

Original Research Article

Knowledge, attitude and practice regarding snakes and snake bite among rural adult of Belagavi, Karnataka

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ABSTRACT

Background: India is home to over 270 species of snakes, including 60 venomous. Belagavi, set in foothills of Western Ghats, is home to four major venomous snakes viz. Russell's viper, spectacled cobra, common krait and saw scaled viper. Surveys suggest that around half of the snake bite related deaths take place in India and are largely avoidable and treatable. The objective of the study was to assess the knowledge, attitude and practice regarding Snakes and Snake bite among adult in a rural area of Belagavi, Karnataka.

Methods: This community based cross-sectional study was conducted among 400 adults who were permanent residents of Kinaye village located in the field practice area of JN Medical College, Belagavi. A predesigned and pretested questionnaire was used to assess their knowledge, attitude and practice after taking written informed consent.

Results: Most of the study participants when shown different photographs could differentiate between venomous and non-venomous snakes and their bite marks. 100% of the study participants knew that medical treatment was available for snakebite and would rush to a health facility in an event of snakebite. Most common venomous Snake to be identified was Spectacled Cobra (72%) while Common Krait was the least identified (24%). About 75% of study subjects correctly differentiated between the pictures of venomous and non-venomous Snake bite marks. Nearly 90.5% believed that Snakes bite for self-defence.

Conclusions: In the present study majority of the participants had basic knowledge about Snake identification and snakebite. Most correctly identified venomous and non-venomous Snakes was Spectacled Cobra and Green Vine Snake respectively, while most incorrectly identified venomous Snake was common Krait. All the participants knew that there is medical treatment available for snakebite and most of them were in favour of not killing Snakes.

Keywords: Snakes, Snake bite, Rural area, Adults

INTRODUCTION

Since time immemorial India has always been culturally associated as the land of snakes. India is home to over 270 species of snakes, including 60 venomous.¹ According to a nationally representative mortality survey out of about 100,000 snake bite related deaths worldwide India accounts for around 46,000 of them.² Most of these deaths are preventable and almost all of them if

intervened in time are treatable. Villagers are often perceived to be unaware about the medical treatment available for snake bite and some even turn to faith healers for their treatment and the victims often tend to ignore the bite. Belagavi, set in the foothills of Western Ghats (UNESCO world natural heritage site and a global biodiversity hotspot) is the abode to the four major venomous snakes which account for the maximum mortality in the Indian subcontinent viz. Russell's viper,

Spectacled Cobra, Common Krait and Saw Scaled Viper.¹ The present study was undertaken to assess the knowledge, attitude and practice about snakes and snake bite in a rural area of Belagavi, Karnataka.

METHODS

This cross-sectional study was conducted between Jan-2017 to Feb-2017 in Kinaye village of rural field practice area of Jawaharlal Nehru Medical College, Belagavi, Karnataka. The sample size was calculated by using the formula $n = \frac{4pq}{d^2}$ where $p=50\%$ and relative error $d=10\%$ of p to be 400 and since Kinaye village has a population of 1590 adults, using systemic random sampling method every fourth adult was interviewed. A pre designed and pre tested questionnaire was used to interview the study participants and various in depth questions regarding knowledge, attitude and practice about snakes and snake bite were collected. Four pictures each of venomous and non-venomous snakes reported in the village and nearby forests along with two pictures of snake bite marks were shown to the study participants for

identification based questions. Statistical analysis was done by using Microsoft Excel and the results were calculated in percentages.

Inclusion criteria

All adults residing in Kinaye Village.

RESULTS

Out of the total 400 study participants, 323 (80.7%) were male and remaining female, while 267 (66.7%) of the population were in the age group of 10-40 years, 23.8% were in the age group of 41-60 years and the remaining 38 (9.5%) were more than 60 years of age. About 191 (47.7%) of the study participants had studied up to matric while 114 (28.2%) studied up to secondary school followed by primary schooling 57 (14.3%) and around 38 (9.5%) were illiterate. Most of the study participants were factory workers, 112 (28.0%), followed by farmers 95 (23.7%), housewives 77 (19.3) and others (Carpenters, Masons, Shopkeepers etc.) 116 (26.0%) (Table 1).

Table 1: Socio-Demographic profile of the study participants.

Sex	Male	Female		
	323 (80.7%)	77 (19.3%)		
Age (years)	18-40	41-60	>60	
	267 (66.7%)	95 (23.8%)	38 (9.5%)	
Literacy Status	Illiterate	Primary	Secondary	Matric
	38 (9.5%)	57 (14.3%)	114 (28.5%)	191 (47.7%)
Occupation	Farmer	Factory worker	Housewife	Others
	95 (23.7%)	112 (28.0%)	77 (19.3%)	116 (29.0%)

Table 2: Distribution of study participants according to knowledge regarding venomous snakes.

