The global burden of snake bite envenoming

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In June 2018, Kofi Annan, former Secretary-General of the United Nations, referred to snake bites as 'the biggest public health crisis you have likely never heard off'. A month earlier, the World Health Assembly had adopted a landmark resolution calling for immediate and effective steps to address the snake bite crisis.[1] In 2017, the World Health Organization (WHO) had decided to add snake bite to the organisation's list of neglected tropical diseases and establish a working group to develop a comprehensive roadmap for tackling this issue.[2] In this editorial, we wish to highlight some pertinent issues related to the global burden of snake bite envenoming which are important for all physicians to be aware of.

Snake bites occur in remote areas, and hence mortality remains unnoticed and under- or unreported. It is an acute life-threatening event which may result in irreversible disabilities. It is also a neglected medical emergency often faced by farmers, farm labourers, villagers, people living in huts and small dwelling places in the hills, hunters, migrating population, plantations workers, fishermen, workers in irrigation schemes, snake charmers and, due to improper handling of snakes, by rescuers and scientists working in venom milking laboratories in tropical and subtropical countries where they study and prepare antivenin. About 45% of snake bite victims are young males, women and children. The death of a young working member due to a snake bite often has a devastating effect on the whole family.

About 5.4 million snake bites occur each year, resulting in 1.8–2.7 million cases of envenoming. It is estimated that this results in the deaths of 81,000–138,000 people each year and leaves a further 400,000 with permanent physical or psychological disabilities, including loss of vision or limbs, disfigurements, extensive scarring and mental stress.[3] Simply putting, this means that every five minutes someone dies of a snake bite and another four people are left with permanent disabilities. However, a surprising 50% of snake bites are dry bites without envenoming.

People most likely to be bitten by snakes live in rural areas in Sub-Saharan Africa, Asia, Oceania and Latin America. South Asia has the highest number of snake bites because of the high population density and agriculture being one of the main occupations. Despite having sufficient production of polyvalent snake antivenin by Indian laboratories, India has the most deaths (50,000 every year) due to snake bites. Victims tend to be very poor and include children from remote rural areas.[3,4] In 2018, WHO recognised that snake bites were a high-risk health issue in South East Asian countries, with India reporting 2.8 million bites and 50,000 deaths, Pakistan 40,000 bites and 8,200 deaths, Nepal 20,000 bites and 1,000 deaths, Bangladesh 710,159 bites and 6,000 deaths, and Sri Lanka 33,000 bites and 4,000 deaths.[5] In some of these countries, and throughout most of Sub-Saharan Africa, snake bite victims usually attend a traditional healer because effective medical treatment is often unavailable or not affordable.[5] After listing snake bite envenoming as a neglected tropical disease, WHO began to develop a global strategy to halve the number of snake bite-induced deaths and disabilities by 2030, including the training of doctors and fieldworkers.[6] According to WHO, there are over 3,700 snake species in the world, of which 650 are venomous and but only 250 are medically important venomous snakes.[7]

The severity of snake bite envenoming depends on the bite to needle (antivenin) time.[5] In many countries, the victims

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miss the crucial window due to the lack of transport and required personnel at primary health centres. Details of different venomous snake species found in South East Asian countries and management of snake bite envenoming have been published by WHO.[8] The mere availability of snake antivenin is not sufficient because clinicians may underuse them due to the fear of anaphylactic reactions.[9] By encouraging clinicians to participate in regular workshops on snake bites, we have prevented the risk of anaphylactic reactions to polyvalent snake antivenins (by epinephrine prophylaxis and management of anaphylaxis). This, in turn, has resulted in a rapid reduction of morbidity and mortality in rural Maharashtra.[10]

In conclusion, like most neglected tropical diseases, snake bites affect particularly the poorest members of society. Although there have been recent multidimensional efforts by WHO to deal effectively with this health crisis, there are still some issues that remain a barrier, such as the lack of awareness and recognition among many stakeholders, inadequate infrastructure, poor logistics and poor availability of snake bite antivenin. We hope that a comprehensive review by Dr Naik in this issue of the *Journal* on *Hypnale* enveomation will draw the attention of physicians worldwide and help generate support for relevant initiatives in their areas.[11]

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