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Original Research Article

Knowledge, attitude and practices regarding snakes and snake bite among students of industrial training institute in tribal area of Maharashtra

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ABSTRACT

Background: Snake bite is an important public health issue and an occupational hazard in India often faced by farmers and villagers. Most vulnerable are people in rural and tribal area but they are poorly informed about the snake bite. This study was undertaken with objective of assessing the knowledge, attitude and practices regarding snakes and snake bite among students of Industrial Training Institute (ITI) in tribal area.
Methods: A cross sectional study was conducted in all students of the institute to assess the knowledge, attitude and practices regarding snakes and snake bite. Data was collected in a predesigned and pretested proforma by oral questionnaire method and was analyzed by SPSS software using descriptive statistics and appropriate statistical tests of significance.
Results: Knowledge about identification of snakes was low. Most correctly identified snake was spectacled cobra (92.3%). Snakes are fond of milk was the most prevailing myth (60%). There was inadequate knowledge about proper first aid and treatment measures of snake bite. Participants from urban area and having higher secondary education had significantly higher knowledge, (p=0.015, p=0.025 respectively).
Conclusions: Participants had inadequate knowledge about identification of snakes with various prevailing myths. Most of the participants were not aware of proper first aid measures but all knew that the patient should be taken to a hospital. There is a need to educate rural and tribal population about snakes and about first aid and treatment measures for snake bite.

Keywords: Snakes, Snake bite, Myths, First aid, Treatment

INTRODUCTION

According to WHO snake bite is an important medical problem but it is also a neglected extrinsic injury in tropical and subtropical developing countries.[1,2] South Asia, South-east Asia, Sub-Saharan Africa and Latin America are most affected regions in the world.[2,3] About 5.4 million snake bites occur each year, resulting in up to 2.7 million envenomings with at least 81,000-138,000 deaths and around 3 times amputations and other permanent disabilities.[4] Snake bite is a major public health problem in the rural tropics.[5] The Indian snake bite statistics are alarming as the figures are highest in the world, though India does not host the largest number of snakes in the world. The official records state about 250,000 snake bite cases occur in India every year, of which, over 50,000 die due to inadequate first aid or unscientific treatment methods.[6]

Of the 283 species of snakes in India, 179 are non-venomous and 62 are venomous. The common species in India which are deadly to man are only 4: The Indian cobra, the Russell's viper, the saw scaled viper and the common Indian krait. These are known as the 'big four'. 42 Indian snakes are "mildly venomous"-in the sense that their bite may not result in fatalities in humans but only cause mild local symtopms.[7] A snake bite is an acute life-threatening medical emergency often faced by farmers, villagers, hunters, and a migrating population and has been listed as an occupational hazard.[8,9] Over years, this neglected tropical disease has emerged as an important established cause of morbidity and mortality among the poor, rural and tropical population.[2]

Misbeliefs and superstitions about snakes across the globe and across the cultures are numerous - about snakes in general and about particular species.[7] Such factors play part in determining attitude and practices of people in general and about health seeking behaviour in particular.

Industrial training institute (ITI) in tribal area of Thane district, Maharashtra comes under the western Ghats characterized by high rainfall and wet evergreen hill forest areas which is home to various venomous and non-venomous snakes. The present study was therefore undertaken in students of ITI to assess the knowledge, attitude and practices regarding snakes and snake bite and to suggest recommendations based on findings of the study.

METHODS

A cross sectional study was conducted among students in the industrial training institute, Sakwar. It is located in the field practice area of rural health and training center, Sakwar of Department of Community Medicine, Seth GS Medical College and KEM Hospital, Mumbai, located at a distance of 75 kilometres from the teaching institution. The study was conducted over a period of three months from June to August 2011. Universal sampling method was used and all those students in ITI willing to participate were included in the study. Sample size was 65. All were male students as there was no female student enrolled in the Sakwar ITI. Permission from ITI authority was taken before collecting required data. Informed verbal consent was taken from all the participating students before the start of the study and after telling them about objectives of the study.

