

Epidemiology of Snakebites, Deaths, Science and Associated Myths in Jashpur District of Chhattisgarh, India

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ABSTRACT

Snakebite is a neglected disease in medicine from Centuries. The burden of human suffering caused by snakebites has been greatly underestimated, ignored and neglected for far too long. Snakebites is common in rural areas of many tropical developing countries, including in India. Jashpur District in Chhattisgarh state is dominated by tribal societies and North-Eastern Region of the district is known as Naglok (World of Snake). Morbidity and mortality due to snakebite is significantly higher in the Jashpur District. The objective of the present research is to bring out the fact and figure of the snakebites, cause of deaths, Science and related myths prevail in the Jashpur district. Primary data on morbidity and mortality were collected from the office of the Chief Medical and Health Officer (CMHO) of Jashpur District, health system and some of data also collected from various Police Stations of the district. Maximum snakebites occurred when person sleeping on floor. Patthalgaon and Pharasabhar Development Blocks are having high prevalence of snakebites and deaths. Belief on local healers and delay to reach the Government health centers are main cause of prevailing deaths. Proper Health education and local health management with availability of anti-venom drugs in local hospitals can be controlled over higher prevalence of snakebites and deaths.

Key Words: Chhattisgarh, Jashpur, Naglok, Snakebite, epidemiology, Bagbahar, Pharsabhar.

INTRODUCTION:

Evolution is spontaneous process and changes in period of time are natural laws. Geological and fossil evidences reveal that in past reptilians were dominant on the Earth. Later on Human species evolved with special physical features have established them as most dominant animal through adaptation. Man was always in prime position in animal kingdom because of his developed brain. According to Darwin, the nature determine the survival of the fittest by the natural selection and adaptation in the nature. Human species is winning all battles and missions in development process since long time. In development interventions with objectives of advantages and curiosity, man acquires many problems also like pollution; extreme use and misuse of chemicals and synthetic materials, deforestation, misuse of atomic power are few examples. Man has disturbed the micro and macro habitat of numerous animals and plants for

management of own settlement consequently these actions are directly or indirectly disturbing to the whole animal kingdom.

Snakebite is a neglected disease in the 21st Century (Gupta and Peshin 2014). The burden of human suffering caused by snakebites has been greatly underestimated, ignored and neglected for far too long. Snakebites is common in rural areas of many tropical developing countries, including in India, mainly affected children or agricultural workers, poor, who have lack of the political voice adequate to protest their needs. (Mahapatra 2011 and Bhowmik 2013) No accurate study has been conducted to determine the frequency of snakebites at the International/National/State/District levels and are scattered in research papers.



Map of Jashpur District (Cited from Maps of India)

In the North-Eastern cultural tri-junction of the Chhattisgarh the Jashpur district is situated sharing its boundary with Jharkhand and Odissa. Areas is primarily dominated by tribal communities namely Oraons, Kanwars, Korwas, Khadiya, Bhuinya, Birhors etc. Their economy is based on agriculture ether or dependant to forest even. The area is far away from the industrial civilization. District Jashpur is having eight development blocks which may be majorly divided in two parts Lower Ghat and Upper Ghat means plains and hilly areas

respectively. Hills are generally around 3500 feet high from the sea level and is offshoot of Chhotanagpur ka pathar categorized traditionally in Indian geography. Development blocks includes Jashpur, Manora Bagicha and Sanna. Lower region is plains of river Mainy includes blocks Pathhalgaon, Duldula, Pharsabahar, Kansabel and Tapkara. Whole district is surrounded by lush green forest with reach *Tictona grandis* and *Sorea robusta* and other mix forest species. Elephant, leopard, deer, lepus, varanus, penguiline , monkeys, bear, wild boar and variety of snakes are major fauna of the area. The plain area Pharsabahar, Bagbahar, Tapkara and Kansabel are famous as **Naglok (world of snakes)**. Rat snake, boa, iryx, typlops, naja(Cobra) and the most poisonous Krait (Banguras) are common species found enormously. Summer and pre-monsoon season is the peak of snakebite cases encountered and experiences by local people and related government agencies.

