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Original Research Article

Sociodemographic profile of patients with snakebite in Jharkhand

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ABSTRACT

Background: Snakebites are a very serious issue that affects people all around the world. The world health organization (WHO) has recently classified snake bites as one of the neglected tropical diseases.
Methods: It was an observational, prospective and cross-sectional study conducted at the department of general medicine, (Rajendra institute of medical sciences, Ranchi). A total of 60 patients suffering with first time snakebite were selected for this study by using a purposive sampling technique. Demographic data of the 60 selected cases were recorded in pre-designed standard study forms by means of structured personal interview of patients and attendants after taking informed consent.
Results: The mean age ± standard deviation of participants' age was 37.35±13.123. There were 61.7% tribal people and 38.3% non-tribal people. Out of 60 cases included in this study, 93 % were from rural area and only 7% belonged to urban areas. The sociodemographic analysis showed that 93% patients were belonging to lower socioeconomic status and 7% were belonging to middle socioeconomic status
Conclusions: The present study concluded that majority of the snakebite fresh cases in Jharkhand belonged to male gender. Majority of cases fell in the age range of 16-48 years, majority of cases belonged to tribal community and rural areas.

Keywords: Snakebite, Lower socioeconomic status, Rural areas, Tribal community in Jharkhand

INTRODUCTION

Animal bites have been an issue that have contributed significantly to morbidity and mortality in children and adults in several regions of the world, with bites from snakes, dogs, cats, and monkeys being the major causes.[1] The South-East Asia region has a diversified and abundant venomous snake biodiversity. It differs both within and between nations. Geographical intra-species diversity can be seen in the venom composition of widely distributed species of significant medicinal relevance, such as Russell's vipers. Snakebites are a common cause of hospital admission and a serious medical emergency that call for prompt response from medical personnel who are properly qualified. Tens of thousands of young adults, particularly those engaged in farming and plantation work, suffer the death or long-term disability as a result.

Based on extensive, carefully planned community-based investigations, the exact extent of death and acute and chronic morbidity from snakebite is only now starting to be understood. Those who have survived a snakebite may face social stigma if they have a persistent or permanent physical or psychological condition. Because of insufficient reporting in practically every area in the region, the full extent of human suffering is still unknown. It is strongly advised that all nations in the South-East Asia region designate snakebite as a distinct notifiable disease to address this shortcoming. Since it is primarily an occupational disease of food producers like farmers, plantation workers, herdsmen, and fishermen, as well as of wild life park rangers, military personnel, snake restaurant employees, snake handlers, and collectors of snake skins, snakebite is primarily a rural problem with significant implications for the nutrition and economy of the countries where it occurs frequently. The International Labour

Office should legally classify snakebite as a serious occupational disease in the South-East Asia region. Snake bites are a common occupational, environmental, and climate danger in rural settings. Agricultural labourers and their families frequently suffer bites to their lower legs, ankles, and feet. In the world, anywhere from 4 to 18 million people are bitten by snakes each year, and anywhere from 20,000 to 94,000 of them die, the bulk of them in South Asia, South-east Asia, and Africa.[2-4] Due to the lack of reliable population-based studies on incidence and mortality, these estimations have large variability.[2-4] The WHO recently re-recognized snake bites as one of the neglected tropical illnesses due to the significant burden of mortality and morbidity caused by snake bites.[5-6] The majority of snakebites and consequent deaths worldwide occur in India.[2] India was estimated to have 46,000 snakebite deaths annually, with an age-standardized snakebite fatality rate of 4.1 per 100,000 people based on a major population-based countrywide survey conducted over 15 years ago. The largest number of yearly snakebite deaths were reported in three states, including Bihar.[7] The clinical management of snakebite victims is a major topic in most of the published literature from India.[8-16] The background and aftermath of a snakebite are poorly understood, which makes it difficult to find effective solutions to this public health issue.[17]

It is always helpful to understand the socio-demographic profile of people suffering from any kind of disease. Hence, present study was conducted to understand the sociodemographic profile of fresh cases of snakebite in Jharkhand.

