# A Retrospective Study on Profile of Snake Bite Cases in Bangalore, India

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## ABSTRACT

Snake bite is a common medical emergency and an occupational hazard, more so in tropical India, where farming is a major source of employment. Every year, 50,000 Indians die in 2, 50,000 incidents of snake bite, despite the fact that India is not home for the largest number of venomous snakes in the world, nor is there a shortage of anti – snake venom in the country. This retrospective study was done on the cases which were brought with alleged history of poisoning at the emergency department of M.V.J Medical College and Research Hospital, Hosakote, Bangalore, during the period January 2010 to December with the objective of evaluating the pattern of snakebites at a tertiary care hospital and to study the socio demographic profile of the same. Most of the victims of snakebites were aged between 21-30 years, with males outnumbering females mostly from the rural area; bites from unidentified snakes were more common than identified species.

**Keywords:** snakebites; epidemiological profile; fang marks; agriculturists

## INTRODUCTION

Snake bite remains a public health problem in many countries even though it is difficult to be precise about the actual number of cases.[1] An accurate measure of the global burden of snakebite envenoming remains elusive despite several attempts to estimate it and, apart from a few countries, reliable figures on incidence, morbidity, and mortality are scarce.[2] India has the highest number of deaths due to snake bites in the world with 35,000–50,000 people dying per year according to World Health Organization (WHO) direct estimates.[1,2] While 2003 saw the highest number of deaths — 230 — the attacks have only increased year on year, with 2010 seeing 10,384 people being bitten.[3] In India, the annual mortality from snake bite is said to be between 25,000 to 30,000. More than 2000 deaths per year are reported from the state of Maharashtra alone.[4] Snake bites accounted for 2,400 deaths in Karnataka in 2005, or 4.2 deaths per 1, 00,000 populations. Karnataka is one of the 13 States with the highest prevalence of snakebite deaths.[3] This may actually be much less than the real number, since the majority of snake bite deaths go unreported, as many villagers go to traditional healers who do not report any cases to the authorities, nor do they generally even maintain any records of their patients. Moreover, snake bite is unfortunately not a notifiable illness, and therefore even allopathic physicians working in small clinics or peripheral areas do not report such cases.

Snake bite is an important occupational injury affecting farmers, plantation workers, herders, and fishermen. Open-style habitation and the practice of sleeping on the floor also expose people to bites from nocturnal snakes. Poor access to health services in these settings and, in some instances, a scarcity of antivenom, often leads to poor outcomes and considerable morbidity and mortality. Many victims fail to reach the hospital in time or seek medical care after a considerable delay because they first seek treatment from traditional healers. Some even die before reaching the hospital. Hospital statistics on snakebites therefore underestimate the true burden. In addition to mortality, some snakebite victims survive with permanent physical sequelae due to local tissue necrosis and, sometimes psychological sequelae.[5] The type of the snakebite varies from region to region.

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## OBJECTIVES

1. To evaluate the pattern of snake bite cases at a tertiary care hospital.

2. To study the socio demographic profile of the same.

## MATERIAL AND METHODS

This record based, retrospective, descriptive study of all the patients with snake venom poisoning was carried out at the MVJMC& Research Hospital, Hosakote, Bangalore, during the period January 2010 to December 2011. Total numbers of cases were 60. The details of each case were entered in a Proforma, which highlighted the main points such as the snake bite incidence, male female ratio, the age group of victims, circumstances of bite, the time and site of bite, the symptoms noticed on hospital admission, the treatment instituted and the final outcome. All the cases of snake bite which were admitted to our hospital were included, excluding cases due to other animal bites.

## RESULTS

The incidence of snake bite was more among males than females, 42 out of 60 cases. With reference to age and sex of the patients in **Table 2,** 02 (3.3%) cases were between 1-10 years and seen equally in both sex 01(1.7%) each. 17 cases (28.33%) belonged to 11-20 years of age and of these cases 13 (21.7%) were of

**Table 1:** Month & season wise distribution of snake bite cases

| Months & Season | No N = 60 | Percentage (%) |
|---|---|---|
| Nov - Feb (Winter) | 5 | 8.3 |
| March - June (Summer) | 23 | 38.3 |
| July - Oct (Rainy) | 32 | 53.3 |

males and 04 (6.7%) cases were females. 19 cases (31.7%) were aged between 21-30 years, out of which 13 (21.7%) were males and 06 (10.0%) were females. 08 (13.3%) cases were between 31-40 years, of these 05 (8.3%) were males and 03 (5.0%) were females. 06 (10.0%) cases out of 60 were between 41-50 years, equal to both sex 03 (5.0%) each. There were 05 (8.3%) case of 51-60 years, 04 (6.7%) being male and 01 (1.7%) female. There was only 01 (1.7%) and 02 (3.3%) case between 61-70 and 71-80 years respectively and both belonged to male.

