

**Addressing an Enduring Loophole in Medical Education: Reflections from JSS Animal  
Bites Care Program**

- *Yogesh Jain and Parag Bhamare<sup>1</sup>*

Animal bites are common in our country where seventy percent of its population lives in rural areas. The neglect of systematic Animal Bites care is an example of marginalization of health care needs of rural poor.

Over the years we have been witness to increasing deforestation and forest encroachment – a trend that has led to a rise in interactions of forest animals and rural inhabitants. Chhattisgarh is a leading state in forest encroachment. The reasons for encroachment seem to be agricultural requirements and the mineral rich soil. About 44% area of Chhattisgarh is forested and 80% population in the state lives in rural or forest or forest fringe areas. In areas where men and animals stay in close proximity, because of their mutual dependency, a certain proportion of Animal Bites is to be expected. It is however tragic that many of these result in death or morbidity. Indeed it is a major problem for the rural population of the country where even minimal healthcare requirements are inadequate. Even on the front of accountability these deaths never get consideration they deserve. The number of Animal Bites is not reliably known though some studies estimated it to be as high as 17.4 million a year. (Whitakar 2012)

---

<sup>1</sup>*Coordinator, Jan Swasthya Sahyog, Chhattisgarh ; and , Volunteer, Jan Swasthya Sahyog, Chhattisgarh respectively. Emails: <jethuram@gmail.com> and <paragbhamare@hotmail.com>*

The term Animal Bites has been used considering Snake, Dog, Cat or other Wild Animal Bites and also for Scorpion, Bees or Wasps Stings. Deaths due to poisonous Snakebites and rabies are an important preventable cause of death in forest fringe areas. Even Scorpion stings can give fatal outcomes more likely so in children under five years.

Of all the bites Snakebites are the most common and the most dangerous bites. The problem of snakebite in India is higher than in any other country. World Health Organization estimates that 35,000-50,000 Indians die due to this every year. (WHO 2010) The findings of a study published in 2011 found that a million Indians are bitten by snakes every year while 50,000 die accounting to one third of the global deaths. (Mohapatra B. *et al.* 2011) Also, the incidence of Snakebite is attributed to farming activity in relation to rainfall and the yearly reproductive cycle of the snake. But unfortunately Central Bureau of Health Intelligence reports an annual average of only 1,350 deaths each year for the period 2004 to 2009.

The Million Death Study (Mohapatra B. *et al.*, 2011) on neglected tropical diseases gave the list of states with high prevalence of Snakebites in which Chhattisgarh is also included. In another study, while reviewing Snakebites in South Asia, Alirol *et al* (2010) observe about this entirely rural problem:

Snakebite is one of the most neglected public health issues in poor rural communities living in the tropics. Because of serious misreporting, the true worldwide burden of Snakebite is not known. South Asia is the world's most heavily affected region, due to its high population density, widespread agricultural activities, numerous venomous snake species and lack of functional Snakebite control programs.

According to the *World Health Organization (WHO) Bulletin* (2007), around 36% of the world's rabies deaths occur in India each year, i.e., approximately 20,000 of an estimated global annual 55,000 rabies deaths, and among them three-quarter of the deaths occur in the rural areas in central and south-eastern States, viz., Chhattisgarh, Uttar Pradesh, Odisha, Andhra Pradesh, Bihar, Assam and Madhya Pradesh. A 2003 assessment carried out by the Association for Prevention and Control of Rabies in India, with the support of the World Health Organization, had estimated the number of 'furious rabies' deaths at about 17,000. A factor of 20 percent was added to take into account paralytic or atypical rabies, taking the total number of deaths to around 20,000.

With such geographic concentration, targeted rabies prevention campaigns aimed at both humans and animals might achieve a significant reduction in the number of deaths or potentially even elimination of deaths from this disease. It is estimated that 600-800 people may be dying in Chhattisgarh annually due to rabies, a disease that is easily preventable.

