

Assessment Of Knowledge Regarding Management Of Snake Bite Cases Among Primary Health Care Providers In Kolhapur District, Maharashtra

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Abstract:

In India where snakes are worshipped, snake bite is one of the neglected tropical health issues with lack in knowledge among community as well among health workers. In the present study health care providers mainly working PHC around Kolhapur district were asked questions regarding their knowledge of snake bite and its management.

A total 74 PHC's were included in this questionnaire-based study, among which 572 health care providers participated in the study with work experience ranging from 1 to 40 years.

When total scores were analysed 29% were able to differentiate poisonous from non-poisonous snake, 22% were able to answer signs and symptoms of poisonous snakes and 30% answered correctly regarding management of snake bites.

It was found that primary health care providers lack in knowledge in identifying poisonous snake but they have adequate knowledge in first-aid and management of snake-bite cases.

Keyword: Snake bite; First-aid; Anti Snake Venom; Health care providers

INTRODUCTION:

Snake-bite is one of the neglected tropical diseases and in June 2017 snake-bite is added to WHO's list of neglected tropical diseases¹. In India there are 216 species of snake out of which only 52 are venomous² and among them common snake encountered are the Common Cobra, Common Krait, Russell's viper and Saw-scaled viper³. Snake bite is an injury caused by the bite of a snake which may be venomous or non-venomous snake. Hands, arms, legs are the most common sites involved. Comparing type of venom most poisonous snakes can be either Neurotoxic (Common Cobra, Krait), or Hemotoxic (Vipers). Only sea snakes are myotoxic in nature. In India where snakes are worshipped identifying and treating poisonous snake-bite is a challenge for health care provider and require adequate knowledge in the same. Snake bite is predominantly a rural problem and it is largely an occupational disease of farmers, fisherman, military personnel, people living in hilly region and near forest. Reasons behind the high morbidity and mortality includes misconception about snakes and snake-bite, lack of knowledge and awareness, strong belief in traditional healing methods and connectivity issues. But it has been noted that health care providers though being the first person to treat the problem are also lacking adequate level of knowledge, training about management of snake bite and rational use of Anti-Snake Venom (ASV) which also results into complications and death⁴. As per Times of India, many cases go unreported as people opt for traditional methods⁵. Recently in March 2024 Government of India has launched National Action Plan for Prevention and Control of Snakebite Envenoming (NAP-SE). With a vision to reduce snakebite deaths by half by 2030, NAPSE provides a broad framework for states to develop their own action plan for management, prevention and control of snakebites through the 'One Health' approach. Plenty of ASVs are

available in District Hospitals and Primary Health Centers but the right training and lack of knowledge about need of ASV, dose calculations errors and delay in identifying signs of envenoming results in high cases of death due to snake bite. Globally 1.2 to 5.5 million of snake bites are estimated annually⁶. In India Maharashtra tops with 42,026 cases of snake bites in 2018-19 among which Kolhapur recorded 2298 cases⁷. Objectives of this study included identifying and differentiating snake bites and assessing knowledge about snake bite management.

METHODOLOGY:

The study was conducted over a period of two months, by involving primary health care providers in Kolhapur district, Maharashtra.

Study design: It was a cross-sectional study and data was collected through a questionnaire administered by investigator.

STUDY SETTING AND STUDY POPULATION: The study was conducted to include Primary health care providers mainly the Multi-purpose Workers (MPW's) working in the Primary Health Centres (PHC's) of Kolhapur district. There are 74 PHC's in Kolhapur district and each PHC's have 5 to 6 Sub-centres based on population. Each sub-centre has one Male MPW and one female MPW hence there are 722 MPW's working in all the PHC's in Kolhapur district. So, all the 722 MPW's were to be include in the study on voluntary basis after obtaining Informed consent. Out of targeted 722 MPW's, 572 health care providers participated, others were either found lack of confidence and training in concerned topic or were not present at PHC's.

DATA COLLECTION: Data collection was done by person-to-person interview using pre validated questionnaires. The questionnaire had 4 parts, Part one includes demographic data of MPW's like name, age, sex, years of experience etc. Second part questions were regarding knowledge of snake habitat and differentiating poisonous from non-poisonous snakes. Third part included knowledge about clinical features of venomous snake bite. Fourth part included questions regarding first-aid and management of snake-bite.