Snake species	Image identified correctly N (%)	Image identified incorrectly N (%)	Venomosity identified correctly N (%)	Venomosity identified incorrectly N (%)	Both image and venomosity identified correctly N (%)	Both image and venomosity identified incorrectly N (%)
Russell's viper	116 (29.0)	284 (71.0)	228 (57.0)	172 (43.0)	96 (24.0)	152 (38.0)
Saw scaled viper	108 (27.0)	292 (73.0)	248 (62.0)	152 (38.0)	96 (24.0)	132 (33.0)
Spectacled cobra	288 (72.0)	112 (28.0)	344 (86.0)	56 (14.0)	288 (72.0)	56 (14.0)
Common krait	96 (24.0)	304 (76.0)	288 (72.0)	112 (28.0)	96 (24.0)	112 (28.0)

Table 3: Distribution of study participants according to knowledge regarding non-venomous snakes.

Snake species	Image identified correctly N (%)	Image identified incorrectly N (%)	Venomosity identified correctly N (%)	Venomosity identified incorrectly N (%)	Both image and venomosity identified correctly N (%)	Both image and venomosity identified incorrectly N (%)
Green keelback	152 (38.0)	248 (62.0)	228 (57.0)	172 (43.0)	96 (24.0)	192 (48.0)
Vine snake	228 (57.0)	172 (43.0)	208 (52.0)	192 (48.0)	208 (52.0)	172 (43.0)
Rat snake	192 (48.0)	208 (52.0)	168 (42.0)	232 (58.0)	152 (38.0)	192 (48.0)
Indian rock python	180 (45.0)	220 (55.0)	136 (34.0)	264 (66.0)	96 (24.0)	168 (42.0)

To assess the knowledge regarding species identification and venomosity of venomous snakes, four images of locally prevalent venomous snakes were shown to the study participants.

Nearly 288 (72.0%) of the study participants could identify spectacled Cobra correctly and 344 (86.0%) correctly identified it to be venomous. Correct image identification was the least for Common Krait 96 (24.0%) while incorrect venomosity identification was the most for Russell's viper 172 (43.0%) (Table 2).

To assess the knowledge regarding species identification and venomosity of non-venomous snakes, four images of locally prevalent snakes were shown to the study participants.

Nearly 228 (57%) of the study participants could identify Green Vine Snake correctly while correct venomosity identification was the most for Green Keelback 228 (57%). Incorrect venomosity identification was the most for Indian Rock Python 264 (66%) (Table 3).

300 (75%) out of 400 study participants knew that all Snakes were not venomous. 100% of the study participants knew about medical treatment being available for Snake bite while 266 (66.5%) participants knew about medical treatment being available for Snake bite at RHTC Kinaye. Nearly 267 (66.75%) believed that Snakes bite mostly during monsoons and there is no specific time for the bites. About 324 (81%) of the participants were aware about the difference in the bite marks of venomous and non-venomous Snakes and 300 (75%) of them even identified the images correctly when the bite mark images were shown to them. Nearly 343 (85.75%) of the study participants believed that Snakes are helpful to the farmers.

Only 114 (28.5%) of the study participants believed that Snakes possess some magical power while 324 (81%) of them considered it as a God. Snakes bite for self-defense was opined by 362 (90.5%) of the participants while the remaining 38 (9.5%) believed that they bite to seek revenge. Almost 381 (95.25%) of the study participants opined that snakes should not be killed while 360 (90%) believed they should be rescued and rehabilitated.

When asked about the immediate measures taken by the study participants if a Snake bites them, all the study participants 400 (100%) said they would rush to the nearest health facility, 304 (76%) believed that they would tie a tourniquet at the site. Other answers given by the study participants were washing with soap 58 (14.5%), Spitting out the blood 56 (14%), Home based remedies 38 (9.5%), while 36 (9%) even considered visiting a local quack or faith healer after a Snake bite. When asked about measures taken upon seeing a Snake, maximum number of respondents 248 (62%) opined leaving the Snake as it is, followed by calling a forest official or a professional Snake rescuer 58 (14.5%).

Nearly 305 (76.25%) of the total participants said they offer milk to snakes brought by local snake charmers on Nag Panchami festival.

