

ORIGINAL ARTICLE

## Epidemiology of Snake Bite in A Medical College in Karnataka

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### ABSTRACT

#### INTRODUCTION

Snake bites are a cause of considerable morbidity and mortality worldwide. Out of 68 cases, the maximum was between the age group of 20 - 30 years (26%). 47 of 68 (69%) victims were male, and 31% of victims were females. More than half of the victims are farmers. 39 of 68 (>57%) victims belonged to a lower class of socioeconomic status. 24% were illiterates, and 76% were literates. Maximum victims, 91%, were from a rural region. Maximum victims, 68% had snake bites in the fields, followed by 19% snake bites at home. 56% of snake bites occurred in the rainy season and 26% in the winter season.

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KEYWORDS | SNAKEBITE; VICTIMS; FARMERS.

#### INTRODUCTION

Snakebite is a major public health problem all over the world, especially in tropical and sub-tropical countries. Snake venom is the oldest known poison to mankind. A total of 45,900 national snakebite deaths in 2005 constituted about 5% of all injury deaths and nearly 0.5% of all deaths in India.<sup>1</sup>

Considerable morbidity and mortality worldwide are caused by Snake bites. The highest burden of snake bites exists in South Asia, Southeast Asia, and sub-Saharan Africa.

Globally, at least 421,000 envenomations cause 20,000 deaths per year as a result of snakebites. There may be as high as 1,841,000 envenomations and 94,000 deaths. Based on the fact that envenomation occurs in one fourth of snakebites, between 1.2 million and 5.5 million snakebites could occur annually.<sup>2</sup>

WHO recognized that snakebite does not have the epidemic potential of infectious and vector borne parasitic diseases, but it should be emphasized that the yearly mortality

caused by snakebite is much greater than that attributed to several presently recognized neglected tropical diseases, including dengue hemorrhagic fever, cholera, leishmaniasis, schistosomiasis, Japanese encephalitis, and Chagas' disease.<sup>3</sup>

More than 60 species of venomous snakes are found in India some of which are abundant and can cause severe envenomation. The most deadly snakes commonly associated with human mortality in India are cobra (*Naja Naja*), krait (*Bungarus Caeruleus*), Russell's viper (*Daboia Russelii*) and saw-scaled viper (*Echis Carinatus*).<sup>4</sup>

**OBJECTIVES**

This study was conducted with the following objectives:

1. To know the Socio-demographic profile of snakebite cases admitted and treated in BLDE University's Shri. B. M. Patil Medical College, Hospital and RC, Vijayapur.
2. To know morbidity and mortality due to snakebites and the effectiveness of Hospital management.

**MATERIALS AND METHODS**

This is a prospective study done for a year from 1<sup>st</sup> January 2014 to 31<sup>st</sup> December 2014. The subjects for the study comprised all 68 patients with snakebite admitted to Shri B.M. Patil Medical College, Hospital and R C.

*Source of data*

The data was collected from following:

1. Proforma, which was designed to collect information regarding the incidence.
2. History elicited from snakebite victims and their attendees.
3. In-patient medico-legal case records of snakebite victims.

*Inclusion criteria:*

1. The study includes cases of snakebite of both sex groups of all ages with a history of snakebite admitted to Shri B.M. Patil Medical College, Hospital and Research

center.

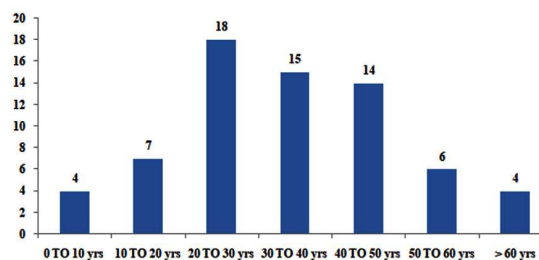
*Exclusion criteria*

Cases of the unknown bite were excluded from the study.

**RESULTS**

**Table 1:** Age wise distribution of cases

AGE in years	N	%
0 TO 10	4	5.9
10 TO 20	7	10.3
20 TO 30	18	26.5
30 TO 40	15	22.0
40 TO 50	14	20.6
50 TO 60	6	8.8
> 60	4	5.9
TOTAL	68	100



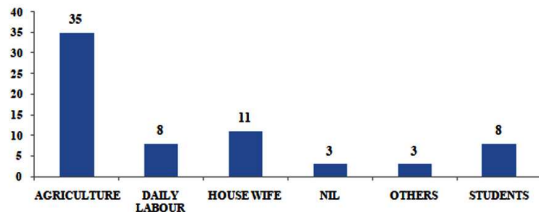
**Chart 1:** Age

**Table 2:** Sex-wise distribution of cases

Gender	N	%
Male	47	69.1
Female	21	30.9
Total	68	100

**Table 3:** Occupation-wise distribution of cases

Occupation	N	%
Agriculture	35	51.5
Daily Labour	8	11.8
Housewife	11	16.2
Nil	3	4.4
Others	3	4.4
Students	8	11.8
Total	68	100



**Chart 2:** Occupation

**Table 4:** Distribution of cases as per Socioeconomic status according to modified B G Prasad classification

Socio-economic status	N	%
Upper Class	3	4.4
Upper Middle	4	5.9
Middle Class	9	13.2
Lower Middle	13	19.1
Lower Class	39	57.3
Total	68	100

**Table 5:** Education-wise distribution of cases

Education	N	%
Illiterate	16	23.5
Primary	11	16.1
Upper primary	16	23.5
Lower secondary	12	17.6
Higher secondary	7	10.2
Post-secondary	4	5.9
NA	2	2.9
Total	68	100