Scorpion envenomation is an important public health hazard in tropical and sub-tropical regions. It is said that Scorpion stings are 10 times more frequent than snakebites. Envenomation by scorpions can result in a wide range of clinical effects, including, cardio toxicity, neurotoxicity and respiratory dysfunction. Out of 1500 scorpion species known to exist, about 30 are of medical importance. The Red Scorpions (*Mesobuthus tamulus*) are the most dangerous. Common scorpion stings do not always lead to death but they are very painful and prompt treatment of the same is very essential. Although Anti-Scorpion Venom is available, it is not used widely in our country. Continuous training of all health care providers in scorpion sting management is necessary.

Honeybees and Wasps are very frequent complaints from forest fringe areas and they can be dangerous in some of the cases. Such bites can lead to anaphylactic shock in an occasional patient and then it would be fatal if not treated on time. It is desirable to give prompt attention to this complaint also as multiple bites leads to significant morbidity.

Bites or stings of these animals constitute a major public health problem. Not considering this so increases the gravity of the problem many fold.

### **Animal Bites Care and Medical Education**

As animal bite cases are more common among the people residing in the rural areas such as forest and forest fringe villages, many a time people opt for traditional or herbal treatment options at the time of any Animal/Snakebite. Often the patient is taken to the hospital too late to be saved and even if he/she reaches the hospital, he/she dies due to lack of knowledge and skilled personnel as well as equipped structure to manage the snake/animal bite at the health center. While the problem of availability of drugs, vaccine and anti-sera is often an issue, information and skill base to manage these at the peripheral outposts are equally scarce.

The systemic negligence towards Animal Bites starts from Medical Education. Urban bias in distribution, orientation and educational content never gives importance to these bites which are actually taking lives more than any individual non-communicable disease in a rural community. When appropriate care at primary level can save lives of these victims, lack of competency at primary level along with commercialization has led to shift these patients to tertiary centers wasting crucial time and making already expensive treatment much more catastrophic.

Today medical education in India is so urbanized that Snakebites or Scorpion sting management gets only a mention in the whole curriculum. Since majority of medical colleges are situated in urban areas, where burden of these bites is considerably low, students do not get enough exposure during training or even during semi-urban internships that they are asked to do. The theoretical knowledge that one is supposed to get in the medical college remains limited to Forensic Medicine and Toxicology. Standard imported textbooks that are used during the training for Medicine or Surgery do not consider these emergencies major issues and hence coaching or even reading about the same gets sidelined. And most unfortunately the subject of community medicine or preventive or social medicine does not consider this problem a public health problem.

The gravity of the problem remains underestimated and the supposedly competent freshly passed out doctor also remains undertrained for the prescribed job when it comes to management of these conditions. On another front, research and publication on the same also remains minimal and overall progress of the locally relevant knowledge about Animal Bites care is negligible. Simpsons correctly mentions this in his article on knowledge base in treating Snakebites amongst doctors as follows;

The present method of training and providing guidance has demonstrably not equipped doctors to effectively manage Snakebite. Journal publications, particularly those in Western journals are not widely read in the developing world due to subscription costs. Although they have a high impact factor amongst specialists in the subject they have a very low impact factor amongst doctors who actually treat Snakebite.”(Simpson 2008)

Educating the primary care physicians and frontline workers regarding prevention and management of snake/animal bite is very essential. For proper treatment, it is indispensable to teach the technique of identification of snake - whether venomous or non-venomous - as well as the symptoms according to the nature of the venom to frontline workers. It is also important for communities to be able to recognize envenomation early in order to be able to seek help at an early stage. Thus, there arises a need to train the health personnel as well as the community about the severity of the problem. This problem is much more relevant in Chhattisgarh owing to its huge rural, tribal and illiterate population.

Taking cognizance of this large burden, Jan Swasthya Sahyog (JSS) - a voluntary organization of health care professionals has been addressing this problem in rural Bilaspur since the last few years by providing free care to all animal bite victims. JSS has its own Animal Bites Care Program with three sub-centers in underserved parts of the area which are well equipped to function as Animal Bites Care Centers. This year JSS is planning to take on this issue at a wider level and hence to facilitate the same Animal Bites Care Resource Material has been designed.

The **Animal Bites Care Resource Material** consists of;

*1. Guidelines Posters*

Five medium size (2 x 1.5 feet) posters were made specifically for display in casualty rooms for easy and quick look at treatment guidelines for managing different Animal Bites.