Aim

The aim of the present study was to document the sociodemographic profile of fresh cases of snakebite in Jharkhand.

METHODS

It was an observational, prospective and cross-sectional study. The study was conducted at department of general medicine in Rajendra institute of medical sciences, Ranchi, India. Sixty admitted cases of symptomatic snake bite in the Rajendra institute of medical sciences were selected for the study. The age range was 16 to 60 years. The study was conducted during the period from August, 2019 to August, 2020. All the confirmed new cases of snake-bite were selected for the study. The exclusion criteria were, patients less than age of 16 years, came to hospital after more than a week after the bites, having non-poisonous/asymptomatic snake bites and patients having previous history of end stage organic diseases as for example, ESRD, ESLD, chronic pulmonary diseases, cardiomyopathy, endocrinopathies, chronic pancreatitis, cerebrovascular accident, coagulation disorders etc.

Prior approval for this study was granted by the "institutional ethics committee, RIMS, Ranchi". The patients or their relatives were counselled and a wilful, written informed consent was obtained. The demographic data of the 60 selected cases were recorded in pre-designed standard study forms by means of structured personal interview of patients and attendants. The data obtained were analysed by using SPSS-26. Descriptive statistics was used for the analysis purpose.

RESULTS

The descriptive analysis of the sociodemographic details shows that 62% patient were male and 38% were females (Table 2). Table 1 shows the mean, median, mode, standard deviation and range of the participants' age in the present study. The mean age ± standard deviation of age in the present study was 37.35±13.123 years. The mode is 29 years suggesting higher representation of this age among the patients under the present study. The minimum and maximum age of the patients with snake bite was 18 years and 60 years respectively. Table 3 is showing the distribution of age in the sample taken in the study. The result shows that there were 28% patients belonged to the age range of 16 to 26 years. Twenty seven percent patients belonged to the age range of 49 to 60 years. Twenty three percent patients belonged to the age range of 38 to 48 years. Twenty two percent patients belonged to age range of 27 to 37 years. It can be seen in the Table 3 that 73% cases were in the age range of 16-48. It can be inferred that maximum cases were under age group of 16 to 26 years and minimum number of cases were in the age group of 27 to 37 years. Table 4 is showing the gender wise distribution of age in the sample selected for the present study. It could be seen in the table that 71% male and 29% female fell in the age range of 16 to 26 years. Sixty nine percent male and 31% female belonged to age range of 27-37 years. Seventy one percent male patients and 29% female patients fell in the age range of 38 to 48 years. It can be seen in the table that 38% male and 62% female patients belonged to the age range of 49 to 60 years. Table 5 shows the distribution of cases on the basis of ethnicity. The result shows that 61.7% patients belonged to tribal community whereas 38.3% patients belonged to non-tribal community. Table 6 shows the distribution of cases on the basis of locality. The result shows that 93% patients belonged to rural areas whereas only 7% patients belonged to urban areas. Table 7 shows the distribution of cases on the basis of socioeconomic status. The result shows that 93% patients belonged to lower socioeconomic status and 7% patients belonged to middle socio-economic status.

Table 1: The mean, median, mode, standard deviation and range of age in the sample for the present study.

Age (Years)	Variables
Mean age	37.35
SD	±13.123
Median	36
Mode	29
Maximum	18
Minimum	60

Table 2: Gender distribution of the cases in the present study, (n=60).

Gender, n (%)	
Male	**Female**
62	38

Table 3: Age distribution of the cases in the present study, (n=60).

Age range (Years)	N	Percentages (%)
16-26	17	28
27-37	13	22
38-48	14	23
49-60	16	27

Table 4: Gender wise age distribution of the cases in the present study, (n=60).

Age range (Years)	Gender, n (%)	
	Male	**Female**
16-26	71	29
27-37	69	31
38-48	71	29
49-60	38	62

Table 5: Ethnicity distribution of the cases in the present study, (n=60).