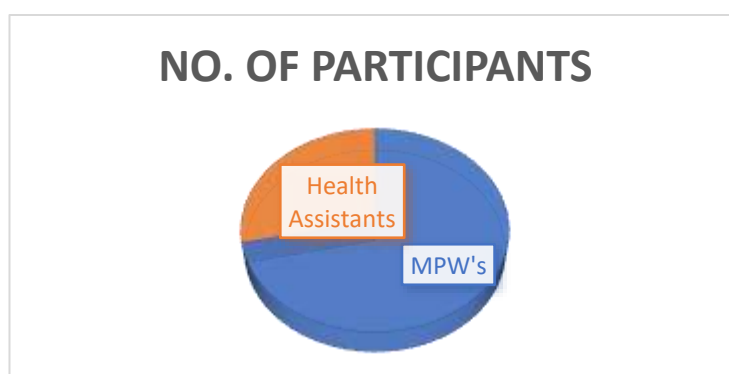
DATA ANALYSIS: Data collected was entered in MS excel worksheet and analyzed.

ETHICAL CLEARANCE: Study participants were informed well about study protocol in vernacular language and their informed consent was obtained before the study. Confidentiality and anonymity of the participants was maintained throughout the study process. Participation in the study was entirely on voluntary basis and without causing any harm to the participants. Study was started only after obtaining ethical clearance from Institutional Ethics Committee.

OBSERVATION AND RESULTS:

Study was conducted for a period of two month after getting clearance from Institutional Ethics Committee. A total of 572 health workers participated in the study after giving their consent. Among them 409 were MPW's and 163 were health assistant from different PHC's around the Kolhapur district. Responses were recorded on excel sheet and analysed and following results were obtained.

Chart 1: Number of Participants



In the present questionnaire-based study Part 1 was biographic data. A total of 572 responses were recorded among them 409 were MPW and 163 were health assistant with variable working experience.

In next section of questionnaire, mainly 15 MCQ were asked which were divided into 3 parts based on knowledge of snake bite and its management. First six questions were mainly regarding knowledge of snake habitat and identifying poisonous from non-poisonous snakes. In this only 28% of total participants were able to answer correctly. When comparing question wise results maximum 39% were able to identify that snake-bite are common in month of June to September. 35% of participants were able to identify common poisonous snake in India. Very few (17% to 25%) were able to morphologically differentiate poisonous from non-poisonous snake based on peculiar characteristics like tail, head scales and belly scale morphology. (Table 1)

Table 1: Characteristics of Poisonous and Non-Poisonous snakes

Q. No	Question	No. answered correct	Percentage
1	Poisonous snakes commonly in India	201	35%
2	Common month of Snake bites	221	39%
3	Poisonous snake characteristics	95	17%
4	Non- Poisonous snake characteristics	141	25%
5	Cobra poison characteristics	155	27%
6	Viper poison characteristics	186	33%

In next part, four question were asked mainly related to knowledge of signs and symptoms of common snake bite i.e., neurotoxic (cobra and krait) and hemotoxic (viper). On an average 21% of total participants were able to answer correctly. 15 % to 32% were able to correctly answer regarding signs and symptoms of cobra snake bite. 18% to 32% participants were able to correctly answer regarding signs and symptoms of viperine snake bites. (Table 2)

Table 2: Knowledge about Clinical features of Snake-Bite

Q. No	Question	No. answered correct	Percentage
7	Characteristic feature of cobra snake envenomation	86	15%
8	Characteristic feature of Viper snake envenomation	135	24%
9	Clinical feature of Cobra poisoning	182	32%
10	Clinical feature of Viper poisoning	105	18%

Last five questions were mainly related to first-aid and management of snake-bite. In this part of questionnaire, about 30% of them answered correctly. Many of them about 40% were able to answer about first-aid of snake bite. 24% to 36% were able to answer about indication for starting anti snake venom therapy. 26% of them answered correctly about contents of polyvalent anti snake venom and its common adverse reaction. (Table 3)

Table 3: Management of Snake-bite.

