15.48±1.761 years. Out of the 100 cases, 33 (33%) were male children, and 67 (67%) were female children. Among the cases, 54 (54%) were residing in an urban area, and 46 (46%) were from a rural area.

Variable	N (%)
Age (years)	
10-12	11 (11)
13-16	53 (53)
17-18	36 (36)
Sex	
Female	67 (67)
Male	33 (33)
Residence	
Rural	46 (46)
Urban	54 (54)
Educational status of parents	
Graduate	2 (2)
High school	11 (11)
Illiterate	37 (37)
Intermediate	10 (10)
Middle school	27 (27)
Primary school	13 (13)
Socio-economic status	
Lower	1 (1)
Lower middle	16 (16)
Upper lower	82 (82)
Upper middle	1 (1)
Type/Agent of poisoning	
Insecticide	43 (43)
Drugs	30 (30)
House hold	14 (14)
Plant	4 (4)
Unknown	4 (4)
Corrosive	2 (2)
Herbicide	1 (1)
Hydrocarbon	1 (1)
Metal	1 (1)

[Table/Fig-1]: Demographic profile of children with poisoning.

Most of the parents of children, 37 (37%) of them, had not gone to school. 27 (27%) had studied up to middle school, 13 (13%) up to the primary level, 11 (11%) up to the high school level, 10 (10%) up to the intermediate level, and 2 (2%) of the parents were graduates among the parents of the 100 poisoning cases. In the present study, the maximum, 82 (82%), children belonged to the upper-lower socio-economic status, followed by 16 (16%) in the lower-middle class, and 1 (1%) each in the upper-middle and lower class.

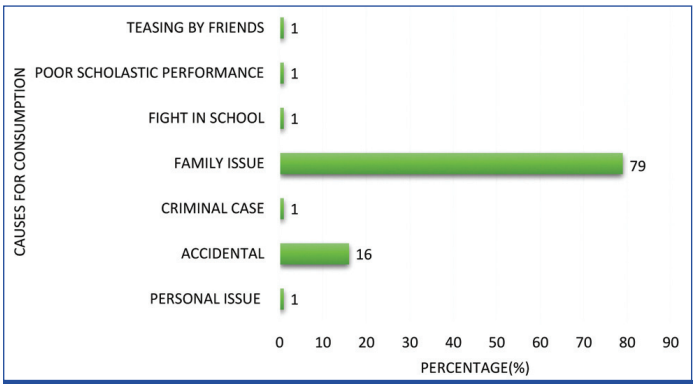
In the present study, 43 (43%) children belonged to the insecticide group, among which organophosphate poisoning was the most common agent. 30 (30%) were in the drugs group (most of them were in combination), 14 (14%) were in the household group, 4 (4%) were in the plant and unknown group, 2 (2%) belonged to

the corrosive group, and 1 (1%) each belonged to the herbicide, hydrocarbon, and metal group, as shown in [Table/Fig-1].

Agents of Poisoning

Mode of poisoning: Suicidal attempts were the most common mode of poisoning observed in 84 (84%) children, followed by accidental consumption in 16 (16%) children.

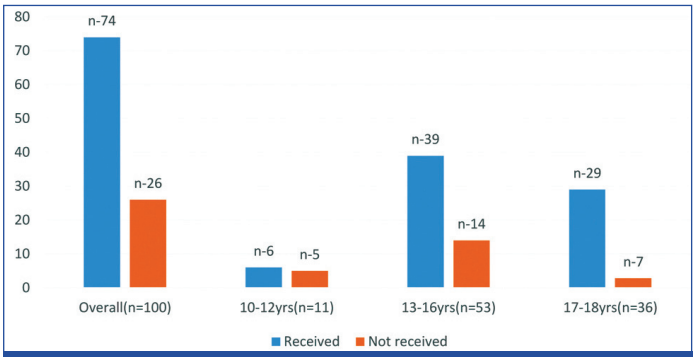
Reason for consumption of poison: In this study, [Table/Fig-2] precipitating/triggering factors for consumption were interfamilial conflicts between family members, observed in 79 (79%) children. Accidental consumption was reported in 16 (16%) children, and other factors were less commonly seen in 5 (5%) children.



[Table/Fig-2]: Bar diagram showing causes for consumption.