Ethnicity, n (%)	
Tribal	**Non- tribal**
61.7	38.3

Table 6: Locality distribution of the cases in the present study, (n=60).

Locality, n (%)	
Urban	**Rural**
7	93

Table 7: Socioeconomic distribution of the cases in the present study, (n=60).

Socio-economic status, n (%)	
Lower	**Middle**
93	7

DISCUSSION

The aim of the present study was to document the sociodemographic profile of snake bite cases in Jharkhand. The study was conducted on the sixty cases with snake bite. It was an observational, prospective and cross-sectional study. The study was carried out at the department of general medicine in Rajendra institute of medical sciences, Ranchi, India. Sixty admitted cases of symptomatic snake bite in the Rajendra institute of medical sciences were selected for the study. The age range was 16 to 60 years. The study was conducted during the period from August, 2019 to August, 2020. All the confirmed new cases of snake-bite were included in the study. The exclusion criteria were, patients less than age of 16 years, came to hospital after more than a week after the bites, having non- poisonous /asymptomatic snake bites and patients having previous history of end stage organic diseases as for example, ESRD, ESLD, chronic pulmonary diseases, cardiomyopathy, endocrinopathies, chronic pancreatitis, cerebrovascular accident, coagulation disorders etc. The consent was taken from the patients for their participation in the present study.

The result of the present study showed that 62% patient were male and 38% were females. Seventy one percent male and 29% female belonged to the age range of 16 to 26 years. Sixty nine percent male and 31% female belonged to age range of 27-37 years. Seventy one percent male patients and 29% female patients fell in the age range of 38 to 48 years. Thirty eight percent male and 62% female patients belonged to the age range of 49 to 60 years (Table 4). A study reported that 58% cases were women in 121 patients of snake bite in their study.[18] The finding of this study is not consistent with the finding of the present study. But there are other studies which has reported that 74.2% and 52.4% of their respective cases were males and 25.8 % and 52.4% of their respective cases were females in their study.[19-20] The gender distribution of the above-mentioned studies is similar to the gender distribution of the cases in the present study. These results indicate that males are more prone to snake bite than females. It can also be inferred from this result that young male (16-48 years) population are vulnerable group for snake bite in Ranchi area. It is also inferred that as most of the cases were young in age and fell victim to snake bite due to active participation in outdoor engagement. The females between 49-60 years of age were found to be vulnerable to snake bite more than female belonging to younger age.

The mean age ± standard deviation of age in the present study was 37.35±13.123 years. The mode is 29 years suggesting higher representation of this age in the sample studied. The median of the age of the participants was 36 in the present study. A study found the median age to be 41.5 years in their study.[21-19] One another study reported mean age to be 42.8 years in the cases of snake bite.[22-20] The mean age and standard deviation reported in a different study on snake bite was found to be 42.2±15 years.[18] These findings are consistent with the findings of the present study. The result of the present study shows that there were 28% patients belonged to the age range of 16 to 26 years. Twenty seven percent patients belonged to the age range of 49 to 60 years. Twenty three percent patients belonged to the age range of 38 to 48 years. Twenty two percent patients belonged to age range of 27 to 37 years. It was also found out that majority of the cases (73%) belonged to age range of 16-48 years of age. This is the age range of Indian people when they actively participate in working for their livelihood. There are other studies which have reported that majority of their cases

with snake bite were young in age.[23-26] The finding of the present study is consistent with findings of these studies.

