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News

Snakebites under-reported in India

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Snakebite, a recent inclusion to the list of neglected tropical diseases drawn up by the World Health Organization, could be the most neglected of all tropical diseases in the 21st century, according to a new analysis.

India has long been considered the nation with the highest snakebite incidence. A recent study has unraveled the full extent of this public health problem. The study, co-authored by David Warrell, Emeritus Professor of tropical medicine at the University of Oxford, confirms the under-reporting of snakebites¹. The findings from a national mortality survey in India, the Million Death Study, indicate that close to 46,000 people in the country die of snakebites every year, as opposed to the poorly estimated 2000.

Published data from the late 19th and early 20th centuries suggested that the annual snakebite mortality in India was about 20,000². But in 1969, the number of snakebite deaths in Maharashtra state was estimated at 1,110, more than the total of 1,100 reported by government hospitals throughout the whole country, says Warrell.

More recently the Government of India's Central Bureau of Health Intelligence³ reported only 985 snakebite deaths in 2010. "It is clear from these disparities that official data grossly underestimates the size of the problem", he says.

Because rural victims of snakebite rarely seek medical help from hospitals, the researchers got interviews conducted with relatives and neighbours of the deceased. "Being bitten by a snake is a sufficiently dramatic event, so people recall details and such recollection helps physicians decide the cause of death", Warrell wrote in an editorial in the National Medical Journal of India. Verbal autopsies, reliable in this context, may still be missing cases where the victims, bitten in the night, die of, say, "early morning paralysis," he cautioned.

The survey found that snakebite deaths occurred mostly in rural areas (97%), were more common in males (59%), and peaked at ages 15–29 years (25%) and during the monsoon months of June to September. Based on these facts, and the universally observed truth that snakes rarely go out of the way to attack humans, experts suggest simple strategies to reduce the risk of snakebites.

More effective cures

Community education for victims should encourage them to seek medical help rather than traditional, at the earliest, and recommend safe and effective first aid methods, says Warrell. Health workers, nurses and doctors should receive better training in the management of snakebites, especially in the use of anti-snake venom (ASV),



A saw-scaled viper, responsible for most snakebite deaths in Rajasthan.

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which is the only specific antidote, he points out.

There is a great diversity of venomous snakes in India but the polyvalent ASV is only raised against the "big four": the spectacled cobra, saw-scaled viper, Russell's viper, and the common krait. Close to 80% of the venom used to generate ASV comes from snakes in and around Mahabalipuram in the Tamil Nadu state, he says.

Herpetologists from the Madras Crocodile Bank, toxicologists and clinicians from across the country are now working together to test the effectiveness of this ASV against venoms of Russell's vipers from other parts of the country. Evidence suggests that there is significant variation in venom composition and toxicity even for the same snake species across the country, says Romulus Whitaker, conservationist and founder-director of the Snake Park in Chennai.

Greater awareness in villages has now led to lower incidence of snakebites, according to Himmat Bawaskar of Bawaskar Hospital and Research Centre in Mahad, Maharashtra. Speaking from decades of clinical experience in rural Maharashtra he says medical textbooks now devote pages to treating envenoming by scorpion and snakebites, which wasn't the case when he graduated from medical school in 1976.

Today, better transport to primary health centers also helps in timely interventions. "Each public health centre is provided enough anti-venom against scorpion and snake venom," he says, but concedes that this may not be true for the entire nation.

Bawaskar has been advocating for a chemical antidote for snakebite⁴, similar to the inexpensive drug he has used to great effect in the treatment of scorpion bite. But funding for this alternative hasn't been forthcoming.



David Warrell milking the krait *Bungarus candidus* in Vietnam.

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