- a. Treatment of Scorpion Sting
- b. Post-exposure prophylaxis of Rabies
- c. How to administer Anti Snake Venom

- d. How to manage neurotoxic or hemotoxic venom
- e. Bees and Wasps Sting and Anaphylactic Shock Management

## 2. *Awareness Posters*

Three big size (3 x2 feet) posters were made for mass awareness.

- a. Identification of Snakes
- b. Prevention and First Aid of Snakebites
- c. Approach to a Snakebite victim

## 3. *Identification Cards*

Identification is the key in management of Animal Bites. Considering the lack of skills amongst health care providers this set of 24 postcard size identification cards was prepared for easy identification of venomous and nonvenomous snakes, potentially rabid animals, red and black scorpions and vortex or honey bees. These cards will be helpful for on table identification of these animals.

## 4. *Training Manual for Doctors in English*

This manual was adapted from National or World Health Organization guidelines for Management of Animal Bites.

## 5. *Training Manual for Health Workers in Hindi*

Important points for the Management of Animal Bites are given in Hindi for health workers. There is a Section on Dos & Don'ts and Myths & Facts for community understanding.

## 6. *Audio-Visual Material in Hindi*

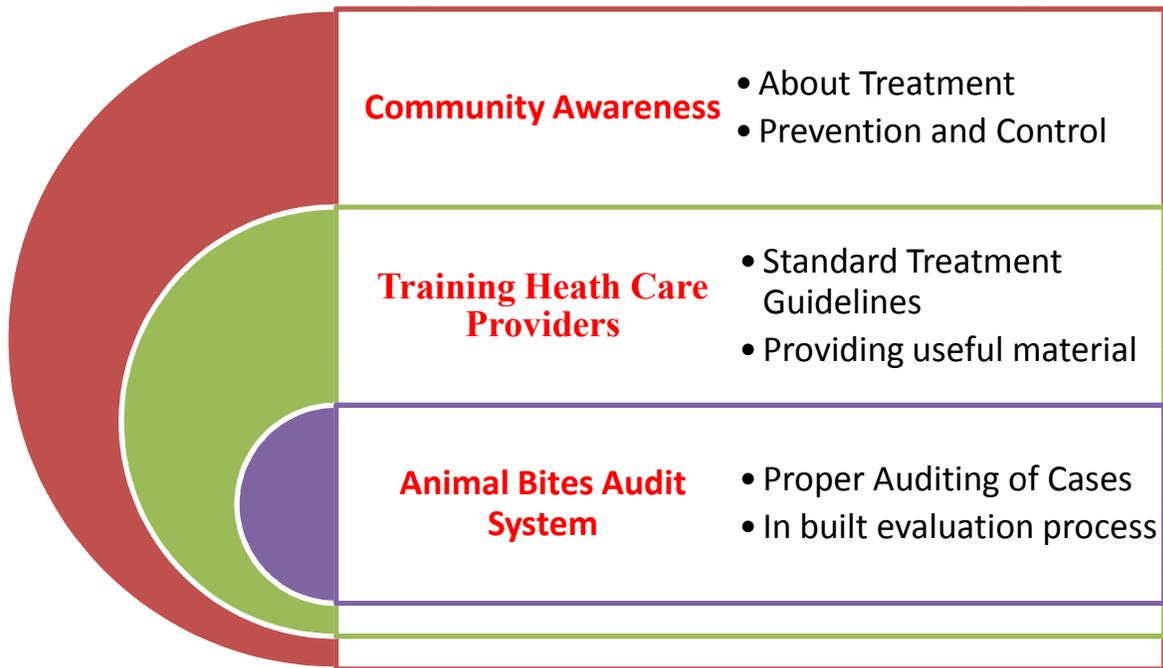
There are about 30 minutes duration available in a CD, made from short clips on different animals, symptoms and signs after envenomation, and cases recorded from Ganiyari health center. This material is useful training material and also a simple tool for revising basics of management of Animal Bites.

Considering the complexities it was understood that the problem of Animal Bites cannot be addressed with a single-pronged strategy. While ensuring proper delivery of Animal Bites Care in JSS activity area, dissemination of information and advocacy for the issue was kept in mind from all the possible platforms.