The objective of the present research is to bring out the fact and figure of the snakebites, cause of deaths, science and related myths prevailing in present time and to encourage zoologist , scientists, medical practitioners and administration to take appropriate action to minimize the deaths, deal with animal and society judiciously so that both man and snakes can get advantages from each other and live and flourish the life in symbiosis as scientific civilization says.

MATERIALS AND METHODS:

Present research work was carried out in five Development blocks of Jashpur district namely Bagicha, Kansabel, Kunkuri, Patthhalgaon, and Pharsabahar. Primary qualitative and quantitative data have been collected using pre-structured interview schedule. Secondary data collected from the office of the Chief Medical and Health Officer Jashpur and from Police Station of Bagbahar and Pharsabahar. To know about the myths and belief focus group discussions have been made among local senior people. Case studies also carried out for few local healers and some persons who claim and are famous as knowledgeable persons in the field of Snakes and related subject.

RESULT AND DISCUSSION:

Data in table 1. states that sleeping on mat and on the Earth is the major cause of snakebite and deaths. Further delayed to reach the medical centres and believe on local healers are additional determinants. Presented data in table-2 revealed that number of snakebite cases are high but death cases are gradually decreasing due to the attempts of local health system and all-round development with time and space. Five years' data from year 2010 to 2015 in table 3 reveals that due to surveillance, more number of cases have been reported but number of deaths are year wise declining.

Causes of Snakebites in Jashpur:

As the above discussions and data reveal about the area, people and societies in the district. There are some key finding as cause of snakebite and deaths are given below:

- Lack of awareness and education among people in the area towards Snakebites
- Favourable geo-climatic condition for Snake Species.
- People believes in magico – religious practices.

- Poverty, sleeping on mat on the floor.
- Poor communication, roadways and poor health facilities.
- Delay in action by local health workers and local hospitals.

Snakes: Associated Myths and Facts in Jashpur area:

Snakes neither enjoy music nor dance of the charmer's music and movements. Snakes do not possess a "Naagmani". Snakes do not take revenge. Snakes are very efficient rodent controllers. People can get economic advantages with understanding the properties of snakes. There are medicinal use of body parts and venom of snakes. People in different part of the world eat snakes in their daily food. In museums and in wildlife sanctuaries living and dead snakes are means of recreation and education. People make shoes, purse, ornaments and cosmetics from snake's body parts. These are friends of farmers, work as predator. Nature has given them venom, different structure and unique look that is why human and other animals are scared of snakes and maintain distance. Snakes are very precious creature of the animal kingdom and of the natural system. Like other animals and needs, same action for conservations and promotion of the genus is needed, so that it may be useful for the betterment of the human society. Indian societies worship cobra as Nagdevta (Snake God). Many societies claim their origin from Snakes are called Nagvanshis (Descendants of Cobra).

Local healer claim that with few of mantras (couplets) they can cure cases of snakebites. Sometimes local healers administer some oral herbs and uses locally made paste on wounds of snakebite. Community belief on such treatments delay to reach patients to the Primary Health Centres and to Community Health Centres.

In Jashpur district also Nagesia tribal group is there who claim their origin from snakes. Due to lack of education some societies believe that "Nagmani" may be found in head of cobra species. People offer cow milk to snakes during worship. Few people eat snakes and rarely observed that one person namely, Baihar Raut in Mayurnacha village was claiming that he drinks snake venom and slowly he is now poisonous. The person was casually catching Cobra and Krait. He was alcoholic and consuming huge amount of alcohol does not get him intoxicated hence he takes poison for addiction.

Table 1. Data of Deaths due to snakebite place wise and development block wise.

