

## A Study of the Demographic Profile and Clinical Features of Snake Bites in Patients Attending Tertiary Care Centre in Karnal, Haryana

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### Abstract

**Objectives:** To learn more about the profiles of snake bite patients in northern India because there aren't enough studies on these topics.

**Materials and Methods:** It is a descriptive observational study conducted on patients who had been bitten by snakes and had been admitted to the wards or ICU of the Department of Medicine at the KCGMC in Karnal. The study covered all of the snake bite instances that occurred over the course of a year. A pre-structured proforma was used to collect comprehensive data on the demographic and epidemiological factors, including age, sex, place of residence, occupation, site of the bite, location of the bite, type of snake recognised, etc.

**Results:** A total of 45 patients were enrolled in the study. Out of which, 19 (42.22%) were females and 26 (57.78%) were males. The mean age of the patients was  $35.96 \pm 18.22$  years. Out of all the patients, 17.77% had anaemia, 8.89% had leucopenia, 20% had leucocytosis, and 2.22% had thrombocytopenia. Among 24.44% patients the blood urea was elevated, and 31.11% patients had reduced serum creatinine. The Prothrombin time was increased in 17.78% patients, and 26.67% patients had reduced INR.

**Conclusion:** A tropical snake bite is a common rural and work-related risk for farmers, plantation workers, herders, and hunters. There is a dearth of information on the epidemiology of snake bites on the Indian subcontinent.

**Keywords:** Clinical Profile, Demographic Profile, Snake-Bite.

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### Introduction

In India, snakebites are a significant and underappreciated cause of death. In India, a lot of people get bitten by snakes. [1] Annual mortality from snake bites is

thought to range between 50,000 and 100,000 worldwide. There are 10,000 to 15,000 snake bites on the Indian subcontinent every year. The states of West

Bengal, Uttar Pradesh, Tamil Nadu, Bihar, and Maharashtra have reported the most deaths in India. [2] For the rural Indian populace who labour in the fields during the monsoon and rainy season, snake biting is a significant occupational hazard. The snakes travel into human homes during the rainy season because the burrows where they normally live are filled with water. When they come into contact with people, they are startled and attack them. Additionally, because human-caused deforestation is happening quickly, snakes' homes are being encroached upon, and they will inevitably enter our area. Because there are so many rats that enter homes in metropolitan areas, snakes follow and can bite people. Despite the high rates of sickness and mortality, nobody pays any attention to this occupational hazard. [3]

Overwhelming terror is the most typical symptom of all snakebites, and it can also cause additional symptoms like nausea, vomiting, diarrhoea, vertigo, fainting, tachycardia, and cold, clammy skin. The excitement around snakebites is in part due to media, literature, and tradition, and some people may have irrational fears of death. [4] The neurotoxic substances found in the venom of elapids, such as sea snakes, kraits, cobras, king cobras, mambas, and many Australian species, assault the nervous system. The person may exhibit odd vision problems, such as blurriness. There may be reports of generalised paraesthesia, trouble speaking and breathing, and more. The symptoms of nervous system disorders are extremely diverse, and the ones listed below are not all of them. They risk dying from respiratory failure if not given prompt medical attention. [5] Whether a venomous snake bit you or not, the majority of snakebites produce some sort of local reaction. Over 90% of the time, there is some mild pain and redness, however the amount depends on the site. Viper and some cobra bites can be excruciatingly painful, and the local tissue can occasionally become sensitive and noticeably swollen

within five minutes. Additionally, this region may bleed, blister, and ultimately develop tissue necrosis. Lethargy, bleeding, weakness, nausea, and vomiting are some more typical early symptoms of pit vipers and viper bites. Over time, symptoms could worsen and turn into potentially fatal conditions include hypotension, tachypnea, extremely fast heartbeats, severe internal bleeding, altered sensorium, kidney failure, and respiratory failure. [6] Vipers, kraits, and cobras are the three species of poisonous snakes that are responsible for the bulk of serious clinical issues. It can be important to know what species are common in a certain area as well as the typical symptoms of envenomation caused by various snake species. [7] The patient's demographics, the type of snake that bit them, the proximity of medical facilities, the availability of anti-snake venom (ASV), the delay in seeking treatment, and occasionally mistakes in first aid procedures and management all affect how severe a snake bite is. Particularly in underdeveloped nations like India, a sizable share of patients is initially treated by traditional healers. This approach frequently delays the institution of adequate management and presentation to contemporary healthcare facilities. The majority of cases that are brought to tertiary care facilities are complex. Regarding the clinical profile, level of envenomation, accessibility to medical facilities, first aid techniques, management approaches, etc., there are wide variances in how snake bite patients present. When patients with snake bites came to our centre, we noticed that many of them were in advanced and complicated states. Some of the complex cases were probably brought on by poor first aid practises, a lack of suitable healthcare facilities, particularly in the periphery, etc. We wanted to perform this study in order to learn more about the profiles of snake bite patients in northern India because there aren't enough studies on these topics.

