

Speaking for Ourselves

The burden of snakebite envenomation demands a hospital-based registry in India

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India shares more than 50% of the global burden of snakebites with more than 2.8 million cases and 45 000 deaths annually.¹⁻³ India has over 300 species of snakes and about 50–60 of them are venomous.^{1,2} The poisonous snakes of India belong to three families, namely Elapidae, Viperidae and Hydrophidae.¹ The most common elapids are Indian cobra (*Naja naja*) and Indian Krait (*Bungarus caeruleus*); the common vipers are Russell viper (*Daboia russelii*) and saw-scaled viper (*Echis carinatus*).¹ They are commonly known as ‘the big four’ and medically important species of India.⁴ Polyvalent antivenom (ASV), the specific treatment of choice for snakebite envenomation, is active only against ‘the big four’. However, the assumption of ‘the big four’ was demystified with the identification of hump-nosed pit viper (*Hypnale hypnale*) in the western ghats of southern India.⁵ Besides, the clinical features of snakebite envenomation differ within the species and also by region.⁴

Compared to other neglected tropical diseases, the estimation burden of snakebite is problematic. This is because in India, most victims approach traditional practitioners/healers for management of snakebite.¹ Overall, 22% of the victims visit health facilities for treatment and only 7% of the snakebite deaths are recorded officially.^{2,6} As a result, there is a huge gap between the official data and that of published surveys. In 2019, the WHO developed a strategy to reduce mortality and disability from snakebite envenoming by 50% before 2030.⁷ However, India lacks reliable data on snakebites, despite sharing half of the global burden. Poor data on snakebite envenomation could have led to underestimation of antivenom needs by national health authorities. A hospital-based snakebite registry in representative regions of the country could generate useful information from clinical and public health perspectives.

A registry is defined as an organized system that uses observational study methods to collect uniform data to evaluate specific outcomes for a population defined by a specific disease, condition or exposure that serves one or more predefined scientific, clinical or policy purposes.^{8,9} The snakebite registry could aim to collect the minimum set of data related to snakebite across the nation through an electronic data capture system, including information regarding all kinds of snakebite, clinical

features, administration of ASV, adverse effects following administration of ASV, systemic complications and outcomes in terms of cure, mortality and disability of snakebite victims who receive treatment from healthcare facilities. This information could be used to enhance understanding of factors that affect both clinical response to envenomation and response to various treatment modalities. The registry would provide good-quality, reliable and representative information for policy-makers and clinicians⁸ and could contribute immensely to clinical research. India has the experience of successfully implementing registries for cancer, burns and birth defects, which provide estimates of these conditions and guide policy decisions and contribute to improved outcomes.^{10,11}

We recommend establishing a hospital-based snakebite registry across India to better characterize snake envenomation and thereby contribute to improving outcomes, planning preparedness and research.

Conflicts of interest. None declared

REFERENCES

- 1 World Health Organization. *Guidelines for the management of snakebites*. 2nd ed. New Delhi: WHO Regional Office for South-East Asia; 2016.
- 2 Mohapatra B, Warrell DA, Suraweera W, Bhatia P, Dhingra N, Jotkar RM, et al. Snakebite mortality in India: A nationally representative mortality survey. *PLoS Negl Trop Dis* 2011;**5**:e1018.
- 3 Alirol E, Sharma SK, Bawaskar HS, Kuch U, Chappuis F. Snake bite in South Asia: A review. *PLoS Negl Trop Dis* 2010;**4**:e603.
- 4 Ministry of Health and Family Welfare. *Management of snake bite: Quick reference guide*. New Delhi: Government of India. Available at www.nhm.gov.in/images/pdf/guidelines/nrhmguidelines/stg/Snakebite_QRG.pdf (accessed on 1 Oct 2018).
- 5 Shivanthan MC, Yudhishdran J, Navinan R, Rajapakse S. Hump-nosed viper bite: An important but under-recognized cause of systemic envenoming. *J Venom Anim Toxins Incl Trop Dis* 2014;**20**:24.
- 6 Majumder D, Sinha A, Bhattacharya SK, Ram R, Dasgupta U, Ram A. Epidemiological profile of snake bite in south 24 Parganas district of West Bengal with focus on underreporting of snake bite deaths. *Indian J Public Health* 2014;**58**:17–21.
- 7 World Health Organization. Snakebite envenoming: A strategy for prevention and control. Available at <https://apps.who.int/iris/bitstream/handle/10665/324838/9789241515641-eng.pdf> (accessed on 16 Jul 2019).
- 8 School of Public Health and Preventive Medicine. *Registry Science Handbook*. Melbourne: Monash University; 2010. Available at www.monash.edu/_data/assets/pdf_file/0003/935184/registry-science-handbook.pdf (accessed on 1 Oct 2018).
- 9 Gliklich RE, Dreyer NA, Leavy MB. *Planning a registry*. Agency for Healthcare Research and Quality (US); 2014. Available at www.ncbi.nlm.nih.gov/books/NBK208631/ (accessed on 3 Nov 2018).
- 10 India Birth Defects Registry Data 2010 – ICBDSR | GHDx. Available at <http://ghdx.healthdata.org/record/india-birth-defects-registry-data-2010-icbdsr> (accessed on 18 Feb 2019).
- 11 Indian Council of Medical Research–National Centre for Disease Informatics and Research. Available at <http://ncdirindia.org/> (accessed on 18 Feb 2019).

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