

Original Research Article


# Knowledge regarding snake bite in rural Bengal – Are they still lingering on myths and misconceptions?

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## Abstract

**Introduction:** Snake bite is a very common problem in rural India which even today leads to a large number of deaths. This is because the uninformed community members take recourse to harmful traditional healing measures which cause loss of vital time which is very important for the survival of the patient.

**Objectives:** To assess the knowledge of the study population on snake bite and to elicit any association of this knowledge with their demographic and socioeconomic characteristics.

**Material and methods:** An observational, cross-sectional study was done in a village in the Singur Block of Hooghly district of West Bengal. The head of the family or in his absence the senior most members was interviewed with a pre- designed, pre-tested schedule.

**Results:** Farming was the occupation of the majority (36%) followed by business (20.6%) and service (17.7%). 45% belonged to the social class I and II (modified B.G. Prasad) while 39% were in the social class IV and V. Only 58.85% of the study population were aware that the incidence of snake bite can be reduced. 68% were aware of immobilisation of the affected part was the initial first aid measure and only 4% had the correct knowledge that application of collar was unnecessary and harmful. . Correct knowledge on the availability of specific treatment was present among 85.1% and 77.1% knew where specific treatment is available. Education OR 2.51 (1.26 – 5.00), Occupation OR 4.44 (2.35-8.40), PCI OR 2.05 (1.12-3.76) were significantly associated with good knowledge.

**Conclusion:** There is a paucity of knowledge on different domains of snakebite. Hence dissemination of correct knowledge is necessary to remove their misconceptions.

## Key words

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Snake bite, Knowledge, Immobilisation, Collar, First aid.

## Introduction

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Snakebite is a very common problems witnessed in rural India. It is very common among agriculture workers because they do not take necessary precautionary measures to avoid snake bite such as wearing gloves, boots etc. either because of unaffordability or because of discomfort associated with their use in hot and humid conditions. Most experts agree that snake bite victims should be transported promptly to a medical facility where they should be evaluated by qualified medical practitioners and antivenom should be readily available. Time of transport is a crucial determinant in snake bite mortality. Poorly informed rural population take inappropriate first aid measures and vital time is lost in shifting the patient to the medical facility. Majority of the victims report to the traditional healers. Traditional methods include chanting, incisions, attempts to suck the venom, application of herbal medicines and snake stones. These are not only ineffective; in most cases they may be harmful and deleterious. Application of tourniquets is practised commonly but it causes severe local damage thus further aggravating the condition. In spite of being such an important public health problem there is a lack of community based study to evaluate the knowledge of snake bite in rural population. So the gaps regarding the knowledge of snakebite should be identified and appropriate measures have to be taken to augment and percolate correct knowledge regarding prevention, control and management of snake bite. The present study is an effort to determine the knowledge of a selected rural population on this largely neglected problem.

## Objectives

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- To study the demographic and socioeconomic characteristics of the study population.

- To ascertain the knowledge of the study population on the first aid measures following snake bite.
- To elicit the knowledge of the study population regarding specific treatment.
- To show the association if any of different demographic and socioeconomic variables with the knowledge on snake bite.

## Material and methods

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### Study settings

The study was done in the service area catered by the Nasibpur sub centre in the Singur block of Hooghly district of West Bengal under the field area of AIIH & PH. Out of the 6 villages under the Nasibpur sub centre one village was chosen by simple random sampling and total enumeration of all households (175) was done. Timeline of study was between 1-1-2015 to 31-1-2015.

### Study design

The study was descriptive in nature and cross sectional in mode of data collection through interview.

### Study Tools

A pre-designed, pre-tested questionnaire was developed in local language. The questionnaire was approved by the experts of AIIH & PH. The cronbachs alpha for the questionnaire was 0.722. The questionnaire was pretested before it was finally made ready. The questionnaire consisted of two parts. Section A – consisting of socioeconomic factors- Education, occupation, PCI, and demographic factors- Age, Sex, Marital status. Section B – contained knowledge questionnaire which was subdivided into 3 parts – Part 1 – contained general idea about poisonous and non –poisonous snakes. Part 2- contained questions on first aid to be undertaken following snake bite. Part 3 – contained

questions on transport and availability of specific treatment of snake bite.