Route of poisoning: Oral ingestion was the only route of poisoning observed in all 100 (100%) children in this study.

Prereferral treatment: In this study, prereferral treatment in the form of gastric lavage, atropine, medication, oxygen, etc., was given to 74 (74%) children. 26 (26%) children did not receive prereferral treatment. The age-wise distribution of prereferral treatment received is depicted in [Table/Fig-3]. With a p-value of 0.226, no significant association was found between age and prereferral treatment.



[Table/Fig-3]: Bar diagram showing age wise prereferral treatment received.

The duration between poisoning and presentation: In this study, most of the children, i.e., 48 (48%), reached the hospital within 7-24 hours, and 41 (41%) children reached the hospital within 1-6 hours. Five (5%) reached the hospital within one hour, and only six (6%) of them reached the hospital more than 24 hours after poisoning. Regarding the mode of presentation, 42 (42%) cases presented with vomiting, followed by 17 (17%) cases of abdominal pain. Seventeen (17%) were asymptomatic, 5 (5%) had giddiness, 3 (3%) were unresponsive, and 2 (2%) had altered sensorium and convulsions. One (1%) each presented with fasciculations, neck muscle weakness, jaundice, and acute kidney injury, while the rest presented with non specific neurological complaints.

The mean duration of hospital stay was 5.24 days. In this study, 35 (35%) children were discharged within 4-5 days, 30 (30%) within three days, and 7 (7%) cases required more than 11 days of hospitalisation. Regarding ICU stay and antidote usage, 56 (56%) children were admitted to the ICU, while 44 (44%) were not. Out of 100 cases, only 23 (23%) received a specific antidote, while 77 (77%) received supportive treatment.

In terms of outcome, 87 (87%) cases were discharged after completing treatment, 8 (8%) cases left against medical advice (DAMA), and 5 (5%) children died. The youngest age group (10-12 years) had the lowest mortality rate. The p-value of 0.310 indicated that the relationship between death and age group was not significant [Table/Fig-4].

			Age category (years)			
			10-12	13-16	17-21	Total
Outcome	DAMA	Count	1	5	2	8
		% within outcome	12.5%	62.5%	25.0%	100.0%
	Death	Count	1	2	2	5
		% within outcome	20.0%	40.0%	40.0%	100.0%
	Discharged	Count	9	46	32	87
		% within outcome	10.3%	52.9%	36.8%	100.0%
Total		Count	11	53	36	100
		% within outcome	11.0%	53.0%	36.0%	100.0%
Outcome of this study age-wise						
Chi-square=20.42, p-value=0.310						

			Sex		
			Female	Male	Total
Outcome	DAMA	Count	4	4	8
		% within outcome	50.0%	50.0%	100.0%
	Death	Count	4	1	5
		% within outcome	80.0%	20.0%	100.0%
	Discharged	Count	59	28	87
		% within outcome	67.8%	32.2%	100.0%
Total		Count	67	33	100
		% within outcome	67.0%	33.0%	100.0%
Outcome of this study sex-wise					
Chi-square=1.454, p-value=0.483					

[Table/Fig-4]: Outcome of study age and sex wise.

Among the cases, 67 (67%) were female, and 33 (33%) were male. The fatality rate in female children (n=4) was higher compared to males (n=1). The p-value of 0.483 indicated that the relationship between death and age group was not significant.

Among the 56 cases admitted to the ICU, death occurred in 5 (8.9%) cases, 4 (7.1%) left against medical advice (DAMA), and 47 (83.9%) were discharged home from the ICU. The Chi-square test with a p-value of 0.123 indicated that the relationship between death and ICU stay was not significant. In this study, among the five deaths, one death (20%) occurred in the group that received a specific antidote, while four deaths (80%) occurred in the group where an antidote was not used. The p-value of 0.978 indicated that this difference was not significant [Table/Fig-5].