The result of the present study showed that 61.7% cases belonged to tribal ethnicity and 38.3% cases belonged to non-tribal ethnicity. A study conducted in Brazil also showed that the majority of the snake bite cases were indigenous people of Brazil.[27] The finding of the present study is in consonance with the finding of this study. It is inferred that as tribal people are more exposed to natural set up and they are more prominently engaged in primary sector for their subsistence, they are at more risk for snake bite. There are studies which also have reported that snake bite is most frequently seen with people engaged in primary sector.[28-29] The finding of the present study is consistent with the findings of these studies. The ninety-three percent cases in the present study were from rural area which suggests that snake bite is a serious problem in rural area. Other studies conducted on snake bite in India have reported that majority of the cases in their studies were from rural area[18-19] which is similar to the finding of the present study. The sociodemographic analysis showed that 93% patients were belonging to lower socioeconomic status and 7% were belonging to middle socioeconomic status. It suggested that people from lower socio-economic background are more affected by snake bite problem. It is inferred that as people from lower socio-economic status are engaged in works more related to raw materials, fields, cultivation or any other primary sector of occupation. There are other studies which have obtained similar findings.[28-29] The result of the present study also showed that majority of the cases belonged to lower socioeconomic status, tribal community and rural areas. It can be inferred that young tribal people from rural part of Jharkhand, who have a lower socio-economic status, tend to fell victim of snakebite as they mostly are engaged in primary sector work specially agriculture and cultivation. The working in agricultural and cultivation activity exposes them to forest and nearby areas, making them more susceptible to snakebite. Many studies have found that snake bites are a frequent occupational, environmental, and climatic risk in rural areas. Agricultural labourers frequently get their lower legs, ankles, and feet bitten and members of their families.[2-4]

Limitation

This was a small hospital-based study so there is always a chance of selection bias. Also, the sample was small and results cannot be generalized for the whole population. As the place of study was a government hospital, only the middle and lower socioeconomic class of population were the major part of study. So, a large population based multicentric study covering all segments of this geographic region is needed to get more accurate results.

CONCLUSION

The present study concluded that majority of the snakebite fresh cases in Jharkhand belonged to male gender. Majority of cases fell in the age range of 16-48 years, majority of cases belonged to tribal community, lower socioeconomic status and rural areas.

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REFERENCES

1. World Health Organization. Animal bites: WHO; 2013. Available at: http://www.who.int/mediacentre/factsheets/fs373/en/. Accessed on 25 August, 2022.
2. Kasturiratne A, Wickremasinghe AR, de Silva N, Gunawardena NK, Pathmeswaran A, Premaratna R et al. The global burden of snakebite: a literature analysis and modelling based on regional estimates of envenoming and deaths. PLoS Med. 2008;5(11):e218.
3. World Health Organization. Prevalence of snakebite envenoming.: WHO. Available at: http://www.who.int/snakebites/epidemiology/en/. Accessed on 25 August, 2022.
4. Gutierrez JM, Warrell DA, Williams DJ, Jensen S, Brown N, Calvete JJ et al. The need for full integration of snakebite envenoming within a global strategy to combat the neglected tropical diseases: the way forward. PLoS Neglect Trop dis. 2013;7(6):e2162.
5. Snake bite-the neglected tropical disease. Lancet (London, England). 2017;390(10089):2
6. Chippaux JP. Snakebite envenomation turns again into a neglected tropical disease. J Venomous Animals Toxins Including Trop Dis. 2017;23:38.
7. Mohapatra B, Warrell DA, Suraweera W, Bhatia P, Dhingra N, Jotkar RM, et al. Snakebite mortality in India: a nationally representative mortality survey. PLoS Neglect Trop Dis. 2011;5(4):e1018.
8. Ahmed SM, Qureshi UA, Rasool A, Charoo BA, Iqbal Q. Snake bite envenomation in children in Kashmir. Indian Pediatrics. 2011;48(1):66-7.
9. Bawaskar HS, Bawaskar PH, Punde DP, Inamdar MK, Dongare RB, Bhoite RR. Profile of snakebite envenoming in rural Maharashtra, India. J Asso Physicians of India. 2008;56:88-95.
10. Bregani ER, Maraffi T, Tien TV. Snake bites in Moyen Chari district, Chad: a five-year experience. Trop Doctor. 2011;41(2):123-6.
11. Chattopadhyay S, Sukul B. A profile of fatal snake bite cases in the Bankura district of West Bengal. J Forensic Legal Med. 2011;18(1):18-20.
12. David S, Matathia S, Christopher S. Mortality predictors of snake bite envenomation in southern India-a ten-year retrospective audit of 533 patients. J Med Toxicol. 2012;8(2):118-23.
13. Gautam P, Sharma N, Sharma M, Choudhary S. Clinical and demographic profile of snake envenomation in Himachal Pradesh, India. Ind Pediatr. 2014;51(11):934-5.