### Study techniques

Head of the family of each household was selected for interview. It was assumed that knowledge of HOF reflects the knowledge of other family members. In their absence the next senior member was interviewed.

### Study variables

- Socio demographic: Age, Sex, Education and Occupation.
- Socioeconomic: Per capita income  
Knowledge on snake bite: General knowledge on snakes and snake bites, Measures to reduce snake bite, First aid measures, and Availability of specific treatment.

A score of 1 was awarded for the correct answer and 0 for wrong answer.

### Ethical issues

The participants were made aware of the nature and purpose of the study. They were assured of the anonymity and confidentiality of the information provided by them and data obtained would be used solely for academic purposes. Even if they refused, they would continue to receive the same medical benefits as they were enjoying previously.

### Statistical analysis and plan

Data were analyzed using SPSS 20. Frequency distribution, Univariate and Multivariable logistic regressions were done.

### Results

As per **Table – 1**, most of the study population were farmers (36%). A considerable proportion of the population were engaged in business (20.6%) and service (17.7%). Most of them completed education upto the middle school to secondary level (42.3%) while 16.6% attained a level of Graduate or above. About 45% of the population belonged to the social class I and II while 39% were in the social class IV and V.

**Table - 1:** Distribution of study population on the basis of socio-demographic and economic features (n=175).

Variable	Frequency (%)
<b>Age</b>	
21-30	46 (26.3)
31-40	45 (25.7)
41-50	22 (12.6)
51-60	36 (20.6)
61-70	14 (8.0)
71-80	12 (6.9)
<b>Occupation</b>	
Farmer	63 (36)
Skilled Workers	13 (7.4)
Manual Labours	18 (10.3)
Service	31 (17.7)
Retired	14 (8)
Business	36 (20.6)
<b>Education</b>	
Primary	54 (30.9)
Middle School – Secondary	74 (42.3)
HS	18 (10.3)
Graduate & Above	29 (16.6)
<b>PCI (Modified B.G. Prasad)</b>	
≥ 5615	23 (13.1)
2808-5614	56 (32)
1685-2807	28 (16)
842-1684	54 (30.9)
<842	14 (8)

As per **Table – 2**, the correct knowledge of snake bite among the study population. It was found that 89.7% knew that all snakes are not poisonous and 86.3% knew that all bites do not result in death however, only 58.85% of the study population were aware that the incidence of snake bite can be reduced. But there remains a misconception on the role of snake charmers with only 36% providing correct answers regarding their utility. Regarding the knowledge on first aid measure 68% were aware of immobilisation of the affected part. But application of tight collar around the affected part was considered to be an important first aid measure by majority and only 4% had the correct knowledge. 84% of the participants had correct

knowledge on the application of ice. Regarding the local application of blade and sucking of the wound 54.3% and 30.9% respectively correct responses were obtained. Correct knowledge on the availability of specific treatment was present among 85.1% and 77.1% knew where specific treatment is available.

**Table - 2:** Distribution of study population according to the correct knowledge on snake bite.

Questions	Correct response n (%)
<b>General knowledge on snakes and snake bites (n=175)</b>	
Does every snake bite cause death?	151 (86.3)
Are all snakes poisonous?	157 (89.7)
Is it possible to reduce snake bite?	103 (58.85)
<b>Measures to reduce snake bite n= 103</b>	
Carbolic acid helps in reduction	51 (49.5)
Cleaning of weeds helps in reduction	59 (57.28)
Snake charmers help in reduction	37 (35.92)
<b>Knowledge on first aid measures n=175</b>	
Immobilisation of the affected part	119 (68)
Application of tight collar	7 (4)
Application of ice	147 (84)
Sucking of wound	54 (30.9)
Local application of blade	95 (54.3)
<b>Knowledge on the availability of specific treatment ( n=175)</b>	
Whether specific treatment is available?	149 (85.1)
Where specific treatment is available?	135 (77.1)

On the basis of knowledge score it has been found that the lowest score attained was 4 and the highest score attained was 14. Mean knowledge score was  $9.60 \pm 2.89$ . Median Knowledge score was 10. Good knowledge score

was considered to be those who attained a score above the median score.