Q. No	Question	No. answered correct	Percentage
11	First-aid management of snake-bite	228	40%
12	Indication to start Antivenom therapy in cobra bite	205	36%
13	Indication to start Antivenom therapy in Viper bite	140	24%
14	Content of Polyvalent snake antivenom	148	26%
15	Symptoms of ASV adverse reaction	146	26%

When overall scores were compared only 24 of MPW's answered >50% of questions correctly, whereas among health assistants 6 of them answered >50% of question correctly, 29% were able to differentiate poisonous from non-poisonous snake, 22% were able to answer signs and symptoms of poisonous snakes and 30% answered correctly regarding management of snake bites.

DISCUSSION:

The present study was conducted to assess the knowledge about snake and snake bite management of primary health providers in Kolhapur district. It was cross sectional questionnaire-based study, in which 4 set of MCQ's were asked regarding identifying poisonous snakes, signs and symptoms of common poisonous and management of snake management. In this study a total 572 participated, out of which 409 were MPW's and 163 health assistants. Many of health workers had variable work experience ranging from 1 to 40 years. Though snake-bite is common, there are very few studies regarding assessing the knowledge of health care providers in snake-bite. Studies have been conducted in different parts of the world like in, Nepal¹, Sri-Lanka,⁶ Bhutan⁸, Japan⁹, Palestine¹⁰, Nigeria¹¹ and different parts of India.¹²⁻¹⁴ In all these studies one of study included Medical students,¹ in one included Farmers,⁶ but many included health workers,^{8,9,11,12} others included , Nursing students¹⁰, Interns¹³, and Villagers.¹⁴ In all these studies only health care providers had some working experience similar to our study.

In India Snake-bite cases are common in rural areas especially in monsoon season, even though common occurrence only 35% answered correctly about common snakes in India and 39% correctly answered common month of rise of snake bite cases. Primary health providers (multi-purpose worker's) come first in contact with victims of snake-bite, and many times they have to identify the snake. When asked about identifying poisonous snake very few (17% to 33%) were able to answer it which shows lack in knowledge. If they had adequate knowledge of identifying poisonous snakes, many times just reassurance from the health care provider will help to decrease anxiety of patients. Lack of knowledge in identifying snakes was also seen in studies conducted by Sunil et al,⁸ Vongphoumy et al,⁹

Sometimes neglected Snake-bite cases might arrive to health care providers with late symptoms and identifying and correlating symptoms to type of snakes is essential for further treatment. In this regard when question related to signs and symptoms of common snakes like cobra, viper was asked, many lacked knowledge in differentiating the two, though 32% were able to answer cobra snake bite symptoms, compared to viper symptoms which was only 18%. Similar results were seen in studies conducted by Vongphoumy et al,⁹ and in Somanath Naskar et al.¹³ Though in one study⁸ participants answered symptoms of viperine snake bite correctly.

Primary health providers (multi-purpose worker's) working in PHC's are the one who come's first in contact with emergency health issues and they have to be knowledgeable and skilled in first-aid management of any emergency situation. Snake-bite is one of emergency where first-aid plays critical role along with its management. In this regard many of health care providers nearly 40% correctly answered first-aid management of snake-bites. Many were aware of anti-snake venom though they lack knowledge its contents and adverse effects of polyvalent anti snake venom (24% to 36%). This was also seen in studies where health care providers had knowledge of first-aid management,^{1,6,10} also in one study participants showed adequate knowledge regarding anti snake venom, its use and its adverse reactions.¹³

Overall, from our study it is seen that though primary health care providers lack in knowledge in identifying poisonous snake but they have adequate knowledge in first-aid and management of snake-bite cases.

CONCLUSION:

Knowledge is gained not only by education but also by proper training, experience and dedication to serve the needy. To conclude the health care providers of Kolhapur district, lack knowledge in identifying poisonous and non-poisonous snakes from external features as well as from signs and symptoms. They have adequate knowledge of first-aid, proper care and management of snake-bite cases. This shows proper regular training and spread of knowledge of snake-bite is absolute necessity for the betterment of community.

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