			ICU stay		
			No	Yes	Total
Outcome	DAMA	Count	4	4	8
		% within outcome	50.0%	50.0%	100.0%
	Death	Count	0	5	5
		% within outcome	0.0%	100.0%	100.0%
	Discharged	Count	40	47	87
		% within outcome	46.0%	54.0%	100.0%
Total		Count	44	56	100
		% within outcome	44.0%	56.0%	100.0%
The outcome in relation to ICU stay					
Chi-square=4.183, p-value=0.123					

			Specific antidote used		
			No	Yes	Total
Outcome	Discharge against medical advice	Count	6	2	8
		% within outcome	75.0%	25.0%	100.0%
	Death	Count	4	1	5
		% within outcome	80.0%	20.0%	100.0%
	Discharged	Count	67	20	87
		% within outcome	77.0%	23.0%	100.0%
Total		Count	77	23	100
		% within outcome	77.0%	23.0%	100.0%
Outcome in relation to antidote used					
Chi-square=0.043, p-value=0.978					

[Table/Fig-5]: Outcome in relation to ICU stay and antidote used.

Outcome

In this study, psychiatric evaluations were conducted for all cases after case stabilisation. Out of the total cases, 79 (79%) were attributed to impulsive acts arising from intrafamilial conflicts, 4 (4%) were due to impulsive acts from other reasons, 16 (16%) were accidental, and 1 (1%) case was attributed to depression.

DISCUSSION

Poisoning is a commonly encountered emergency in children and adults. Unfortunately, poisoning in children is becoming more common due to easy access to poison, temperamental and behavioural changes in children, increased screen media exposure, and unreasonable parental expectations [12]. Whether in India or across the world, paediatric acute poisoning is one of the most preventable conditions that can significantly reduce mortality and morbidity among children [15]. Present study described the profile of acute poisoning in the adolescent population admitted to a tertiary care teaching hospital.

The present study shows a higher prevalence of acute poisoning in female children (67%) compared to male children (33%). Studies by Kohli U et al., and Gupta SK et al., have shown a higher prevalence of acute poisoning among males [5,13]. The gender imbalance in present study could be due to the preponderance of the urban population, where gender bias is relatively subdued, and most poisoning incidents occur at home, negating the outdoor risk factors favouring poisoning in boys. The female preponderance is comparable to studies conducted by Lalwani S et al., and Basavaraj S and Pushpalatha K [14,16].

Most of the cases involved parents belonging to the upper-lower-class group (82%) according to the modified Kuppuswamy scale [18]. This was likely due to their lower educational status, a greater number of family members, limited storage spaces, and overcrowding in these families. A similar pattern was observed in studies conducted by Vasanthan M et al., Ahamed B et al., and Kajala P et al., [17,20,21].

The results of the present study was similar to those of the study by Modi NP et al., regarding the agents of poisoning [22]. Most of the cases admitted to our hospital belonged to rural populations and lower socio-economic status, with organophosphorus and household agent compounds being the most common, compared to developed areas where drug poisoning was more prevalent.

In the present study, the most common cause of poisoning was suicide resulting from impulsive acts, followed by accidents. Suicide was the most common mode due to immaturity, fear of parents scolding them for poor school performance, and family disputes. Females had a higher incidence of suicidal poisoning compared to males. Other studies have reported drug ingestion as the most common method of suicidal poisoning [23]. Oral ingestion was the most common route. A study conducted by Jesslin J et al., which involved 1045 cases, found that the most common substance used was insecticide, and the most common mode of ingestion was oral, which was comparable to present study [24].

In this study, the majority of the children (74%) received prereferral treatment in the form of atropine, gastric decontamination, oxygen, etc., at surrounding referral hospitals. Among them, 48% reached the hospital within 7-24 hours, and 41% arrived within one to six hours. The duration was shorter for the urban population compared to the rural population. This can be attributed to the longer distance these rural patients had to travel to reach our hospital and their initial treatment at a nearby facility. This finding aligns with the study conducted by Kohli U et al., [5]. In present study, 42% of the children presented with vomiting, followed by 17% with abdominal pain, 17% were asymptomatic, 5% experienced giddiness, 3% showed unresponsiveness, and 2% had altered sensorium. Fasciculation, neck muscle weakness, yellowish discolouration of the skin with acute kidney injury, and fasciculation were the least common symptoms. In the majority of cases (74%), treatment was supportive, including gastric lavage, oxygen, intravenous fluids, and other supportive therapies.

Out of the 100 children, only 23% (n=23) received specific antidotes such as atropine, Pralidoxime, Physostigmine, NAC, and Vitamin K when indicated. This observation was consistent with the previous study by Kohli U et al., [5]. Most of the patients required a shorter duration of ICU stay compared to cases of insecticide and pesticide poisoning.

