

## Unintentional Poisoning and Bites during Childhood in Ujjain, Madhya Pradesh

The prevalence of poisoning and bites was 0.76% (48/6308) and 1.24% (78/6308), respectively in a community-based survey in Ujjain district, Madhya Pradesh. Household cleansing agents and medicines, and dog bite and bee-sting were the most common poisons and bites, respectively. Most parents (59%) reported lack of appropriate first-aid knowledge. Educational interventions and implementing the medicine take-back program are suggested.

**Keywords:** *Community-based injury survey, Rural, Slum, Prevalence.*

Unintentional poisoning in children is a crucial public health concern and has resulted in a loss of 10.7 million years of disability-adjusted life years [1]. As most studies on poisoning have been conducted in hospitals, their results are affected by the health-seeking pattern of a community and access to health care services. In view of the paucity of community-based preventive programs [2], this cross-sectional, community-based study was conducted from January 2017 to October 2017 in 10 slums and 7 villages in Ujjain city and district, respectively. This study determined the prevalence and patterns of acute unintentional poisoning, animal and insect bites in children and adolescents aged up to 18 years to develop a community-based program for poisoning prevention.

Data for this study were obtained using World Health Organization TEACH-VIP 2 guidelines for surveys on injuries [3]. A house-to-house survey was conducted, covering a total of 2846 households of which 2518 had 6308 children aged up to 18 years. The survey identified 1049 different injuries [4]. After obtaining informed written consent, the household heads were interviewed on questions related to unintentional poisoning, animal and insect bites that occurred in the past one year. The Institutional Ethics committee of our college approved the study.

A total of 126 children experienced poisoning and bites (**Table I**). The prevalence of poisoning and bites was 0.76% (48/6308) and 1.24% (78/6308), respectively. The mean (SD) age of children when poisoning occurred was 3.9 (3.69) years, with 44% children being aged below 2

**TABLE I** DETAILS OF POISONING AND BITES IN CHILDREN BELOW 18 YEARS IN UJJAIN

	<i>Poisoning</i> No. (%), n = 48	<i>Bites</i> No. (%), n = 78
<i>Age</i>		
1 mo-5 y (n=56)	41 (85)	15 (19)
>5 to 18 y (n=70)	7 (15)	63 (81)
<i>Gender</i>		
*Boys (n=79)	29 (60)	50 (64)
<i>Locality</i>		
*Rural (n=85)	29 (60)	56 (72)
Multiple poisoning/bites	26 (54)	44 (56)
Symptomatic (n=116)	43 (90)	73 (94)
<i>Common signs/symptoms</i>		
Wound at bite site	–	26 (33)
Swelling	–	24 (31)
Skin discoloration	–	7 (9)
Pain	–	6 (8)
Vomiting	32 (67)	4 (5)
Increased salivation	4 (8)	–
Foul smelling breath	2 (4)	–
Spasmodic pain	1 (2)	–
Loose motion	1 (2)	–
Vertigo	1 (2)	4 (5)
Unconsciousness	1 (2)	2 (3)
Uneasiness	1 (2)	–
<i>Treatment status</i>		
Home treatment (n=24)	8 (7)	16 (21)
Hospitalized (n=31)	14 (29)	17 (22)
By HCP (n=71)	26 (54)	45 (58)

\*  $P < 0.001$  for male-female and Rural-urban comparison; HCP: health care provider.

years. The mean (SD) age of children that experienced bites was 9.5 (4.4) years, with 47% children being above 8 years of age. Overall, boys were affected more often than girls ( $P < 0.001$ ), and most cases were reported from rural areas ( $P < 0.001$ ). A total of 31 hospital admissions were reported with no deaths. Poisoning was by soap detergent (24,50%), kerosene (11, 23%), leftover medicines (7, 15%), pesticides (5, 10%) and phenyl or toilet cleaner (1, 2%). Similar poisonings have been reported in other community-based studies [2,5-7] and are unlike a hospital-based study that reported kerosene as the most commonly

ingested poison in India [8]. Stings were by bees (24, 37%) and scorpions (7, 9%), whereas bites were by dogs (26, 33%) and snakes (16, 21%). Approximately half ( $n=65$ ) of the children with poisoning and 63% ( $n=49$ ) of the children with bites received first-aid at home (**Table I**). Children in rural areas were taken to informal health care providers for treatment. Most of the family heads ( $n=73$ ; 59%) reported lack of first-aid knowledge.

In conclusion, an educational intervention program providing anticipatory guidelines to parents can improve poisoning management [1,5,9]. Other proven interventions, such as providing child-resistant caps for storing kerosene and medicines [9], implementing the 'kerosene-free city' program [8] and medicine take-back program, can be used in our settings [9]. Cognitive/behavioral interventions to educate children about dog safety can prevent dog bites [10].

*Funding:* Indian Council of Medical Research, New Delhi; Grant No. 2013-1253.

**ASHISH PATHAK<sup>1,2</sup>, ADITYA MATHUR<sup>1</sup>  
AND LOVE MEHRA<sup>1</sup>**

*From<sup>1,2</sup>Department of Pediatrics,*

*RD Gardi Medical College, Ujjain, India; and*

*<sup>2</sup>Department of Women and Children's Health, International Maternal and Child Health Unit, Uppsala University, Uppsala SE-751 85, Sweden. drashishp@rediffmail.com*

## REFERENCES

1. World Health Organization 2012. International Programme on Chemical Safety-Poisoning Prevention and Management. Available from: <https://www.who.int/ipcs/poisons/en/>. Accessed January 28, 2019.
2. Nixon J, Spinks A, Turner C, McClure R. Community based programs to prevent poisoning in children 0-15 years. *Inj Prev*. 2004;10:43-6.
3. World Health Organization TEACH-VIP 2 2012. Training Educating and Advancing Collaboration in Health on Violence and Injury Prevention Users' manual. Available from: [whqlibdoc.who.int/publications/2012/9789241503464\\_eng.pdf?ua=1](http://whqlibdoc.who.int/publications/2012/9789241503464_eng.pdf?ua=1). Accessed January 28, 2019.
4. Mathur A, Mehra L, Diwan V, Pathak A. Unintentional childhood injuries in urban and rural Ujjain, india: A community-based survey. *Children (Basel)*. 2018;5:E23 [abstract].
5. International Labour Organization, United Nations Environment Programme and World Health Organization 2004: Guidelines on the Prevention of Toxic Exposures Education and Public Awareness Activities. Available from [https://www.who.int/ipcs/features/prevention\\_guidelines.pdf](https://www.who.int/ipcs/features/prevention_guidelines.pdf). Accessed January 28, 2019.
6. Franklin RL, Rodgers GB. Unintentional child poisonings treated in United States hospital emergency departments: national estimates of incident cases, population-based poisoning rates, and product involvement. *Pediatrics*. 2008;122:1244-51.
7. Hung HT, Hojer J, Du NT. Potentially hazardous environmental factors for poisoning in rural Vietnam: A community-based survey. *Southeast Asian J Trop Med Public Health*. 2010;41:1021-7.
8. Sachdeva S, Gupta P. Kerosene-free Delhi: Safer for children. *Indian Pediatr*. 2014;51:837.
9. White ND, Kibalama W. Prevention of pediatric pharmaceutical poisonings. *Am J Lifestyle Med*. 2018;12:117-9.
10. Shen J, Rouse J, Godbole M, Wells HL, Boppana S, Schwebel DC. Systematic review: Interventions to educate children about dog safety and prevent pediatric dog-bite injuries: A meta-analytic review. *J Pediatr Psychol*. 2017;42:779-91.