Data was collected using the predesigned, pre-tested proforma by oral questionnaire method. After establishing good rapport with study group, demographic profile in form of name, age, sex, caste, education and place of residence was taken. Questionnaire was in the form of 30 multiple choice questions and few open-ended questions for assessing the knowledge, attitude and practices of study participants regarding snakes and snake bite. Ten images of commonly found venomous and non-venomous snakes in the ITI campus and nearby forests were shown to the study participants while assessing the knowledge about identification of snakes.

Data entry was done using microsoft excel. While assessing the knowledge on 'Snakes and Snake bite', scores were given as 1 for correct answer and 0 for incorrect/partially correct/don't know answer. All responses were tabulated. Data was analyzed by SPSS software version 16. Descriptive statistics like frequencies and percentage were used. Chi square test and Fisher exact test were used as tests of significance to determine the association of knowledge with different variables. $P<0.05$ was considered statistically significant.

RESULTS

Total 65 students took part in the study and majority of the students (78.5%) were adolescents and studied up to 10th standard (66.2%). Most of the students (83.1%) were from rural background and 84.6% students were belonging to backward castes like other backward caste (OBC), scheduled caste (SC) and scheduled tribe (ST) while remaining 15.4% students belonged to open category (Table 1).

Table 1: Distribution of participants by age, education, caste and place of residence (n=65).

Variable		Frequency	Percentage
Age (in years)	≤19	51	78.5
	>19	14	21.5
Education	Secondary	43	66.2
	Higher secondary	22	33.8
Caste	OBC	35	53.8
	Open	10	15.4
	SC	3	4.6
	ST	17	26.2
Place of residence	Urban	11	16.9
	Rural	54	83.1

To assess the knowledge regarding species identification and venomosity of snakes, 10 images of locally prevalent venomous and non-venomous snakes were shown to the study participants. Correct identification of both image and venomosity was highest for spectacled cobra, where 60 (92.3%) of the study participants could identify it correctly. Among venomous snakes correct identification of both image and venomosity was lowest for common krait, where 16 (24.6%) of the study participants could identify it correctly. Among non-venomous snakes correct identification of both image and venomosity was highest for checkered keelback 29 (44.6%) and it was nil for wolf snake. Wolf snake was confused with common krait by most of the participants because of their similar appearance (Table 2).

Table 2: Distribution of participants according to knowledge regarding identification of snakes (n=65).

S. no.	Snake species	Image and venomosity - both identified correctly	Image and venomosity - none identified correctly	Only image identified correctly	Only venomosity identified correctly
		N (%)	N (%)	N (%)	N (%)
1	Spectacled cobra	60 (92.3)	0 (0)	5 (7.7)	0 (0)
2	Common krait	16 (24.6)	39 (60)	4 (6.2)	6 (9.2)
3	Russell's viper	21 (32.3)	6 (9.2)	13 (20)	25 (38.5)
4	Saw scaled viper	35 (53.8)	3 (4.6)	19 (29.3)	8 (12.3)
5	Rat snake	28 (43.1)	4 (6.2)	20 (30.7)	13 (20)
6	Worm snake	4 (6.2)	25 (38.5)	11 (16.8)	25 (38.5)
7	Wolf snake	0 (0)	43 (66.2)	0 (0)	22 (33.8)
8	Indian rock python	10 (15.4)	4 (6.2)	48 (73.8)	3 (4.6)
9	Checkered keelback	29 (44.6)	13 (20)	21 (32.3)	2 (3.1)
10	Green keelback	22 (33.8)	17 (26.2)	13 (20)	13 (20)

Table 3: Distribution of participants according to assessment regarding myths and facts related to snakes and snake bite (n=65).