14. Majumder D, Sinha A, Bhattacharya SK, Ram R, Dasgupta U, Ram A. Epidemiological profile of snake bite in south 24 Parganas district of West Bengal with focus on underreporting of snake bite deaths. Ind J Pub Health. 2014;58(1):17-21.
15. Pore SM, Ramanand SJ, Patil PT, Gore AD, Pawar MP, Gaidhankar SL et al. A retrospective study of use of polyvalent anti-snake venom and risk factors for mortality from snake bite in a tertiary care setting. Ind J Pharmacol. 2015;47(3):270-4.
16. Punde DP. Management of snake-bite in rural Maharashtra: a 10-year experience. National Med J Ind. 2005;18(2):71-5.
17. Gutierrez JM, Burnouf T, Harrison RA, Calvete JJ, Brown N, Jensen SD et al. A Call for Incorporating Social Research in the Global Struggle against Snakebite. PLoS Neglect Trop Dis. 2015;9(9):e0003960.
18. Sanjay Vikrant, Ajay Jaryal, Anupam Parashar. Clinicopathological spectrum of snake bite-induced acute kidney injury from India. World J Nephrol. 2017;6(3):150-61
19. Jarwani B, Jadav P, Madaiya M. Demographic, epidemiologic and clinical profile of snake bite cases, presented to Emergency Medicine department, Ahmedabad, Gujarat. J Emerg Trauma Shock. 2013;6(3):199-202.
20. Gajbhiye R, Khan S, Kokate P, Mashal I, Kharat S, Bodade S, Yadav A, Mahale S. Incidence & management practices of snakebite: A retrospective study at Sub-District Hospital, Dahanu, Maharashtra, India. Indian J Med Res, 2019;150:412-6.
21. Mao YC, Liu PY, Chiang LC. Bungarus multicinctus multicinctus Snakebite in Taiwan. Am J Trop Med Hygiene. 2017;96(6):1497-504.
22. Jayawardana S, Arambepola C, Chang T, Gnanathasan A. Long-term health complications following snake envenoming. J Multidiscip Healthcare. 2018;11:279-85.
23. Kularatne SA. Epidemiology and clinical picture of the Russell's viper (Daboia russelii russelii) bite in Anuradhapura, Sri Lanka: a prospective study of 336 patients. Southeast Asian J Trop Med Public Health. 2003;34:855-62.
24. De Silva. Snake bite in Anuradhapura District. Snake. 1981;13:117-30.
25. Sharma SK, Khanal B, Pokhrel P, Khan A, Koirala S Snakebite-reappraisal of the situation in eastern Nepal. Toxicon. 2003;41:285-9.
26. Sharma N, Chauhan S, Faruqi S, Bhat P, Varma S. Snake envenomation in a north Indian hospital. Emerg Med J. 2005;22:118-20.
27. Schneider MC, Vuckovic M, Montebello L, Sarpy C, Huang Q, Galan DI et al. Snakebites in Rural Areas of Brazil by Race: Indigenous the Most Exposed Group. Int J Environ Res Public Health. 2021;18(17).
28. Sharma SK, Chappuis F, Jha N, Bovier PA, Loutan L. Impact of snake bites and determinants of fatal outcomes in southeastern Nepal. Am J Trop Med Hyg. 2004;71:234-8.
29. Ariaratnam CA, Sheriff MH, Theakston RD, Warrell DA. Distinctive epidemiologic and clinical features of common krait (Bungarus caeruleus) bites in Sri Lanka. Am J Trop Med Hyg. 2008;79:458-62.

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