**Table 6:** Education wise distribution of cases

Region	N	%
Urban	6	8.8
Rural	62	91.2
Total	68	100

**Table 7:** Distribution of cases v/s time of the incident

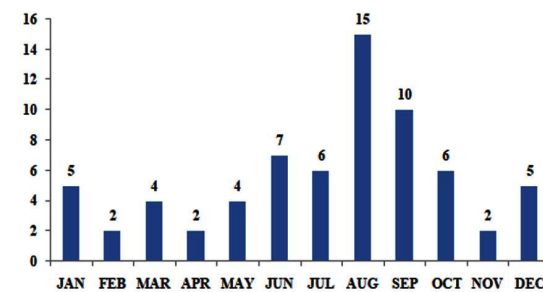
Time of Bite	N	%
0 to 06 Hrs	9	13.2
06 to 12 Hrs	15	22.0
12 to 18 Hrs	19	27.9
18 to 24 Hrs	25	36.7
Total	68	100

**Table 8:** Distribution of cases based on Place of occurrence of the incident

Place	N	%
Fields	46	67.6
House	13	19.1
Road	6	8.8
Cattle shelter	3	4.4
Total	68	100

**Table 9:** Distribution of cases based on month wise

Month	N	%
Jan	5	7.4
Feb	2	2.9
Mar	4	5.9
Apr	2	2.9
May	4	5.9
Jun	7	10.2
Jul	6	8.8
Aug	15	22.0
Sep	10	14.7
Oct	6	8.8
Nov	2	2.9
Dec	5	7.3
Total	68	100



**Chart 3:** Month-Wise

### DISCUSSION

Out of 68 cases, the maximum was between the age group of 20-30 years (26%), followed by the age group of 30-40 years (22%) and the age group of 40-50 years (20%), 47 of 68 (69%) victims belonged to the age group of 20-50 years. Bite victims belonging to extremes of

age groups (0-10 years and >60 years) were a minimum of only 10%.

The same kind of observations was made in studies conducted by Ganneru B & Sasidhar RB<sup>5</sup> in Andrapradesh and Nuchhi U C et al.<sup>6</sup> in Gulbarga. The probable reason for the predominance of the 20-50 yrs age group is they constitute the most active and major working force among these individuals.

47 of 68 (69%) victims were male, and 31% of victims were females.

The same kind of observations was made in studies conducted by Kulkarni ML & Anees S<sup>7</sup> in Karnataka and Shetty AK & Jirli SP.<sup>10</sup>

This observation is in contrast with the findings recorded in the study conducted by Monterio NP et al.<sup>8</sup> in Manipal, where female predominance was recorded with male to female ratio of 1:1.5.

The probable reason for the predominance of males is increased agricultural activity among these individuals.

More than half of the victims are farmers. Among three others, two were in the stationery business, one was a panchayat bill collector, and among 3 of Nil, 2 were kids of 3 years old, and one was a 70-year-old lady.

The observations made in the study are in accordance with the studies conducted by Lal P et al.<sup>9</sup> in JIPMER Hospital, Pondicherry, Nuchhi U C et al.<sup>6</sup> in Gulbarga and Shetty AK & Jirli SP<sup>10</sup> at Belgaum.

The predominance of agriculture workers can be attributed to the increased frequency of human confrontation with snakes in agricultural fields owing to the snakes' habits, habitat and prey preferences.

39 of 68 (>57%) victims belonged to the lower class of socioeconomic status.

In this study, two victims were below the age group of schooling, hence among the rest 66 cases, 24% were illiterates, and 76% were literates having different levels of education. The majority, 41%, had primary education, followed by 29% had secondary education, and 6% were graduates.

The above observation depicts that victims

with non technical (unskilled) knowledge are more involved in agricultural work, hence more exposed to snakebites. The low literacy level also leads to a lack of knowledge regarding precautions to be taken to avoid snakebites.

In our study, the maximum number of victims 91%, belonged to a rural region. This finding is similar to the observations in the studies made by Kulkarni ML & Anees S<sup>7</sup> in Karnataka, Nuchhi U C et al.<sup>6</sup> in Gulbarga and Shetty AK & Jirli SP<sup>10</sup> in Belgaum, and Mohapatra et al.<sup>1</sup> in India.

In this study, Maximum snakebites, 65% were between 12 noon to 12 midnight, of which 37% of snakebites occurred between 18.00 hrs to 24.00 hrs, followed by 28% between 12.00 hrs to 18.00 hrs.

In this study, the maximum number of victims 68%, had snakebites in the fields, followed by 19% snakebites at home. The same kind of finding was seen in the study conducted by Kulkarni ML & Anees S<sup>7</sup> in Karnataka.

In this study, a maximum snakebites 56% occurred from June to September (monsoon season), followed by 26% from October to January (winter season).

The same kind of observations was made in the study conducted by Lal P et al.<sup>9</sup> in JIPMER Hospital, Pondicherry, Bawaskar HS<sup>11</sup> in Mahad region of Maharashtra, Shetty AK & Jirli SP<sup>10</sup> in Belgaum and Mohapatra B et al.<sup>1</sup> in India.

Whitaker R<sup>12</sup>, in his study conducted in Kerala, observed that the month of May had the highest incidence of snakebite. However, in our study, the highest incidence of snakebite was in the month of 22nd August %.

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#### CONCLUSION

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The observations found in this study shows that the farmers of rural background are the maximum victims of snake bites that too in the rainy season. So the farmers should be advised to use shoes and gloves while working in the field. They should even be advised to carry a torch while working in the field. The government should educate the people about the preventive measures immediately necessary for hospital admission to save the

valuable lives of the people.

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