In relation to the site of snake bite and place of occurrence in **Table 3,** majority of the bites were seen on lower limb (leg and foot) 44 cases (73.3%) mostly in outdoor area 38 cases (63.3%). Upper limb (hands and fingers) were in the next order of 12 cases ( 20%) in outdoor area 08 cases ( 13.3%) and 05 cases were indoor areas (8.3%). There was only one case out of 60 where the face was involved (in front of the ear) being

**Table 2:** Age & Sex Distribution of Snake Bite Cases

| Age (years) | Total | | Males | | Females | |
|---|---|---|---|---|---|---|
| | No N=60 | Percentage (%) | No N=42 | Percentage (%) | No N=18 | Percentage (%) |
| 1-10 | 2 | 3.3 | 1 | 1.7 | 1 | 1.7 |
| 11-20 | 17 | 28.3 | 13 | 21.7 | 4 | 6.7 |
| 21-30 | 19 | 31.7 | 13 | 21.7 | 6 | 10.0 |
| 31-40 | 8 | 13.3 | 5 | 8.3 | 3 | 5.0 |
| 41-50 | 6 | 10.0 | 3 | 5.0 | 3 | 5.0 |
| 51-60 | 5 | 8.3 | 4 | 6.7 | 1 | 1.7 |
| 61-70 | 1 | 1.7 | 1 | 1.7 | 0 | 0 |
| 71-80 | 2 | 3.3 | 2 | 3.3 | 0 | 0 |

**Table 3:** Site of snakebite and its relation to place of occurence

| Site of bite | Outdoor | | Indoor | |
|---|---|---|---|---|
| | No N=49 | Percentage (%) | No N=11 | Percentage (%) |
| Upper limb N=12 | 8 | 13.3 | 4 | 6.6 |
| Lower limb N=44 | 38 | 63.3 | 6 | 10 |
| Face N= 1 | 0 | 0 | 1 | 1.7 |
| Not known N=3 | 3 | 5 | 0 | 0 |

in indoor area 01(1.7%). 03 cases (5.0%) were of site of bite being not known and of outdoor area.

With reference to the time of bite and time elapsed after being bitten by snake as given in **Table 4,** maximum cases 31(51.7%) were reported in the day time and taken immediately within two hour to the hospital, and in 02 cases each (3.3%) the treatment was started after 2 hours and time of treatment not known respectively. In 21 cases (35%) time of bite was in the night, where treatment was given within 2 hour period and in 02 cases each (3.3%) the treatment was started after 2 hours and time of treatment not known respectively.

An attempt was made to know the clinical manifestations in snake bite cases, which showed that most of the patients presented with the swelling pain and tenderness at the site of bite 23(38.3%) cases. Followed by bleeding at the site of bite, ecchymosis and cellulites like features in 20 (13.3%) cases. Anxiety fever and numbness were seen in 15(25%) cases, and only in 02(0.3%) cases blurred vision and difficulty in speech was noted.

In relation to the type of the snake and its relation to the treatment outcome in **Table 5,** it was analyzed that out of 12 (20%) poisonous cases, all were given first aid along with anti snake venom, 3(5%) were referred to higher centers for further treatment, 06(10%) were discharged and remaining 03(5%) cases went against medical advice. Non poisonous snake bite cases were 08(13.3%) where first aid only and first aid with anti snake venom was given in 04(1.6%) cases each respectively, 6(10%) were discharged and 02 (3.3%)

cases went against medical advice. In Maximum cases the type of snake was not known 40(66%) in which 29(48.3%) cases treatment was given as first aid alone and in 11(21.6%) cases first aid with anti snake venom was given, out of which 5(8.3%) cases were referred to higher centers, 22(36.7%) were discharged and 13(21.7%) went AMA.