S. no.	Myth	Correct answer	Incorrect answer	Don't know
		N (%)	N (%)	N (%)
1	Snakes are fond of milk	22 (33.8)	39 (60)	4 (6.2)
2	Snakes chase people	46 (70.8)	13 (20)	6 (9.2)
3	Snakes seek revenge	34 (52.3)	26 (40)	5 (7.7)
4	All snakes are poisonous	50 (76.9)	13 (20)	2 (3.1)
5	Charming of snakes by the music played on pipe	18 (27.7)	38 (58.5)	9 (13.8)
6	Cobra carries a precious stone on his head	46 (70.8)	4 (6.2)	15 (23)
7	Rat snake sucks milk from cows	32 (49.2)	21 (32.3)	12 (18.5)
8	Snakes found in water are non-poisonous	23 (35.4)	18 (27.7)	24 (36.9)

Table 4: Distribution of participants according to knowledge, attitude and practices regarding first aid and treatment for snake bite (n=65).

S. no.	Measures	Correct answer	Incorrect answer	Don't know
		N (%)	N (%)	N (%)
1	Reassurance to the patient	58 (89.2)	0 (0)	7 (10.8)
2	Application of tourniquet	21 (32.3)	18 (27.7)	26 (40)
3	Immobilization of the bitten limb	33 (50.8)	20 (30.7)	12 (18.5)
4	Cleansing/washing of the bitten area	18 (27.7)	32 (49.3)	15 (23)
5	Sucking of blood by mouth	37 (57)	20 (30.7)	8 (12.3)
6	Cutting with blade near bite mark	15 (23)	18 (27.7)	32 (49.3)
7	Keeping the bitten area below the level of heart	25 (38.5)	23 (35.4)	17 (26.1)
8	Consuming alcohol	53 (81.5)	10 (15.4)	2 (3.1)
9	Application of native medicine	18 (27.7)	35 (53.8)	12 (18.5)
10	Take patient to faith healer/quack	33 (50.8)	25 (38.5)	7 (10.7)
11	Take patient to hospital	65 (100)	0 (0)	0 (0)
12	Anti-snake venom is the treatment	45 (69.2)	2 (3.1)	18 (27.7)

While assessing about myths and facts related to snakes and snake bite; majority of participants correctly responded that snakes do not chase people (70.8%), snakes do not seek revenge (52.3%), all snakes are not poisonous (76.9%) and cobra does not carry any precious stone on his head (70.8%); however, less than half of the study participants responded with correct answers about other myths i.e. snakes are fond of milk (33.8%), charming of snakes by music played on pipe (27.7%), sucking of milk from cows by rat snake (49.2%) and about venomosity of snakes found in water (35.4%) indicating their poor knowledge or misbeliefs (Table 3).

While assessing the knowledge, attitude and practices of the study participants regarding first aid and treatment for snake bite; more than half of the study participants correctly responded that reassurance to the patient (89.2%), immobilization of the bitten limb (50.8%), no sucking of blood by mouth from the bitten area (57%), no consumption of alcohol (81.5%), and not to take patient to faith healer/quack (50.8%) should be practiced. All the participants correctly mentioned that patient should be taken to a hospital immediately and 69.2% were aware about the ASV (Anti Snake Venom) as the treatment for snake bite. However, majority of the students mentioned that they don't know or responded incorrectly about other measures like application of tourniquet, cleansing/washing of the bitten area, cutting with blade near bite mark, keeping the bitten area below the level of heart and about application of native medicine (Table 4).

While assessing the overall knowledge regarding snakes and snake bite no significant association was observed with age or caste of the study participants; however, significant association was observed with place of residence and education. Participants from urban area and having higher secondary education had higher knowledge (p=0.015, p=0.025 respectively) (Table 5).

Table 5: Association of socio-demographic factors with knowledge about snakes and snake bite.