## Materials and Methods

It is a descriptive observational study conducted on patients who had been bitten by snakes and had been admitted to the wards or ICU of the Department of Medicine at the KCGMC in Karnal. The study covered all of the snake bite instances that occurred over the course of a year. A pre-structured proforma was used to collect comprehensive data on the demographic and epidemiological factors, including age, sex, place of residence, occupation, site of the bite, location of the bite, type of snake recognised, etc. For each case, the amount of time it took to get to the medical institution following the snake bite and any first aid administered was noted. Information was subsequently gathered regarding the improvement, deterioration, or death. The records were used to obtain the clinical profile, which included the blood profile as well as other crucial details including the patient's symptoms and the results of the physical examination. The SPSS version 20 programme was used to code and input the gathered data. Later, the

data was interpreted using the necessary statistical techniques to provide percentages and proportions.

## Results

A total of 45 patients were enrolled in the study. Out of which, 19 (42.22%) were females and 26 (57.78%) were males. The mean age of the patients was  $35.96 \pm 18.22$  years. Most of the patients were bitten indoor (53.33%), the body part mostly bitten was lower limb (48.89%) followed by upper limb (42.22%), and face (8.89%) was the least bitten body part. Most of the patients had bite marks (82.22%). Almost 66.67% patients had no comorbidities, and 15.56% patients required ventilator support. Out of all the patients, 17.77% had anaemia, 8.89% had leucopenia, 20% had leucocytosis, and 2.22% had thrombocytopenia. Among 24.44% patients the blood urea was elevated, and 31.11% patients had reduced serum creatinine. The Prothrombin time was increased in 17.78% patients and decreased in 2.22% patients. Out of all, 26.67% patients had reduced INR.

**Table1: Demographic and clinical profile of snake bite patients**

|                     |               |
|---------------------|---------------|
| Age (in years)      | 35.96 ± 18.22 |
| Gender              |               |
| Males               | 26 (57.78%)   |
| Females             | 19 (42.22%)   |
| Place of Bite       |               |
| Indoor              | 24 (53.33%)   |
| Outdoor             | 21 (46.67%)   |
| Part of body bitten |               |
| Lower limb          | 22 (48.89%)   |
| Upper limb          | 19 (42.22%)   |
| Face                | 4 (8.89%)     |
| Bite marks          |               |
| Yes                 | 37 (82.22%)   |
| No                  | 8 (17.78%)    |
| Comorbidities       |               |
| Yes                 | 15 (33.33%)   |
| No                  | 30 (66.67%)   |
| Ventilator support  |               |
| Yes                 | 7 (15.56%)    |
| No                  | 38 (84.44%)   |
| CBC                 |               |

|   |             |
|---|-------------|
| Anaemia   | 8 (17.77%)  |
| Leucopenia (TLC < 4000/mm <sup>3</sup> )                  | 4 (8.89%)   |
| Leukocytosis (TLC > 11000/mm <sup>3</sup> )               | 9 (20%)     |
| Thrombocytopenia (Platelet count <1 Lac/mm <sup>3</sup> ) | 1 (2.22%)   |
| RFT   |             |
| Elevated blood Urea                                       | 11(24.44%)  |
| Reduced serum Creatinine                                  | 14 (31.11%) |
| Increased PT  | 8 (17.78%)  |
| Decreased PT  | 1 (2.22%)   |
| INR (<0.9 Sec)  | 12 (26.67%) |

## Discussion

In India, particularly in rural regions, snake biting is a serious but sometimes ignored health issue. In our study, 26 (57.78%) of the snake bite victims were male, with a mean age of  $35.96 \pm 18.22$  years. It might be as a result of males and younger people participating in outdoor activities more frequently. These findings are similar to those of numerous previous research [8–10]. The majority of bites (24, 53.33%) occurred during indoor activity. These findings contrast with those of numerous previous research, where the majority of snake bite incidents occurred during outside activities [11–14]. This information indicates that locking the doors and properly caulking any potential snake entry points into the house should be done before retiring to bed.

Lower limbs were bit most frequently, accounting for 22 (48.49%) patients, followed by upper limbs, accounting for 19 (42.22%) patients. In contrast, research found that lower limb bites were more common—24%—on the upper limbs. [15] The most typical site of bite in several other research [8,16, 21] was on a lower limb, hence this was similar to those studies. This discrepancy might be caused by the fact that most bites in our study happened while patients were asleep, giving all body parts an equal chance to be bitten. According to research by Sakthivel Vaiyapuri et al. [16–20], 82% of bites happened on the lower leg. The bulk of 37 (82.22%) patients had bite marks. In research from South India,

fang markings were observed in 88% (1,320) of the patients [9].

In one study from North India, the most frequent complication in children was respiratory failure requiring mechanical ventilation (41.6%), which was followed by haematuria (bleeding symptoms), hypotension (28.3%), and acute kidney injury (6.6%). [19]

## Conclusion

A tropical snake bite is a common rural and work-related risk for farmers, plantation workers, herders, and hunters. There is a dearth of information on the epidemiology of snake bites on the Indian subcontinent. Most conventional approaches for administering first aid to snake bite victims have been discovered to cause more harm than benefit. The basis for lowering the morbidity and mortality linked to snake bites continues to be the immediate immobilisation, prompt transport to the hospital of snake bite victims, and prompt administration of ASV. The rural populace needs to be informed immediately about the dangers and remedies for snake bites.

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