S. No.	Name/ Police Station	Sleeping on Bed	Sleeping on Mat/Earth	Walking on Field	Working on Agriculture Field.	Processing on Crops	Others
1	Farsabahar	-	16	-	-	-	4
2	Kansabel	1	32	2	-	-	1
3	Bagbahar	2	13	-	-	-	-
4	Tapkra	-	9	-	-	-	-

5	Kunkuri	-	14	2	-	-	6
6	Bagicha	1	12	5	1	-	1
7	Pathalgaon	3	22	3	2	1	-
8	Narayanpur	-	12	2	-	-	-
	Total	7	130	14	3	1	12

Table.2. Data on Deaths due to Snakebites (1987-1996)

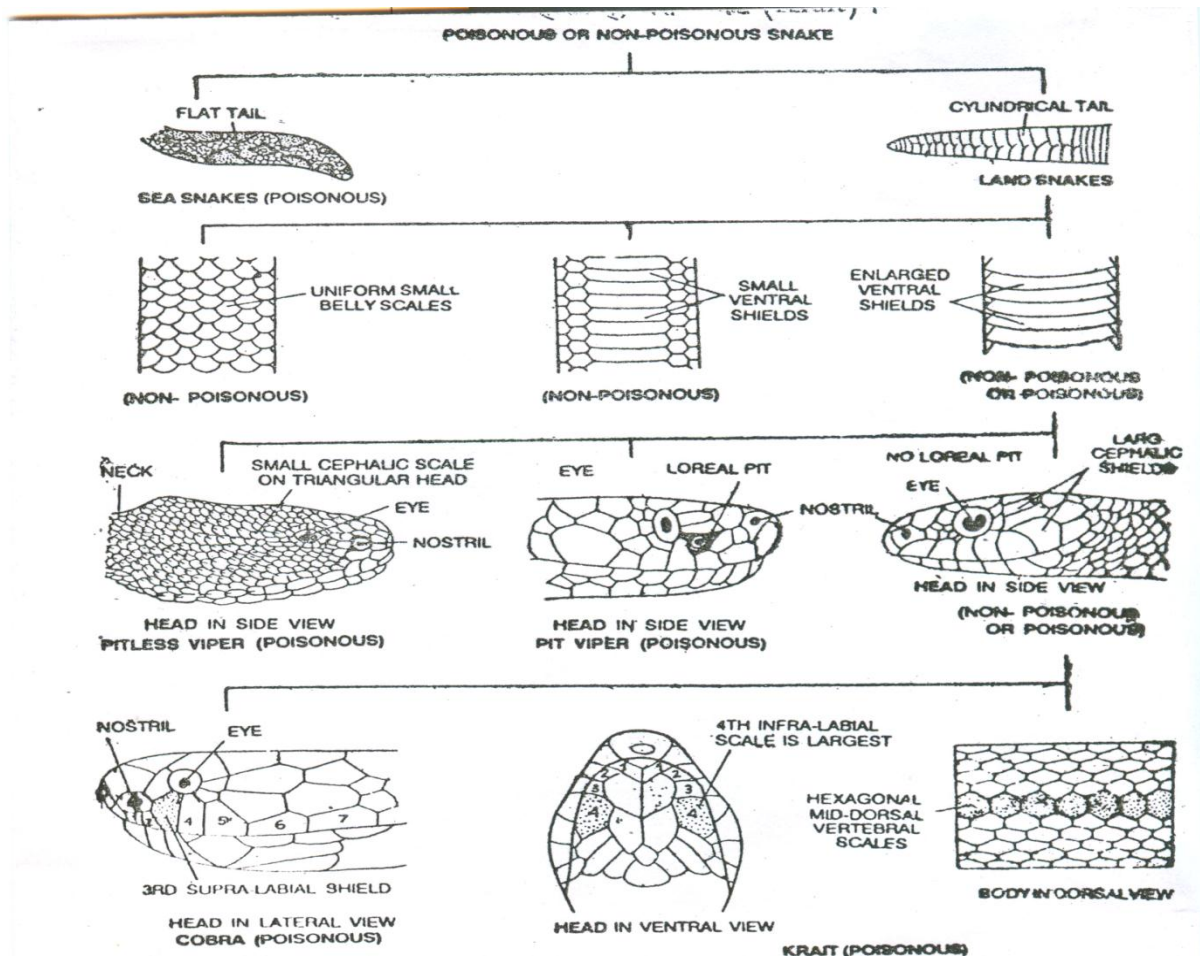
S. No.	Year Name	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
1	Farsabaha	05	14	11	08	06	09	03	07	05	03
2	Kansabel	04	08	05	04	05	07	08	04	08	08
3	Bagbaha	09	10	07	13	11	10	08	05	11	06
4	Tapkara	04	02	06	09	08	09	06	12	15	10
5	Kunkuri	05	06	06	02	02	06	06	06	10	05
6	Bagicha	04	--	03	03	03	01	02	02	12	05
7	Pathalgaon	09	10	04	08	09	05	04	08	13	11
8	Narayanpur	05	--	03	07	02	05	04	05	06	03
	Total	45	50	45	54	46	52	41	49	70	51

