

SPECIAL ARTICLE

National Snakebite Strategy of Bangladesh

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Abstract:

Considering the importance of snakebite as a public health problem the Non-communicable Disease Control Program of the Ministry of Health and Family Welfare, Government of Bangladesh developed and approved the National Snakebite Strategy and Costed Action Plan 2023-2028 in line with the WHO global and regional strategy on snakebite mitigation. The strategy contains four objectives and twenty seven strategies, and several activities under each objective. The objectives are: empowering and engaging the community, ensuring effective safe treatment including

antivenom, making the health system more effective, and partnerships, coordination and institutional development. Snakebite prevention and control is part of universal health coverage and a right based issue. Subject to the availability of resources and fund it is expected that once implemented Bangladesh will be able to achieve the target of 50% reduction of death and disability following snakebite by the year 2030.

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Background:

For long period snakebite is recognized as an important public health problem in Bangladesh. Even before the World Health Organization (WHO) developed any strategy the Government of Bangladesh proactively developed the snakebite guideline in 2000 updated in 2008 and recently in 2019.^{1,2,3} According to a recent national survey conducted in 2022, around 400,000 people were estimated yearly victims of snakebite in Bangladesh, of which about 7,500 people died (unpublished report submitted to NCDC). Despite insufficient information on snakes, the major venomous snakes include 'Gokhro' (Cobra), krait ('Kalach'), 'Chandrabora' (Russell's viper) and green pit viper. There are also reports of some sea snake bites. Some notable activities within the existing health care system over the past 25 years include formulation of National Management Guidelines; training modules for physicians and other health care providers; conducting snakebite control measures across the health system under the Directorate General of Health Services, using limited health educational (HE) materials.⁴

Some groundbreaking research on snakebite in Bangladesh contributed to the global literature.^{5,6,7} Bangladesh also played an important role in the development of international and regional documents related to snakebite mitigation. Snakebite was identified by the WHO as a Neglected Tropical Disease (NTD) at the 2018 World Health Assembly.⁸ To adopt a proposal for a report on reducing the global burden of snakebite, the WHO quickly formed a 28-member expert task force, Snakebite Envenoming Working Group (co-chairs Dr. David J. Williams and Prof. MA Faiz), who developed the strategy for snakebite prevention and control. The strategy on snakebites was launched on 23 May 2019 at the World Health Assembly⁹

The highest number of snakebite and deaths in the world occur in South Asian countries, including Bangladesh. In the light of the WHO strategy the "Regional Action Plan for the Prevention and Control of Snakebites in South-East Asia 2022-2023" has been formulated.¹⁰

Despite a number of fragmented activities there was no separate program on prevention and control of snakebite

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in Bangladesh. Apart from the government system, private sector participation in snake and snakebite issues is virtually non-existent. Civil society involvement is also not as visible as is present in other public health programmes. Teaching and training on snakebite in medical courses is also minimal. The participation of non-government medical college hospitals has been found to be very limited. On the other hand snakebite is one urgent health issue that require multi-sectoral involvement.

Purpose: In the light of the World Health Organization's strategy and action plan, "Snakebite strategy and costed action plan (2023-2028)" has been prepared in Bangladesh with the aim of reducing death and disability by 50 percent by the year 2030. This strategy sets out four main objectives, and strategies and actions for each objective.¹¹

The four objectives and underlying strategies are:

- (a) Empowering and engaging the community (09 strategies):
 - (1) Identify high-risk populations,
 - (2) Effectively engage/engage and participate communities,
 - (3) Promote prevention, reduce risk, and increase avoidance of venomous snakebites. (Educate at-risk populations),
 - (4) Effective first aid practices and rapid hospital bike/ambulance/ motor transport,
 - (5) Participation in clinical trials to promote pre-hospital treatment,
 - (6) Promote healthcare seeking behavior,
 - (7) Develop a strong understanding of socio-cultural-epidemiological (anthropological, qualitative), economic factors and 'one-health' influencing outcomes (research),
 - (8) Incentive systems for families of snakebite victims and follow-up costs,
 - (9) Snake conservation.
- (b) Ensuring effective safe treatment including antivenom (06 strategies) (Figure-1):
 - (1) Training and education of health care professionals,
 - (2) Clinical decision making facilitating admission, treatment, recovery and rehabilitation,
 - (3) Antivenom production, quality development, and monitoring,
 - (4) Ensuring safe, cost-effective antivenom treatment,
 - (5) Snake venom and development of anti-venom regulation,
 - (6) Encouraging participation in pre-clinical trials of new antivenoms or drugs. (research)

- (c) Making the health system more effective (06 strategies) (Figure- 2):
 - (1) Strengthening community health services (develop emergency transport system in the community),
 - (2) Research and policy development to reduce treatment costs,
 - (3) Improve infrastructure, services and health facilities,
 - (4) Include snakebite in national and local health plans,
 - (5) Increase disease burden monitoring and surveillance,
 - (6) Encourage research on the ecology, epidemiology, medical outcomes and medicine of snakebites.
- (d) Partnerships, coordination and institutional development (06 strategies) (Figure 2):
 - (1) Support governance and leadership,
 - (2) Advocacy, effective communication, and effective participation,
 - (3) Integration, develop coordination and cooperation,
 - (4) Strengthen partnerships, cooperation and alliances,
 - (5) Information and research,
 - (6) Establish a strong, sustainable investment system.