The mean duration of hospitalisation was 5.24 days, which was shorter in cases of mortality and Discharge Against Medical Advice (DAMA). This could be due to the poor general condition at presentation. Supportive measures and antidotes were less effective when there was a significant delay in presentation and treatment. The mean duration of hospital stay varied from 0.66 days in a Nigerian study to 3.8 days and 3.78 days in Buthathoki S et al., [25].

In the present study, 87% (n=87) of children with poisoning survived and were discharged, 8% left against medical advice (DAMA), and death occurred in 5 (n=5) cases. The mortality rate in this study was similar to that seen in previous studies [26,27]. The highest number of deaths (n=5) occurred in the insecticide group, particularly with aluminum phosphide, followed by organophosphorus compounds, with a predominance of female patients. The outcome was poor for children admitted to the hospital more than 24 hours after ingesting the poison.

Limitation(s)

The study was conducted at a tertiary care hospital; hence, it may not represent the population in the community. This makes it susceptible to referral bias, and therefore, the study findings cannot be projected at a community level.

CONCLUSION(S)

This study highlights the morbidity due to acute poisoning in adolescents. The study found that self-poisoning attempts commonly occurred in females due to impulsive acts resulting from conflicts with family and friends. Insecticides were the most frequently used agents. Most cases were symptomatic and required hospitalisation due to the inherent toxicity of the substances involved. Measures need to be taken to prevent accidental and intentional poisoning in adolescents, including strengthening pesticide regulations and providing adolescent counseling.

Author contributions: BMR had full access to all the data in the study and takes responsibility for the integrity and accuracy of the data analysis. SK assisted with the analysis and interpretation of data. SV contributed to the concept, design, and statistical analysis. SVS participated in drafting the manuscript, critically revising it for important intellectual content, and managing cases. LM managed the treatment of cases and provided critical revision of the manuscript. MK also managed the treatment of cases, critically revised the manuscript, and provided administrative support.