Science and Identification of Snakes

Around 80% snakes are non-poisonous in nature (Tiwari 1997). Snakes with laterally compressed tail are poisonous like Sea snakes i.e. Hydrophis and Enhydrina. Tail cylindrical, tapering, rounded not compressed may be poisonous or non-poisonous. Scales of belly or ventral part can be examined- if ventral and dorsal scales are small and continuous mean snake is nonpoisonous, differ from these sign may be poisonous. Scales on head are small with no loreal pit are poisonous- Pitless Viper (Viper Russell). Head with small scales and presence of a pit between eye and nostril means Poisonous-Pit Viper (Lachesis). Head with large scales without pit than one has to examine the vertebrae if enlarged, hexagonal, fourth infra-labial largest is poisonous e.g. Krait, Banguras. This species is common in Jashpur district of Chhattisgarh. Vertebral not enlarged but third supra labial touches eyes and nostril with cervical hood means poisonous may be Cobra (Naja).Cervical hood absent but coral spot present is callophis poisonous. (Tiwari 1997).

Table 3. Snakebite report year wise (2010-2015)

Place/Year	2010		2011		2012		2013		2014		2015		2016(Jan to March)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Pathalgoan	23	2	68	8	46	14	67	8	63	2	85	5	0	0
Pharsabahar	25	2	82	15	77	3	77	5	74	5	60	2	1	0
Kansabel	0	0	10	2	27	4	18	2	43	1	16	1	0	0
Kunkuri	5	0	15	2	23	3	4	0	2	0	1	0	0	0
Bagicha	7	0	10	2	42	3	37	2	31	1	37	0	0	0
Duldula	2	0	4	0	1	1	8	0	0	0	1	0	0	0
Lodam	2	0	5	1	2	0	0	0	1	0	6	0	0	0
Manora	0	0	10	2	9	2	3	0	8	2	0	0	0	0
Dist. Hospital Jahpur	10	1	13	8	25	0	29	5	14	0	24	1	0	0
Holy Cross Hospital Kunkuri	3	0	34	7	0	0	42	5	27	2	45	1	0	0
Total	77	5	251	47	252	30	285	27	263	13	275	10	1	0



Key for Identifying the poisonous and non-poisonous snakes of India with diagrams (cited from Kotpal 2010 and Tiwari 1997).

Poison Gland and Fang

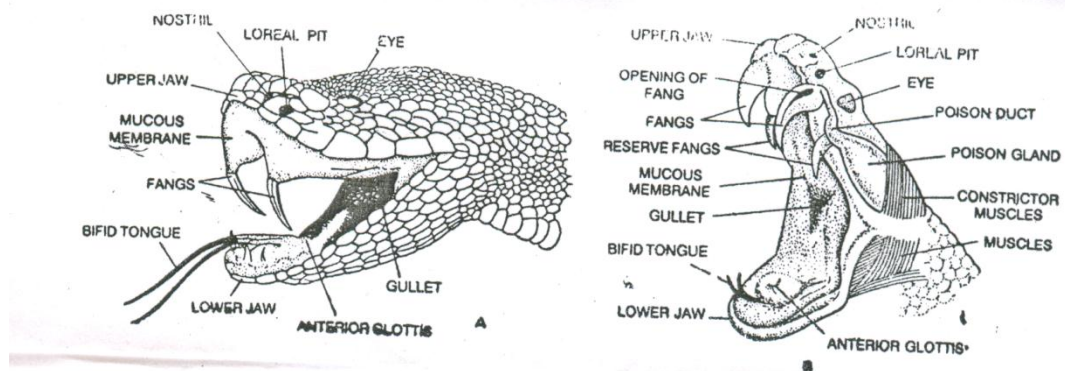


Figure cited from Kotpal 2010

Scientific facts of Snakes, Snakebites and Venom:

Death due to Snakebite in India is approximately 7000 – 12000/per year. Only 23 – 33 % snakes are poisonous. About 330 snake species are found in India out of which only 69 species are poisonous. Out of 69 total 40 species are Terrestrial, other 29 are aquatic (Sea). Cobra, Vipers, Krait , Sea Snakes are poisonous. (Kotpal, 2010, Kashirsagar 2013).

Venom is an organic compound, consists of enzymes, 30% of which have toxic protein. It appears green yellowish color. Precipitate with silver nitrate and potassium permanganate. Venom of few snakes are neurotoxin which severely influence Central nervous system especially motor nerves, cardiac and respiratory muscles. Venom of cobra is the typical example. Other group produces hemotoxic venom which influences the endothelium of blood capillaries. Krait and Vipers venom are examples.

As per guideline (Prathmik Upachar Nirdeshika, Chhattisgarh Sarkar 2009) locally available in health centers, when any snakebite case occurs, do not panic, tie a strap between heart and spot of snakebite. Encourage the patient to be conscience without fear. Do not administer any ointment or medicine without medical supervision. Nearer to the spot of bites 2-3 cuts can be made by the trained person to get little flow of blood to get out poison. Most important step is to arrange to provide antivenin as early as possible.

Efforts made by local Government in Jashpur District of Chhattisgarh.

1. People were provided with threads, pits around their households.
2. Provided predator as a peacock at the village level.
3. Initiating a Snake Park and Venom Research Centre at Tapkara , Jashpur.
4. Awareness through pamphlets, wall painting, holdings and Media playing important role to make aware the local people regarding snakebites.
5. Making attempts to available antivenin at all health centres in the district.

Recommended Plan to reduce the morbidity and mortality

1. Make people aware towards prevention of snakebites.
2. Community participation.
3. Ensure the availability of anti-venom.
4. Ensure the transportation of cases.
5. Training to administer the anti- venom.
6. Training of local healers.
7. Effective Surveillance
8. Incentive to accompany person.
9. Inter-sectoral coordination.
10. An intervention program for socio- economic development of rural people.

Snake Trivia

S. No.	Characteristics	Snakes	Distribution
1.	Largest Snakes (Up to 50 kg)	Anaconda	South America
2.	Longest Snake (UP to 33 feet)	Reticulated	India, South East Asia
3.	Smallest Snake (10 cm.)	Barbados Thread snakes	Africa, Asia, Caribbean Islands
4.	Fastest land snakes (19 kmph)	Black Mamba	Africa
5.	Most venomous snake 50 times more toxic than rattles snakes , 200-400 times more toxic than Cobra	Inland Taipain	Australia
6.	Largest venomous (up to 22 feet)	King Cobra	South East Asia

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REFERENCES:

Tiwari V.K.(1997) Textbook of Zoology. Unified for BSc, Shivalal Agrawal and Company, Agra.

Kotpal R.L (2010) *Modern text book of Vertebrates*. Rastogi Publication, Meeruth.

Bhowmik S. (2013) Snakebite: A forgotten problem, *BMJ* ,31, 346-f628.

Kashirsagar V.Y. (2013) Clinical Profile of Snakebite in Children in Rural India, *Iran J Pediatr*. 2013 Dec; 23(6): 632–636.

Gupta YK, Peshin SS, (2014) Snakebite in India: Current Scenario of an Old Problem. *J Clin Toxicol* 4:182. doi:10.4172/2161-0495.1000182.

Mahapatra B. (2011), Snakebite Mortality in India: A Nationally Representative Mortality Survey, *PLoS Negl Trop Dis*. 2011 Apr; 5(4): e1018. Published online.

Prathmik Upachar Nirdeshika, (2009). Chhattisgarh Sarkar

<https://www.mapsofindia.com/maps/chhattisgarh/districts/jashpur.htm>