Some of the important activities of the strategy:

Improving snakebite data: mandatory reporting of all cases of snakebite through Management Information System (MIS) of the Government. Good epidemiologic data with mandatory reporting is needed to procure the necessary antivenom.

Access to treatment for snakebite- provision of antivenom, other logistics and medicines through NCDC and other action plans of the Directorate General of Health Services to ensure supply of antivenom, collection, distribution and storage of antivenom in all government hospitals. Currently, the amount of antivenom is not determined based on evidence, the number of antivenom is measured as the number of vials procured, not the number of doses required. Simultaneously we need to conduct evidence-based need assessment.

Use of antivenom:

Ongoing training and support for early appropriate use of antivenom, developing skills in providing treatment for physicians and other health care workers, developing management of snakebite emergencies including organ support, providing appropriate initial management of

anti-venom adverse reactions, and ensuring the training on advanced life support of physicians and other team members.

Supportive supervision: Some examples of good management are: '24/7' Snakebite Clinic at Chittagong Medical College Hospital, Chattogram, use of other social media platforms including 'Snakebite Support Group' as a 'hub & spoke' model of management, using telemedicine and artificial intelligence, application of knowledge learned from Covid-19 and other programmes.

Treatment seeking from Traditional Healers ('Ojha'): With heavy reliance of rural community on 'traditional medicine', in many occasions the medical team hesitate to treat snakebite with confidence, which may lead to loss of trust on the public hospitals and also wasting the most vital moments to start-up treatment.

Appropriate Social and Behavior Change Communication (SBCC): Very little evidence-based SBCC, few good efforts to promote SBCC, sometimes inconsistent health education messages that may confuse the community, identifying and implementing which methods of SBCC are appropriate.

Rapid Transport: Snakebite is a part of a community health emergency (Medical emergency).

Current system: The community use multiple transport, use of slow speed transport is conventional, out-of-pocket expenses for the management is usual ; in the absence of a rural emergency care and transport system, innovation is needed to cover the costs (example, tuberculosis, malaria, emergency obstetric care).

Private Sector Involvement: Especially for the poor population in remote areas health policy for engaging the private sector is already being practiced considering both 'for-profit' and 'not-for-profit' facilities, a similar provision of antivenom from public supplies may be considered.

Governance: Formation of national steering committee, technical committee, working group and district, upazila snakebite committee with defined role and union 'parishad' & community clinic group will discuss snakebite prevention and control during routine meetings.

Conclusion:

Prevention and control of snakebite is part of the universal health care system, which is also a right-based health issue. The strategy formulated for 2023-2028 if implemented hopefully we will be able to reduce snakebite deaths and disability with the availability of funds and resources along with the existing limited activities currently underway.