As per **Table – 3**, the association of knowledge on snake bite with demographic and socioeconomic factors. Knowledge on snake bite was assessed by the scoring system dichotomised by the median score. Those having score above median i.e.10 were considered having good knowledge. Bivariate regression analysis revealed that Education OR 2.51 (1.26 – 5.00), Occupation OR 4.44 (2.35-8.40), PCI OR 2.05 (1.12-3.76) were significantly associated with good knowledge. All these variables were entered in multivariable analysis. Those which remained significant in multivariable analysis were Age AOR 3.07 (1.27-7.41) and Occupation AOR 0.15 (0.06-0.36).

### Discussion

Snake bite is a menacing problem in this part of the world and most of the studies on snake bite have been done in hospital settings. Community base studies on the subject are rare. A Community based cross-sectional study among 2272 households conducted in rural Maharashtra revealed that awareness was less in all subjects. However it revealed that educated people had more knowledge than the uneducated people. ( $p < 0.001$ ) [1]. In the present study, education was significantly associated with knowledge OR 2.51 (1.26-5.00). There was suboptimal knowledge regarding some first aid measures like application of collar and sucking of wounds while fair degree of knowledge was prevalent in other domains.

A study was done in rural Srilanka where the awareness and perceptions of 176 part time and full time farmers was studied [2]. 89.5% of the study participants were aware that immobilisation of the affected part was the initial first aid measure compared to 68% in the present study. Application of tight band (tourniquet) proximal to the site of bite was considered as an important first aid measure in 74.9% of cases while it was 96% in our case. 98.3% of the

individuals were suggesting that cleaning of an area, devoid of leaf litter and grass around the house was considered as an important preventive measure. In the present study 57.28% believed that cleaning of weeds could lead to decrease incidence of snake bites. In the Srilankan study

86.8% of the individuals preferred western treatment from a government hospital. 77.3% of the study population in the present study had the knowledge that specific treatment was available at Government facilities.

**Table - 3:** Association between knowledge on snake bite with demographic and socioeconomic factors.

Explanatory variables	Good knowledge score n (%) 79 (100%)	OR (95%CI)	AOR (95%CI)
<b>Age</b>			
≤50 years	57 (50.44)	1.85 (0.97-3.50)	3.07 (1.27-7.41)**
>50 years	22 (35.48)	1	1
<b>Education</b>			
High school and Above	29 (61.7)	2.51 (1.26-5.00)*	1.46 (0.50-4.21)
Up to Secondary	50 (39.06)	1	1
<b>Occupation</b>			
Business, Service and Retired	52 (64.19)	4.44 (2.35-8.40)*	0.15 (0.06-0.36)**
Farmers, SW and ML	27 (28.72)	1	1
<b>PCI (Modified B G Prasad)</b>			
Class I and II	47 (54.02)	2.05 (1.12-3.76)*	0.82 (0.36-1.87)
Class III, IV and V	32 (36.36)	1	1

\*Sig at p<0.05. SW- Skilled workers, ML- Manual Labours. \*\*Sig variables in multivariable analysis. For multivariable analysis Hosmer Lemeshow gave a chi-square value of .10.60 (p=0.27) indicating a good model fit. Nagelkerke R<sup>2</sup> =0.42 indicating that above independent variables explain the knowledge on snake bite

While comparing the study results of the study in rural Sindh population in Pakistan by Chandio, et al. [3] with the present study it is found that 79% of the Sindh population were using tourniquets as opposed to 96% in the present study. 29% were practising cuts or suction while in our case 69.1% had wrong idea about suction and 45.7% had wrong idea about application of blades. Regarding the specific treatment the awareness was 55.5% in their case versus 85.1% in our case.

### Conclusion

The present study points to certain lacunae in the knowledge on the snake bite. These gaps are to be addressed at personal, community and government level. In an agricultural country like India emphasis should be given on personal

protective measures. Use of gum-boots, LED torches at night and keeping the area clean by removing the weeds should be encouraged. Lack of community awareness to decrease the incidence of snake bite remains an area of concern. Correct first-aid measures should be propagated among villagers so that they can adopt the correct first aid measures and send the patient to appropriate facility for correct treatment. At the government level the peripheral health workers should be trained with national snake bite protocol 2007 so that they spread the correct message to the community.

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