Editorial

Snakebite Envenoming: An Overlooked Public Health Issue

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Snakebite envenoming (SBE) refers to the medical condition that occurs when a venomous snake bites a person and injects venom into the body. When a poisonous snake bites and venom is injected, it can affect the body in different ways depending on the species of snake and the type and amount of venom injected. A bite by a venomous snake which produces specific symptoms and signs or a syndrome is considered as a venomous snakebite. It is important to note that a bite by venomous snake may not always produce signs and symptoms of SBE. Even biting with venomous snake, 50% of bites by Russell's vipers, 30% of bites by cobras do not result in any symptoms or signs of envenoming. A bite by a non-venomous snake does not produce the 'specific features' due to venom but due to the psychological impact a victim may develop some features due to anxiety.[1]

SBE is a serious, yet frequently neglected public health issue in Bangladesh. In contrast to many other serious health conditions, a highly effective treatment exists for this acute medical emergency. Most deaths and serious consequences of SBE are entirely preventable by efficient treatment with effective antivenoms.

Around 5.4 million cases of snakebite occur worldwide each year with 1.8 to 2.7 million cases of SBE. The WHO approximates 81,410 to 137,880 deaths each year because of SBE along with approximately three times as many amputations and other permanent disabilities. Serious morbidities from SBE include paralysis with respiratory failure, fatal hemorrhage, irreversible renal failure and tissue damage causing permanent disability and limb amputation. Children often suffer more severe effects than adults, due to their smaller body mass. Bangladesh is one of the most affected countries regarding morbidity and mortality from SBE due to its tropical climate, rural farming communities, and limited access to timely antivenom treatment.[2]

The highest burden of SBE is suffered in South Asia, Southeast Asia, and Sub-Saharan Africa.[3] High population density, widespread agricultural activities, numerous venomous snake species, lack of functional snake bite control programs and scarcity of antivenom has made South Asia (including Bangladesh) a heavily affected region of SBE in the world.[4] The true incidence is probably higher than what is reported. The incidence density of snakebite in rural Bangladesh is 623.4/100,000 person years with an estimated 6,041 death annually.[5] Based on records of the surveillance system of the Directorate General of Health Services (DGHS), Bangladesh, SBE was identified as a leading cause of death in several flood disasters, second only to drowning.

Most of the victim of snakebite is a poor, young and active individual. Most incidences occur when individuals are engaged in activities such as cultivation, fishing, plantation, wood collection, or tending crops or gardens. SBE in Bangladesh is thus an occupational health hazard of the rural people. Males were found to be most vulnerable with a risk of 1.5 times higher than female. People living in rural areas are almost 11 times higher at risk than people living in urban areas. 44% incidence occurs during evening and night and 94% of the victims are from poor socioeconomic condition. 34% victims are bitten in the leg.[6]

There are about 3000 species of snakes worldwide and 10% to 15% of which are venomous.[7] The snake fauna of Bangladesh includes 100 species of which 16 species of sea

snakes, 3 cobras (including 1 king cobra), 5 kraits, 2 coral snakes, 6 green pit vipers and 1 species of true viper (Russell's viper) are venomous.[1]

Management of SBE includes, providing appropriate first aid treatment, appropriate urgent treatments, antivenom administration and Identifying and managing antivenom reactions. Details management protocol is available from guidelines of Directorate General of Health Services, Ministry of Health & Family Welfare, Banglladesh.[1] WHO also provide a strategy for prevention and control of SBE.[2]

In rural communities, traditional healers (Ozhas) are the first respondent for snakebite victims in 70% cases. The treatment methods of these 'traditional healers' often lack scientific approach which may complicate the situation and also delay effective medical treatment.[8] Community education about venomous snakes and snakebite prevention is strongly recommended as the most effective strategy to reduce the incidence of bites.[3,9] Public awareness campaigns focusing on safe agricultural practices, avoidance of snake habitats, and prompt medical attention following a bite are essential components of prevention programs.[10]

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References

1. Directorate General of Health Services (DGHS). Learner's guide for management of snakebite. Dhaka: Ministry of Health and Family Welfare, Government of Bangladesh; 2020.

2. World Health Organization. Snakebite envenoming: A strategy for prevention and control. Geneva: WHO; 2019. Available from: https://www.who.int/publications/i/item/9789241515641

3. Kasturiratne A, Wickremasinghe AR, de Silva N, et al. The global burden of snakebite: a literature analysis and modelling based on regional estimates of envenoming and deaths. PLoS Med. 2008 Nov 4;5(11):e218.

4. Alirol E, Sharma SK, Bawaskar HS, et al. Snake bite in South Asia: a review. PLoS Negl Trop Dis. 2010 Jan 26;4(1):e603.

5. Faiz MA, Hossain M, Amin R, et al. (2008) National Guideline of Management of Snake Bite. 2nd Edition, DGHS, Dhaka.

6. Hossain J, Biswas A, Rahman F, et al. Snakebite Epidemiology in Bangladesh - A National Community Based Health and Injury Survey. Health. March 2016;8(5):479-486.

7. Meyers SE, Tadi P. Snake Toxicity. [Updated 2022 Sep 19]. In: StatPearls [Internet]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557565/

8. Rahman M, Mostafi M. Snakebite in Bangladesh: a hidden public health concern. J Bangladesh Coll Phys Surg. 2024;42(4):301-302.

9. Warrell DA. Guidelines for the management of snake-bites. 2nd ed. New Delhi: WHO Regional Office for South-East Asia; 2016.

10. Hossain J, Biswas A, Rahman R, Faiz MA. Snake bite epidemiology in rural Bangladesh. Trans R Soc Trop Med Hyg. 2016;110(9):523-530.