The objectives behind designing these resource material were as follows,

- To standardize guidelines for management of Animal Bites
- To prepare material that can be used for mass awareness
- To prepare material for training of health care providers
- To present and disseminate resource material all over the country to create an environment for advocacy and network of influence to devise or revise policy measures that address this neglected rural health problem.

## Animal Bites Care Program at JSS



With the help of the resource material, Animal Bites Care Program runs in JSS on three fronts as shown in the above illustration.

### **Community Awareness Activities**

Community Awareness activities in the program are based on secondary data analysis and also experience with the community. The first step in the process was to make the community think of the right choice to seek care whenever the Animal Bite event happens.

An upshot is that prevention and control of Animal Bites is in hands of the community. Taking few crucial steps and precautions Animal Bites can be significantly reduced. Addressing myths about Animal Bites and more specifically Snakebites is a huge challenge in tribal and rural communities. Awareness drive was conducted to understand origin and consequences of these myths and to address them in ways which the community will accept.

### **Training of Health Care Providers**

Training Health Care provider is basically focused on standardizing treatment whenever a case of Animal Bites comes to a center. Studies have shown that outcome of Animal Bites is influenced by various factors including the treatment procedures practiced by health care providers. (Simpson 2008). This training module was planned differently for different level of health care providers: Basic First Aid measures for community health workers, Health Center level training for senior health workers and beyond that Secondary Level Care training for Doctors.

Dissemination of useful material in the form of guidelines posters and manuals from the kit was planned to ensure proper delivery and reinforcement of training. Health workers were expected to display these posters in the area where they manage cases of Animal Bites.

### **Animal Bites Care Audit System**

Animal Bites Care Audit System is the system to monitor and evaluate the program as a whole. It will help identifying loopholes, weak areas and finding root causes for devising preventive strategies. It will ensure notification of each case and will be an objective guide for further improvement of the program.

### **Resource Material: Tool for Agenda Setting and Advocacy**

Distributing and presenting resource material to different organizations and groups working predominantly in rural setting environment with an aim to create agenda setting on Animal Bites was planned. Though it is a long-term process, attempts were planned right from the initial stages.

Resource material has been widely disseminated across different states and training sessions have been conducted. Along with more than 100 Health workers of JSS, health workers from different parts of the country have also been trained. Training sessions were conducted for Doctors and Nurses in various hospitals in and outside Chhattisgarh. The process has got the desired structure and with timely modification as per the experience gained, the process will be continued even in the future.

During this course of shared learning, we have received overwhelming response and interest in knowing and picking skills for management of these bites. But we have also realized the utter scarcity of knowledge and technical skills amongst physicians across the board. The overwhelming refrain has been that the issue never gets the attention it deserves in our education system.

The neglect of Animal Bites Care in medical education reflects the marginalization of health care needs of rural poor. The intervention of JSS described here is a small but definite step in

reducing this injustice to rural poor. Resource material that has been made is to make community aware of this problem and also to guide possible solution to tackle the same. It has been designed to cover everyone along the social hierarchy, viz., Common people, Health Workers, Community organizers, Middle level Health Workers, Paramedics and Doctors. It would be an achievement on the part of JSS if such informative material is taken up by educational councils and promoted for inclusion in skill development, coaching or practice of all health care providers.

