



Knowledge, Attitude and Perceptions on Snakebite Envenoming Amongst General Public in Assam

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Abstract

Snakebite is a common and neglected public health problem in many parts of India mostly affecting the lower socioeconomic group. The public health issues of snakebite are neglected globally, and it has only been added to WHO's list of neglected tropical diseases in June 2017.

India has remarkably the highest number of snakebite cases contributing to nearly 50% of the global snakebite deaths. Despite this fact, there is limited knowledge and awareness regarding the management practices for snakebite in the Indian population. Aim of this study was to assess knowledge, attitude, and perceptions on snakebite envenoming amongst general public in Assam. The present study is a cross sectional study conducted on general population in Assam state. Total 100 adult participants were included in the study. Data was collected by personal interview of an individual with predefined data collection sheet which was comprised of demographic information of participants and pre-defined questionnaire. Among the study population, 87% of the participants correctly mentioned that patient should be taken to a hospital immediately and 65% were aware about the ASV (Anti Snake Venom) as the treatment for snake bite. However, majority of the participants responded incorrectly about application of tight band [Tourniquet] proximal to the bite site (70%), 46% believed in chanting in prayers while encountering a snake bite, 8% partially believed and 58% were unaware of dry bites. Considering these results, it is recommended that steps must be taken to educate the general population. The basic first aid measures, the Do's and Donts' during a snakebite should be incorporated in the curriculum of primary education especially in the rural India.

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I. Introduction

India has remarkably the highest number of snakebite cases contributing to nearly 50% of the global snakebite deaths. Despite this fact, there is limited knowledge and awareness regarding the management practices for snakebite in the Indian population.¹ According to WHO, snakebite envenoming is a potentially lifethreatening disease caused by toxins in the bite of a venomous snake. Envenoming can also be caused by having venom sprayed into the eyes by certain species of snakes that can spit venom as a defence measure. A very large community-level study of snakebite deaths in India gave a direct estimate of 45,900 (99% CI: 40,900-50,900) deaths in 2005, which is over 30 times higher than the Government of India's official figure.² High quality snake antivenoms are the most effective treatment to prevent or reverse most of the venomous effects of snake bites. They are included in the WHO List of essential medicines and should be part of any primary health care package where snake bites occur. Many victims do not attend health centres or hospitals and instead rely on traditional treatments. An ongoing crisis restricting access to safe, effective antivenom treatment in many regions is one factor that contributes to the predisposition for seeking help through traditional medicine. In India, particularly in the rural areas snake bite victims turn to traditional medicine men and healers, due to lack of availability of antiserum.³ The study aimed to explore the knowledge, attitude and perceptions towards snake bite envenoming in the general public of Assam.

II. Materials and methods

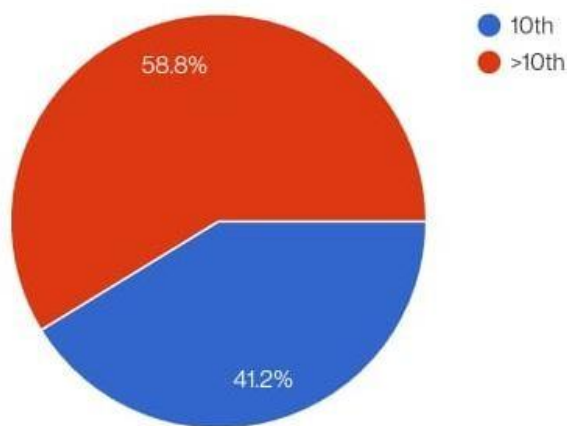
The present study was a cross sectional study conducted on attendants accompanying patients coming to the Emergency Department, Gauhati medical college. Total 100 participants were included in the study. All those who were aged 18 years and above and were willing to take part in the interview based survey were included in the study. Consent for the participation in the study was taken from everyone. Data was collected by personal interview of an individual in his/her vernacular language with predefined data collection sheet. Data collection sheet was comprised of demographic information of participants and predefined questionnaire. The questionnaire was prepared in a way to assess knowledge, attitude, and perception of general population towards snake envenoming. Chi square test was used for comparing the responses. *P* value of < 0.05 was considered significant. SPSS software was used for statistical analysis.

III. Results

Total 100 participants took part in the study among which 70% were males, 41% studied up to 10th standard. 70% were brought up in the terrain regions of Assam. 17% of the participants had a history of family members bitten by snake. (Table 1)

Demographics of respondents

Variables	Number	Percent(%)
Sex		
Male	70	70
Female	30	30
Other	0	0
School		
10th	41	41
>10th	59	59
Region of upbringing		
Mountain	30	30
Terrain	70	70
Family members bitten by snake		
Yes	17	17
No	80	80
I don't know	3	3



Pie diagram depicting participants categorised based on their education

While assessing the knowledge, attitude and perceptions of the participants regarding snake bite envenoming; more than half of the study participants correctly responded that immobilization of the bitten limb (51%) should be done, no local incisions pricks or punctures should be made over the bite sites (64%), no healthy volunteers should suck the venom out of the wound (67%). 87% of the participants correctly mentioned that patient should be taken to a hospital immediately and 65% were aware about the ASV (Anti Snake Venom) as the treatment for snake bite, 62% were aware that all snake bites are not associated with envenomation, 55% were aware that chlorinated lime should not be applied over the site and 69% of the participants did not believe in the presence of snake god around them after a snake bite. 43% responded that topical instillation/application of herbal medicines is not beneficial while 20% were unaware of the same. 55% knew that pressure immobilisation bandages should not be applied around the bite site. However, majority of the participants responded incorrectly about application of tight band [Tourniquet] proximal to the bite site (70%), 46% believed

in chanting in prayers while encountering a snake bite and 8% partially believed and 58% were unaware of dry bites (Table 2)