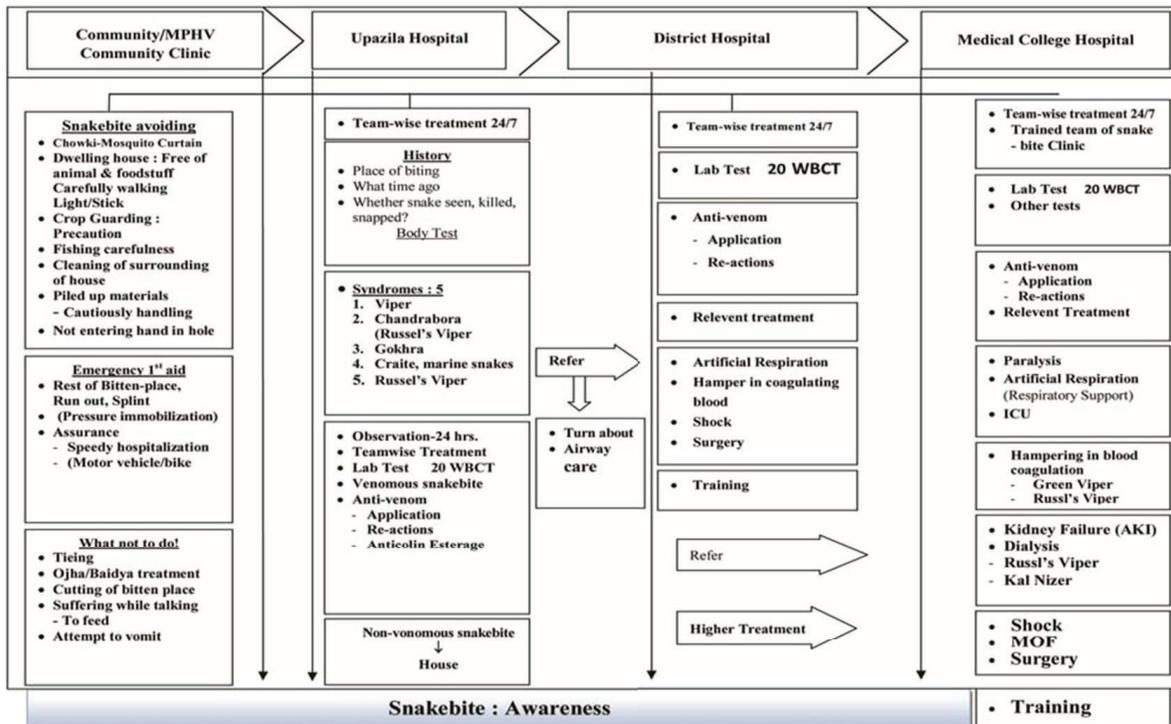


Figure 1: Net of venomous snakebite treatment: Snakebite prevention, First Aid, and Rapid Transport for Urgent Hospitalization

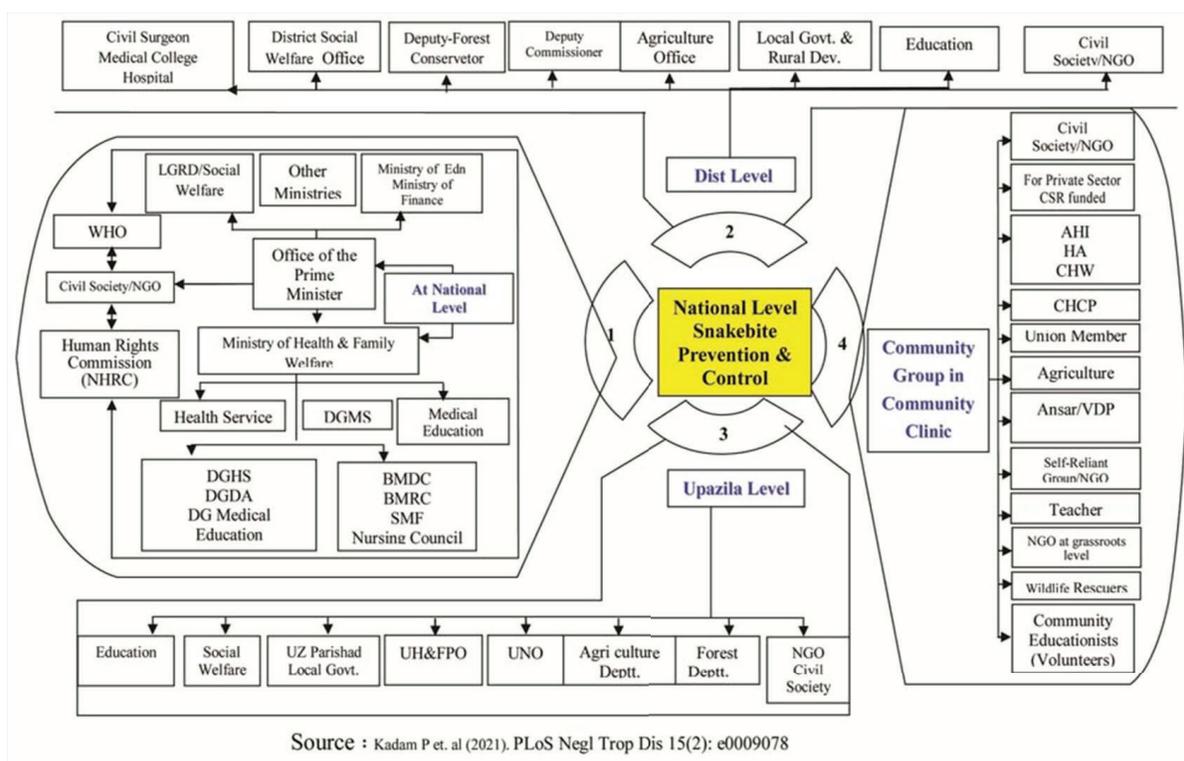


Figure 2: A Model Outline of participation of multiple stakeholders at different levels in managing snakebite

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