### **References**

1. Alirol E, Sharma SK, Bawaskar HS, Kuch U, Chappuis F, 2010. Snakebite in South Asia: A Review. *PLoS Negl Trop Dis* 4(1): e603. doi:10.1371/journal.pntd.0000603
2. Bawaskar HS, Bawaskar PH, 2001. Call for global snake-bite control and procurement funding. *The Lancet*; 357: 9262, 1132 – 1133.
3. Bawaskar HS, Bawaskar PH.1986. Prazosin in management of cardiovascular manifestations of scorpion sting. *The Lancet* 2: 511-512.
4. Bawaskar HS. and Bawaskar PH. 2004. Envenoming by the Common Krait (*Bungarus caeruleus*) and Asian Cobra (*Naja naja*): Clinical Manifestations and their Management in a Rural Setting. *Wilderness and Environmental Medicine*, 15, 257-266.
5. *Forest Survey of India*. 2007. Dept. of Forests, Govt. of India
6. Government of India, Central Bureau of Health Intelligence. *Health Status Indicators, National Health Profile 2007 and 2008. State/UT wise Cases and Deaths Due to Snakebite in India*. Available at: [http://cbhidghs.nic.in/writereaddata/mainlinkFile/Health Status Indicators.pdf](http://cbhidghs.nic.in/writereaddata/mainlinkFile/Health%20Status%20Indicators.pdf)  
[http://cghr.org/publications/Causes\\_of\\_death\\_2001-03\\_20RGI\\_CGHR.pdf](http://cghr.org/publications/Causes_of_death_2001-03_20RGI_CGHR.pdf)
7. Kalantri S. et al. 2006. Clinical predictors of in-hospital mortality in patients with Snakebite: a retrospective study from a rural hospital in central India. *Tropical Medicine and International Health*, 11: 1, 22–30.
8. Mohapatra B, Warrell DA, Suraweera W, Bhatia P, Dhingra N, et al. 2011. Snakebite Mortality in India: A Nationally Representative Mortality Survey. *PLoS Negl Trop Dis* 5(4): e1018. doi:10.1371/journal.pntd.0001018
9. Narvencar K, 2006, Correlation between Timing of ASV Administration and Complications in Snakebites, *JAPI*, Vol. 54.
10. Paul, V et al. 2004. High-Dose Anti-Snake Venom versus Low-Dose Anti- Snake Venom in “The Treatment of Poisonous Snakebites - A Critical Study”. *JAPI*, Vol. 52; 14-17.
11. Punde DP, 2005. Management of snake-bite in rural Maharashtra: A 10-year experience, *The National Medical Journal of India*, Vol. 18, No. 2, 71-75.
12. Registrar General of India, 2009. *Report on Causes of Death in India, 2001–2003: Sample Registration System*. New Delhi: Government of India. Available at: [http://www.cghr.org/wordpress/wp-content/uploads/Causes\\_of\\_death\\_2001-03.pdf](http://www.cghr.org/wordpress/wp-content/uploads/Causes_of_death_2001-03.pdf)
13. Sharma S. et al. 2004. Impact of Snakebites and Determinants of Fatal Outcomes in Southeastern Nepal. *Am. J. Trop. Med. Hyg.*, 71(2), 234–238.

14. Simpson I. 2008. A study of the current knowledge base in treating Snakebite amongst doctors in the high-risk countries of India and Pakistan: Does Snakebite treatment training reflect local requirements? *Royal Society of Tropical Medicine and Hygiene*. 102, 1108—1114.
15. Sudarshan M.K. et al. An Epidemiological Study of Animal Bites in India: Results of a WHO Sponsored National Multi-Centric Rabies Survey. *J. Commun. Dis.* 38 (1) 2006; 32-39
16. Warell DA, 2011. Snakebite: A neglected problem in twenty-first century India, *The National Medical Journal of India* Vol. 24, No. 6, 321-324.
17. Warrell DA, 2010. Snakebite. *The Lancet* 375: 77–88.
18. Warrell DA. 1999. The clinical management of Snakebites in the Southeast Asian region. *Southeast Asian J Trop Med Public Health*; 30 (suppl): S1–67.
19. Whitaker R, 2012, In search of a cure, *The Hindu*. June 30, 2012.
20. Whitaker R, Captain A, 2004. *Snakes of India: The Field Guide*. Chennai: Draco Books. 495 pp.
21. WHO SEARO (2010) Guidelines on Management of Snake-bites. New Delhi: WHO Regional Office for South-East Asia. Available at:  
[http://www.searo.who.int/LinkFiles/BCT\\_snake\\_bite\\_guidelines.pdf](http://www.searo.who.int/LinkFiles/BCT_snake_bite_guidelines.pdf)
22. *World Health Organization, Bulletin, 2007*. Rabies and envenoming: a neglected public health issue. Geneva: World Health Organization.
23. World Health Organization, 2010. Updated WHO position paper on rabies vaccines published in *World Epidemiology Reports*. World Health Organization.