Respondents' knowledge of first aid of snake bites

Variables	Yes	No	I don't know
Should the limb be immobilized following the bite?	51	30	19
Should local incisions or pricks/punctures be made over the bite site?	23	64	13
Should healthy volunteer suck the venom out of the wound?	23	67	10
Should tight bands(tourniquets) be applied around the limb proximal to the bite site?	69	21	9
Should pressure immobilization bandages be applied around the bite site?	32	55	13
Is topical instillation or application of herbs beneficial?	37	43	20
Should the snakebite patient be transported to the hospital soon after the bite?	87	7	6
Can envenomation be cured by anti-venom therapy?	65	17	18
Are all snakebites associated with envenomation?	19	62	19
Do you chant prayers when someone around you gets bitten by a snake?	46	46	8
Do you believe in the presence of snake god around you after the snake bite?	22	69	9
Should chlorinated lime be applied over the snake bite?	16	55	29
Are you aware of dry bites?	42	58	-

Significant association was observed with schooling of the study participants in terms of knowledge regarding immobilisation of bitten limb(p value:0.046) and practice of chanting prayers following bite(p value 0.047). Other wrong practices such as making local incisions over puncture site,topical instillation of herbs and application of chlorinated lime were practiced among both the groups which means education has not given the general public the insight regarding basic first aid measures during a snakebite in a place like Assam where snakebites are common .

S No	Knowledge on snake bite first aid and treatment measures	Correct response	Incorrect response	χ^2	p value
1	Should the limb be immobilized following the bite?				
	>10th	35	24	3.988	0.046
	10th	16	25		
2	Should local incisions or pricks/punctures be made over the bite site?				
	>10th	42	17	3.226	0.072
	10th	22	19		
3	Should healthy volunteer suck the venom out of the wound?				
	>10th	42	17	1.141	0.286
	10th	25	16		
4	Should tight bands(tourniquets) be applied around the limb proximal to the bite site?				
	>10th	15	44	1.697	0.193
	10th	6	35		
5	Should pressure immobilization bandages be applied around the bite site?				
	>10th	28	31	3.308	0.069
	10th	27	14		
6	Is topical instillation or application of herbs beneficial?				
	>10th	30	29	3.616	0.057
	10th	13	28		
7	Should the snakebite patient be transported to the hospital soon after the bite?				
	>10th	54	5	2.606	0.106
	10th	33	8		
8	Can envenomation cured by anti-venom therapy?				
	>10th	38	21	0.022	0.881
	10th	27	14		
9	Are all snakebites associated with envenomation?				
	>10th	38	21	0.354	0.552
	10th	24	17		
10	Do you chant prayers when someone around you gets bitten by a snake?				
	>10th	32	27	3.931	0.047
	10th	14	27		
11	Do you believe in the presence of snake god around you after the snake bite?				

	>10th	49	10	13.282	0	10th	20	21
12	Should chlorinated lime be applied over the snake bite?							
	>10th	31		28	0.351		0.553	
	10th	24		17				
13	Are you aware of dry bites?							
	>10th	23		36	0.538		0.463	
	10th	19		22				

IV. Discussion

This study was done to assess the knowledge, attitude and perceptions on snake bite envenoming. In our study 87% participants mentioned that snake bite patient should be taken to hospital for medical treatment and 65% of them were aware about the anti-snake venom (ASV) as the treatment; In study done by Krishnaleela et al, 62.5% preferred hospital treatment and 59.5% believed that ASV is effective which was lower than our study findings.⁴ Studies done by Pathak et al and Pandey et al observed that all the participants knew about medical treatment being available for snake bite and all said that they will rush to the health facility if a snake bites them which was similar to our study findings.^{5,6} Use of ineffective first aid treatment and delay in getting antivenom combined leads to systemic envenoming by the time they seek medical treatment.⁷

According to the WHO guidelines, nothing should be done at bite site except for splinting and bandaging the bitten limb. Traditional measures popular among the population i.e., incision and drainage of bite site, sucking of the blood and application of herbal formulas causes no gain but pain and are contraindicated.⁹ Attitude towards ultimate medical management of snake bite was found appropriate among population, in a study by Doshi M et al.⁸ According to our study, 64% were aware that no local incisions pricks or punctures should be made over the bite sites compared to 37% in a study chidananda et al.¹⁰

V. Conclusion

This study highlighted that knowledge regarding snake bite envenoming was inadequate in study participants. Considering these results, it is recommended that steps must be taken to educate the general population. The basic first aid measures, the Do's and Donts' during a snakebite should be incorporated in the curriculum of primary education so that the delay to seek medical treatment is reduced and thereby reducing the deaths due to snakebite in India. This study has a limitation that the findings cannot be generalized to the entire population, as it included only a segment of population which attended Gauhati medical college ED; however, community based studies can be planned on large scale to assess the knowledge based on which further educational and training sessions can be conducted.

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