S. no.	Variable	P value
1	Age (adolescent/adult)	0.88 (Chi square)
2	Caste (OBC/Open/SC, ST)	0.25 (Chi square)
3	Residence (urban/rural)	0.015 (Fisher exact)
4	Education (secondary/higher secondary)	0.025 (Chi square)

DISCUSSION

This study was done to know the awareness levels regarding identification of snakes, myths and facts related to them, and about proper first aid measures and treatment after snake bite. A study conducted on snake bite in rural Laos by Keooudom et al found that 90% of the study population had knowledge to identify the snakes which was comparatively higher than our study (34.61%).[10] Our results were comparable to study done in rural population of Tirunelveli district by Krishnaleela G et al who found that 39.5% of the respondents had the knowledge to identify the snakes.[11] In our study, the most correctly identified snake was spectacled cobra (92.3%), which could be because of its characteristic hood. Similar results have been found in the studies done by Pathak et al, Duminda et al and Pandey et al in Karnataka, Sri Lanka and Nepal respectively.[12-14] In our study all the participants incorrectly identified non-venomous wolf snake and majority of them confused it to be venomous common krait which could be because of their similar appearance. Such misrecognition usually results in many uncommon non-venomous snake species getting misidentified as venomous and unfortunately gets killed.[13] In our study 76.9% of the total participants knew that all snakes were not venomous which was similar to study done by Pathak et al but significantly less than the study done by Pandey et al.[12,14] In our study, it was observed that various myths are prevailing and 60% of the participants had misbelief that snakes are fond of milk. Our results were comparable with study done by Pathak et al, who found that 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.[12]

Findings of our study about practice of application of tourniquet (32.3%) was less prevalent than findings of study done by Krishnaleela et al, where it was (69.5%) but practice of application of native medicine (27.7%) was comparable (25.5%) with their study.[11] In another study done by Chincholikar et al in Maharashtra among rural adults it was observed that awareness about first aid measures was less in all subjects.[15]In our study all participants mentioned that snake bite patient should be taken to hospital for medical treatment and 69.2% of them were aware about the anti-snake venom (ASV) as the treatment; however, 50.8% of the participants also showed misbelief in faith healers/quacks. In study done by Krishnaleela et al 62.5% preferred hospital treatment and only 12% preferred traditional practices and 59.5% believed that ASV is effective which was lower than our study findings.[11] In an another study done by Silva et al among the farmers in Sri Lanka found out that 86.8% of them preferred hospital treatment and only 11.5% preferred traditional treatment which was also lower than findings of our study.[16] Studies done by Pathak et al and Pandey et al observed that all the participants knew about medical treatment being available for snake bite and all said that they will rush to the health facility if a snake bites them which was similar to our study findings.[12,14] Use of ineffective first aid treatment and delay in getting antivenom combined leads to systemic envenoming by the time they seek medical treatment.[17]

In our study knowledge regarding snakes and snake bite was found to be significantly associated with place of residence and education. Participants from urban area and having higher secondary education had higher knowledge which may be because of better educational exposure. In another study done by Chincholikar et al, it was observed that educated people had more knowledge about types of snakes as compared to uneducated.[15] Therefore awareness camps for imparting basic knowledge to general population and especially to people in rural and tribal area about identification of snakes, snakebite prevention, clearing misconceptions with demonstration of proper first aid measures should be conducted through various outreach activities.

This study has a limitation that the findings cannot be generalized to the entire population, as it was specific to the male students enrolled for various courses of ITI; however, community based studies can be planned on large scale to assess the knowledge based on which further educational and training sessions can be conducted.

CONCLUSION

Our study findings highlighted that knowledge of identification of snakes, first aid and treatment measures of snake bite was inadequate in study participants with various prevailing myths. Though, all the participants knew that patient should be taken to the hospital for medical treatment but still some participants had misbelief in harmful practices like taking the patient to faith healers and applying native medicine. Participants from urban area and having higher secondary education had higher knowledge compared to those from rural area and having secondary education. Considering these results, it is recommended that steps must be taken to educate the rural and tribal population about the snakes and about first aid and treatment measures for snake bite to prevent harmful practices so that patients could be taken to hospital without delay.

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