## DISCUSSION

Snakebite remains an underestimated cause of accidental death in modern India. Because a large proportion of global totals of snakebites arise from India, global snakebite totals might also be underestimated. High incidence of snake bite cases were reported in **Table 1**, the month of July to October (rainy season) 53.3% and in the month of March to June (summer season) 38.3%. This also coincides with the studies done by other workers.[2, 4,6,11,13] This may be attributed to the flooding of the rain water in the dwelling places of snakes thus causing their dislodgement. The age and sex incidence of snake bite victims throws light on the vulnerable section of the population. While snake bite is observed in all age groups, the age group with maximum incidence of snakebites 31.7% was between 21 - 30 years in both males and females and is significantly less in the extremes of age, followed by 11-20 years and then 31-40 years. Gender distribution revealed that 13(21.7%) were males and 6 (10.0%) were females. The present study coincides with the study of other workers.[2,5,7-11,13,14] The predominance of male victims suggests a special risk of outdoor activity.

In the present study, most frequent site of the bite is the lower limb 38 (63.3%) around the leg and ankle region and bitten outdoor than indoor area 6 (10.0%). The upper limb, face and the site of bite being not known was comparatively less. The observations were similar to the other studies done.[7-11] In maximum cases the bites were seen during the day time 31 (51.7%) where the treatment was started within two hours of the bite. The bites during the night time were comparatively less 21 (35%).[10-12] Other studies showed that bites were more common in the night times.[7,8,13] A preponderance of rural habitat over urban habitat has been observed in this study, India is an agricultural economy and more people live and earned livelihood in rural areas in this part of the country. Our findings are in general agreement with those of others.[7,8]

**Table 4:** Time of bite and its relation with time taken for treatment to be started

| Time of the bite | Treatment started in hours | | | | | |
|---|---|---|---|---|---|---|
| | 0-2 | | >2 | | Not known | |
| | N=52 | Percentage (%) | N=4 | Percentage (%) | N=4 | Percentage (%) |
| 6 am – 6 pm (day) | 31 | 51.7 | 2 | 3.3 | 2 | 3.3 |
| 6pm – 6 am (night) | 21 | 35 | 2 | 3.3 | 2 | 3.3 |
| Not known | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 5:** Type of the snake and its relation with the treatment outcome:

| Type of snake | Referred | | Discharged | | AMA | |
|---|---|---|---|---|---|---|
| | No N=8 | Percentage (%) | No N=34 | Percentage (%) | No N=18 | Percentage (%) |
| Poisonous (N=12) | 3 | 5 | 6 | 10 | 3 | 5 |
| Nonpoisonous (N=8) | 0 | 0 | 6 | 10 | 2 | 3.3 |
| Unknown (N=40) | 5 | 8.3 | 22 | 36.7 | 13 | 21.7 |

In our study majority of the envenomation was due to unidentified or unknown snakes 40(66%) followed by poisonous and non poisonous snakes. Most patients are unable to identify the snake species either because of ignorance or poor visibility in darkness. A large number of bites occur in fields, most individuals are unable to spot the snake due to tall grass and crops.[5,10,13] Poisonous snakebites were observed more commonly in other studies. Most of the patients presented with the swelling pain and tenderness at the site of bite, Followed by bleeding at the site of bite, ecchymosis and cellulites like, Anxiety fever and numbness were, blurred vision and difficulty in speech were less seen. Other studies reported haematotoxic, followed by neuroparalytic.

A retrospective analysis was one of the limitations of this study, since some of the important data were incomplete or insufficient and they may not reflect the exact statistics.

In the developing countries, most of the patients consult a traditional healer first instead of seeking treatment at the health centers. Many snakebite cases are treated at the primary healthcare centers and they were not referred to the higher centers, thus leading to an underestimation of the morbidity status in the studies which were done at the tertiary healthcare centers. There is a need for enactment of National programme on snake bite prevention; aiming at improving quality of care, health education, financial aid to curtail non-mechanized farming techniques and steps for implementation of WHO guidelines on Snakebite management for South East Asia Region.

## CONFLICTS OF INTEREST
Declared none

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