REFERENCES

[1] Eddleston M, Phillips MR. Self-poisoning with pesticides. Br Med J Publishing Group. 2004;328(7430):42-44.
[2] Peden M, Oyegbite K, Ozanne-Smith J, Hyder AA, Branche C, Rahman AF, et al. World report on child injury prevention. Switzerland: WHO publication. 2008. Pp. 211.
[3] Brata Ghosh V, Jhamb U, Singhal R, Krishnan R. Common childhood poisonings and their outcome in a tertiary care center in Delhi. Indian J Pediatr. 2013;80(6):516-18.
[4] Roy RN, Shrivastava P, Das DK, Saha I, Sarkar AP. Burden of hospitalized pediatric morbidity and utilization of beds in a tertiary care hospital of Kolkata, India. Indian J Community Med. 2012;37(4):252-55.
[5] Kohli U, Kuttiat VS, Lodha R, Kabra SK. Profile of childhood poisoning at a tertiary care centre in North India. Indian J Pediatr. 2008;75(8):791-94.
[6] Chowdhary AN, Banerjee S, Brahma A, Biswas MK. Pesticide poisoning in nonfatal, deliberate self-harm: A public health issue. Indian J Psychiatry. 2007;49(2):117-20.
[7] London L, Bailie R. Challenges for improving surveillance for pesticide poisoning: Policy implications for developing countries. Int J Epidemiol. 2001;30(3):564-70.
[8] WHO. The impact of pesticides on health: Preventing intentional and unintentional deaths from pesticide poisoning. 2004.
[9] McClure GM. Suicide in children and adolescents in England and Wales 1970-1998. Br J Psychiatry. 2001;178:469-74.
[10] Marecek J. Culture, gender, and suicidal behavior in Sri Lanka. Suicide Life Threat Behav. 1998;28(1):69-81.
[11] Aaron R, Joseph A, Abraham S, Muliyil J, George K, Prasad J, et al. Suicides in young people in rural southern India. Lancet. 2004;363(9415):1117-18.
[12] Bindu A, Kumar RS, Nanda C. Pattern of poisoning in children, an experience from a teaching hospital in Northern India. JK Sci J Med Edu Res. 2014;16(4):174-78.
[13] Gupta SK, Peshin SS, Srivastava A, Kaleekal T. A study of childhood poisoning at National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi. Journal of Occupational Health. 2003;45(3):191-96.
[14] Lalwani S, Sharma GA, Kabra SK, Girdhar S, Dogra TD. Suicide among children and adolescents in south Delhi (1991–2000). Indian J Pediatr. 2004;71(8):701-03.
[15] Shreekrishna HK, Singi Y, Chandan V, Dabhi D. A study on the profile of poisoning in the paediatric population in a tertiary care teaching hospital of Chitradurga region. Cureus. 2022;14(12):e32369.
[16] Basavaraj S, Pushpalatha K. Clinical profile and outcome of acute pediatric poisoning in urban tertiary care hospital. Journal of Evidence based Medicine and Healthcare. 2015;2(5):459-63.
[17] Vasanthan M, James S, Shuba S, Abhinayaa J, Sivaprakasam E. Clinical profile and outcome of poisoning in children admitted to a tertiary referral center in South India. Indian Journal of Child Health. 2015;2(4):187-91.
[18] Wani RT. Socioeconomic status scales-modified Kuppuswamy and Udai Pareekh's scale updated for 2019. J Family Med Prim Care. 2019;8(6):1846-49.
[19] Högberg C, Billstedt E, Björck C, Björck PO, Ehlers S, Gustle LH, et al. Diagnostic validity of the MINI-KID disorder classifications in specialized child and adolescent psychiatric outpatient clinics in Sweden. BMC Psychiatry. 2019;19(1):142.
[20] Ahmed B, Fatmi Z, Siddiqui AR, Sheikh AL. Predictors of unintentional poisoning among children under 5 years of age in Karachi: A matched case-control study. Inj Prev. 2011;17(1):27-32.
[21] Kajala P, Jhavar L, Narsaria N, Dubey NK, Sankar J. Childhood poisoning: Clinical profile and outcome. Indian Journal of Emergency Paediatrics. 2011;3(2):55-59.
[22] Modi NP, Dash BK, Satapathy S, Mohanty AK. Trends of acute poisoning in a tertiary care hospital in Odisha, India: A prospective study. IOSR Journal of Dental and Medical Science. 2014;13(11):12-17.
[23] Paudyal BP. Poisoning: Pattern and profile of admitted cases in a hospital in central Nepal. JNMA J Nepal Med Assoc. 2005;44(159):92-96.
[24] 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):587-91.
[25] Budhathoki S, Poudel P, Shah D, Bhatta NK, Dutta AK, Shah GS, et al. Clinical profile and outcome of children presenting with poisoning or intoxication: A hospital based study. Nepal Med Coll J. 2009;11(3):170-75.
[26] Manzar N, Saad SMA, Manzar B, Fatima SS. The study of etiological and demographic characteristics of acute house hold accidental poisoning in children–a consecutive case series study from Pakistan. BMC Pediatr. 2010;10:28.
[27] Andiran N, Sarikayalar F. Pattern of acute poisonings in childhood in Ankara: What has changed in twenty years? Turk J Pediatr. 2004;46(2):147-52.

PARTICULARS OF CONTRIBUTORS:
1. Senior Resident, Department of Paediatrics, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India.
2. Associate Professor, Department of Physiology, St. Peters Medical College Hospital and Research Centre, Hosur, Tamil Nadu, India.
3. Associate Professor, Department of Forensic Medicine, Apollo Institute of Medical Sciences and Research, Chittoor, Andhra Pradesh, India.
4. Assistant Professor, Department of Paediatrics, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India.
5. Professor, Department of Paediatrics, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India.
6. Professor and Head, Department of Paediatrics, Bangalore Medical College and Research Institute, Bengaluru, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sushma Veeranna Sajjan,
Assistant Professor, Department of Paediatrics, Bangalore Medical College and Research Institute, Bengaluru-560002, Karnataka, India.
E-mail: sushma.sajjan@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Jul 05, 2023
- Manual Googling: Aug 16, 2023
- iThenticate Software: Sep 29, 2023 (12%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Jul 04, 2023**
Date of Peer Review: **Jul 28, 2023**
Date of Acceptance: **Sep 02, 2023**
Date of Publishing: **Oct 01, 2023**