DISCUSSION

In the present study 288 (72%) of the total study participants could identify Spectacled Cobra correctly and 344 (86%) correctly identified it to be venomous which was significantly more compared to numbers for other Snakes. This could be due to the fact that Spectacled Cobra have a prominent hood which makes them easily identifiable and media portrayal of Cobras also have a role to play. Similar results have been found in the studies done by Duminda et al and Pandey et al in Sri Lanka and Nepal respectively.^{3,4} In the present study, among non-venomous/mildly venomous Snakes, Green Vine Snake was correctly identified, 228 (57%) followed by rat snake, 192 (48%). Similar findings were found in the study done by Duminda et al.³ Most of the study participants those who incorrectly identified Rat Snake, confused it to be Spectacled Cobra. An interesting fact which was seen in our study was that for Common Krait only 96 (24%) of the participants identified the image correctly, which was the least for venomous snakes but 304 (72%) of them identified them to be venomous, which was second highest among venomous Snakes only after Spectacled Cobra. Similar results were seen in the studies done by Duminda et al and Pandey et al.^{3,4}

This could be due to the reason that people who do not generally know about the Snake species assume it to be venomous, it usually results in many uncommon non-venomous Snake species getting misidentified as venomous and unfortunately killed.^{4,7}

In our study around 300 (75%) of the total study participants knew that all Snakes were not venomous which was significantly less than the study done by Pandey et al.⁴ General perception that most snakes are venomous and the desire to kill snakes is also known to occur in other areas, such as Sikkim, in India.⁸ Similar challenges were even seen outside Asia in Brazil, Kenya and Australia.⁹⁻¹¹

Contrary to popular perception, it was found that illiterate Farmers could identify most of the venomous and non-venomous Snakes correctly, and were better than a lot of other literate village dwellers in overall knowledge, attitude and practice.

One of the major positive findings in our study was that all the 400 (100%) of the participants knew about medical treatment being available for snake bite which was similar to the study done by Pandey et al.⁴

In the present study 267 (66.75%) knew that Snakes bite mostly during Monsoons, which is more than a similar study done by Wang et al.¹² In another study done by Francis et al¹³ in southern India most of the Cobra bite

cases came during the month of June. In a similar study done Kshirsagar et al on snake bite cases in children of rural India it was found that more than half of the patients (51.85%) came between the months of July to September, this pattern has also been reported in a few other studies.¹⁴

In the present study more than half of the participants believed that there is no specific time for the snakes to bite whereas similar studies done on snakebite patients around India have found the bites occurring mostly during day.¹³ While studies have also shown that most of the snakebites occur during night.¹²

In the present study 343 (85.75%) of the study participants believed that Snakes are helpful to the farmers, in a similar study done by Duminda et al most of the participants opined that snakes are helpful because they control pests and are important for maintaining food chain.³

In the present study 324 (81%) of them considered Snake as a God which we believe is one of the prime reasons why 381 (95.25%) of the study participants opined that snakes should not be killed and 360 (90%) believed they should be rescued and rehabilitated. In similar studies done in Sri Lanka and Nepal it was found that most of the participants did not want snakes to be killed and should be conserved.^{3,4}

It was heartening to note that all the participants said that they will rush to the health facility if a Snake bites them, result on similar lines has also been seen in the study done by Pandey et al.⁴

In the present study 304 (76%) participants believed that they would tie a tourniquet at the site should there be a Snake bite, which is a potentially dangerous intervention, carrying a high risk of adverse consequences, such as ischemic damage and rhabdomyolysis, contributing to skin grafting and even amputation.¹⁵⁻¹⁸ This wrong knowledge has also been seen in studies conducted in Sri Lanka and Bangladesh.^{16,19}

It was encouraging to know that in the present study 364 (91%) of the participants did not consider going to a faith healer or quack as a treatment option after snake bite, this finding was similar to the study done by Pandey et al.⁴ While in other similar studies 86% of snakebite victims in Bangladesh, 75% in Pakistan, and 61% in Maharashtra, India still visit traditional healers.²⁰⁻²²

In the present study it was found that 305 (76.25%) of the total participants offer milk to snakes brought by local Snake charmers on Nag Panchami festival which proves detrimental to the snake's health. Therefore awareness camps in laying emphasis on imparting basic knowledge about snake identification, snakebite prevention and clearing misconceptions should be held in schools, proper first aid methods for snakebites should be demonstrated

through various outreach activities and increased awareness about snake and snakebite identification among health care workers and general population should also be done.

CONCLUSION

In the present study majority of the participants had basic knowledge about Snake identification and snakebite. Most correctly identified venomous and non-venomous Snakes was Spectacled Cobra and Green Vine Snake respectively, while most incorrectly identified venomous Snake was common Krait. All the participants knew that there is medical treatment available for snakebite, although majority of the participants considered Snake as God but were not superstitious about Snakes having any magical powers. Most of the participants believed that Snakes are part of the ecology, helpful to the farmers and therefore they should not be killed.

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