

# DEVASTATING IMPACT OF SNAKEBITE ENVENOMING



Photo: Global Snakebite Initiative

## SNAKEBITE VICTIMS: A SHOCKING YET UNDERESTIMATED NUMBER

Conservative estimates show that snakebite envenoming kills more people than any other neglected tropical disease on the World Health Organization's (WHO) priority list. But valid data on the global impact of snakebite envenoming is poor due to under-reporting and insufficient research. Every year, at least:

- 1.8–2.7 million people are seriously injured and develop clinical illness (envenoming) following a venomous snakebite.<sup>[1, 2]</sup>
- 81,000–138,000 people die of snakebite.<sup>[1, 2]</sup>
- 400,000 of those who survive suffer serious disabilities, permanent disfigurement, and psychological strain.<sup>[3]</sup>

## STRIKING THE POOREST OF THE POOR

### Most affected victims and risk groups

- Impoverished rural communities in tropical and sub-tropical areas in Africa, Latin

America and Asia—some of the most vulnerable economies in the world—are most greatly affected.

- Rural dwellers, agricultural workers, herders, fishermen, hunters, working children (10–14 years of age), people living in poorly constructed housing, and people with limited education and healthcare access are at increased risk of being bitten.<sup>[4]</sup>

### Age and gender

- Morbidity and mortality occurs most frequently among people 10 to 30 years of age—often the most economically productive members of a community.<sup>[5]</sup>
- Young children (less than 5 years of age) suffer higher case fatality.<sup>[6]</sup>
- Women experience increased barriers to accessing medical care in some cultures.
- Pregnant women are particularly vulnerable to the risk of haemorrhage and miscarriage following a venomous snakebite.<sup>[7]</sup>

## SCARRED FOR LIFE: LOSING LIMBS & A NORMAL LIFE

### Short-term effects of snakebite envenoming

- Paralysis, suffocation and bleeding disorders result in irreversible kidney failure, blindness and severe tissue damage (necrosis) requiring amputation.

### Long-term effects of snakebite envenoming

- Disability and disfigurement, psychological trauma, stigma, discrimination and social exclusion from family and the community.

## VICIOUS CYCLE OF DESTITUTION: ONE BITE DESTROYS MANY LIVES

**No future:** Children are often taken out of school to recover from a venomous snakebite, care for a family member that has been disabled by a snakebite, or because families can no longer afford school fees due to the high cost of snakebite treatment.

**Poverty:** Snakebite envenoming pushes people further into poverty. In India, expenses can amount to 12 years of income for the average farmer or herdsman.<sup>[8, 9]</sup> The average treatment cost in a Nigerian study was US\$216<sup>[10]</sup>, and the average daily cost of keeping an envenomed patient in hospital (excluding treatment costs) in Zimbabwe was US\$225.<sup>[11]</sup>

### From family destitution to economic stagnation:

A permanently disabled family member is not only a long-term financial burden on family resources; the loss of a victim's productivity and the family's poverty also hinder socio-economic development for communities.

## HEALTH ACTION INTERNATIONAL'S SNAKEBITE PROGRAMME

Health Action International's (HAI) Snakebite Programme operates in Kenya, Uganda and Zambia in collaboration with the Global Snakebite Initiative and our country partners (including the James Ashe Antivenom Trust, Bio-Ken Snake Farm, and HEPS Uganda).

### Programme Activities

- **Building a snakebite evidence base:** We are gathering much-needed data from healthcare facilities and communities on snakebite cases and antivenom treatment.

- **Conducting evidence-based advocacy:** We are building a multi-stakeholder group of snakebite experts, led by civil society, which regularly meets to review and use our data to call for policy changes by national stakeholders, including health ministries.
- **Increasing community education:** We are providing communities with information and tools to learn how to prevent snakebite and provide effective first-aid and treatment for it.

### Programme Goals

- **Empowered communities:** Communities independently reduce the number of snakebite cases through awareness and education tools.
- **Mandatory snakebite reporting:** Government authorities make snakebite a notifiable or reportable disease by law.
- **Treatment available for all:** Health authorities take steps to ensure antivenom is provided to everyone, and is validated, safe, effective, and affordable.
- **Effective healthcare interventions:** Evidence from our Programme encourages proper training of healthcare workers, including tools for rehabilitation and disability services.

## FOR MORE INFORMATION

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### REFERENCES

1. Kasturiratne, A., Wickremasinghe, A.R., de Silva, N., et al., 2008. The Global Burden of Snakebite: A Literature Analysis and Modelling Based on Regional Estimates of Envenoming and Deaths. *PLoS Medicine*, 5(11): e218.
2. Gutiérrez, J.M., Burnouf, T., Harrison, R.A., et al., 2014. A multicomponent strategy to improve the availability of antivenom for treating snakebite envenoming. *Bulletin of the World Health Organization*, 92(7):526-532.
3. Chippaux, J.P., 2011. Estimate of the burden of snakebites in sub-Saharan Africa: A meta-analytic approach. *Toxicon*, 57(4): p. 586-99.
4. Swaroop, S. and Grab, B., 1954. Snakebite mortality in the world. *Bulletin of the World Health Organization*, 10(1): p. 35-76.
5. Warrell, D.A. and Arnett, C., 1976. The importance of bites by the saw-scaled or carpet viper (*Echis carinatus*): epidemiological studies in Nigeria and a review of the world literature. *Acta Trop*, 33(4): p. 307-41.
6. Sankar, J., et al., 2013. Factors affecting outcome in children with snake envenomation: A prospective observational study. *Arch Dis Child*, 98(8): p. 596-601.
7. Langley, R.L., Snakebite during pregnancy: a literature review, 2010. *Wilderness Environ Med*, 21(1): p. 54-60.
8. Vaiyapuri, S., et al., 2013. Snakebite and its socio-economic impact on the rural population of Tamil Nadu, India. *PLoS One*, 8(11): p. e80090.
9. Hasan, S.M., et al., The impact of snakebite on household economy in Bangladesh, 2012. *Trop Doct*, 42(1): p. 41-3.
10. Habib, A.G., et al., Envenoming after carpet viper (*Echis ocellatus*) bite during pregnancy: timely use of effective antivenom improves maternal and foetal outcomes, 2008. *Trop Med Int Health*, 13(9): p. 1172-5.
11. Kasilo, O.M. and Nhachi, C.F., 1993. A retrospective study of poisoning due to snake venom in Zimbabwe. *Hum Exp Toxicol*, 12(1): p. 15-8.