



## KNOWLEDGE REGARDING SNAKE BITE PREVENTION AND FIRST AID MANAGEMENT

### Nursing

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### ABSTRACT

A descriptive study was undertaken to determine the knowledge regarding snake bite prevention and first aid management among 169 adults attending the Outpatient Department service in a tertiary hospital. A cross sectional study design with random sampling technique was used to select the participants. Self administered knowledge questionnaire on general awareness, prevention of snake bite and first aid management was administered. Descriptive statistics and Chisquare were used to analyse the data. Males accounted for 72.19% of the study subjects, 40.83% are from the rural community. Of the subjects 66.86% reported that they had never witnessed a snake bite victim in the past. General awareness about snake bite was found among 15.38%, 87.57% of them had adequate knowledge on snake bite prevention while 39.64% had adequate knowledge on first aid management for snake bite. There was no significant association between the general awareness, knowledge regarding snake bite prevention and first aid management among the subjects with socio demographic variables. Study findings denote the need for more awareness programs among the general public to enlighten them on this neglected yet preventable public health concern.

### KEYWORDS

Spinal Epidural Abscess, Paraplegia, Immunocompromised state

#### Introduction:

Snakes play a major role in maintaining the ecological balance of the environment. Very often snakes being shy creatures, they bite either when being provoked or threatened. Snakes are commonly found in rural areas where majority of the Indian population dwell too. The victims of snake bite are usually active young people, especially those involved in farming and agriculture. General public are less aware about the habitat and behavior of snakes and fatal effects of snake bite which might even include the death of the victim. The bystanders or the relatives of snake bite victims sometimes waste precious time seeking assistance from traditional healers and taking inappropriate first aid measures. Though a significant proportion of the victims seek medical help after the snake bite, it is also proven that the general awareness about snake bite, its prevention and first aid management among the general public is significantly limited. Knowledge about the habitat and behavior of poisonous snakes would help to avoid confrontation with the snakes and every individual needs to be prepared to give first aid for the snake bite victim before shifting them to a health care facility in order to reduce the mortality and morbidity of victims. The aim of the study was to assess knowledge regarding snake bite prevention and first aid management among adults attending Out Patient Department (OPD) of a tertiary hospital.

#### Objectives:

- To assess knowledge regarding snake bite prevention and first aid management among relatives of patients visiting the Out Patient department.
- To find association between knowledge regarding snake bite prevention and first aid management with selected socio demographic variables among relatives of patients visiting the Out Patient department.

#### Methodology:

This study was undertaken to determine the knowledge regarding snake bite awareness, prevention and first aid management among 169 adults attending OPD services of a tertiary hospital. A cross sectional study design was used. Subjects were recruited for the study based on the sampling criteria and random sampling technique. Informed written consent from each participant was obtained. Data were collected over a period of two weeks. Based on the study conducted by Silva et al., (2014), the percentage of awareness about snake bite

preventive measures among farmers was found to be 99.4 (95% CI: 96.87, 99.98). Assuming 1.5% precision with 95% confidence interval, the sample size was estimated to be 169 subjects. The self administered knowledge questionnaire was administered. Part I elicited Socio demographic data while Part II included three sections. Section I with 7 items for assessment of general awareness, Section II with 24 items about knowledge on prevention and Section III with 17 items on first aid management of snake bite. Tool was validated by Medical and Nursing experts with the content validity index score of 0.83. Score of 80% and above was considered as adequate knowledge and 69-79% moderate and less than 69% as inadequate knowledge.

#### Findings:

Data were analyzed using STATA 16.0. Descriptive statistics for socio demography and inferential statistics to find the association between knowledge and demographic variables were used.

**Table 1: Distribution of participants based on socio demographic variables (n= 169)**

S. No	Variables	Type	Number	Percentage
1.	Gender	Male	122	72.19
		Female	47	27.81
2.	Religion	Hindu	133	78.70
		Christian	30	17.75
		Muslim	6	3.55
3.	Location	Rural	69	40.83
		Urban	100	59.17
4.	Type of house	Tiled	43	25.44
		Thatched	12	7.10
		Concrete	73	43.20
		Terraced	41	24.26
5.	Bitten by snake	Yes	4	2.37
		No	165	97.63
6.	Seen snake bite victim	Yes	56	33.14
		No	113	66.86
7.	Assisted snake bite victim	Yes	83	49.11
		No	86	50.89
8.	Information about snake bite	No	25	14.79

	Yes	144	85.21
TV	1	57	39.58
Friends	2	46	31.94
Teachers	3	8	5.56
Social media	4	23	15.97
Others	5	9	6.25
NGO	6	1	0.69
9. Aware of Indian snakes	Yes	78	46.15
	No	91	53.85

**Table 1** describes the study population. Males comprised 72% of the participants, 78.7% belong to Hindu religion, 59.17% are from urban area and 43.2% live in concrete house. Of the participants 97.63% had never been bitten by a snake, 66.86% had never seen a person bitten by snake and 50.89% had never assisted any snake bite victim. Knowledge about snake bite information was noted in 85.21% of them.

**Table 2: Distribution of participants based on general awareness, prevention and first aid management regarding snake bite (n=169)**

S. No	Content	Correct response	%	Incorrect response	%
<b>A. GENERAL AWARENESS</b>					
1.	Most snake bites are on the hands.	123	72.78	46	27.22
2.	Russell's Viper, Saw scaled viper, Cobra, Krait are poisonous snakes.	155	91.72	14	8.28
3.	The shape of head of venomous snakes will be triangular.	55	32.54	114	67.46
4.	Common krait bites are common while sleeping outdoors and on floor.	129	76.33	40	23.67
5.	The victim faints soon after snake bite.	54	31.95	115	68.05
6.	The victim will have pain soon after snake bite.	139	82.25	30	17.75
7.	The victim may have swelling on the bitten site.	97	57.40	72	42.60
<b>B. KNOWLEDGE REGARDING PREVENTION OF SNAKE BITE</b>					
1.	Protect the legs with ankle length garments and feet with shoes.	154	91.12	15	8.88
2.	Land covered by tall grass or dense undergrowth, jungle paths, and agricultural lands are areas where snakes are not found.	100	59.17	69	40.83
3.	One should wear shoes and carry a bright light when walking at night.	160	94.67	9	5.33
4.	Carry and use a stick to beat the grass and undergrowth when walking in snake infested sites.	109	64.50	60	35.50
5.	Beating vegetation on either side of a foot path may drive snakes on the path in front of you.	154	91.12	15	8.88
6.	Warn snakes of your approach by treading heavily since snakes are sensitive to ground vibrations.	162	95.86	7	4.14
7.	Do not put hand into ant hills, cavities in trees and thick undergrowth and under logs.	146	86.39	23	13.61
8.	Clear the area likely to be occupied by snakes around the house.	167	98.82	2	1.18
9.	Do not let fallen trees, logs and firewood lie around.	149	88.17	20	11.83

10.	Be cautious when moving logs, rocks etc. in the course of work.	166	98.22	3	1.78
11.	When harvesting paddy be extra careful in the last field.	160	94.67	9	5.33
12.	Rats, mice, frogs, lizards, will not attract snakes.	116	68.64	53	31.36
13.	Dispose garbage and junk occasionally.	164	97.04	5	2.96
14.	Keep house and surroundings free of rats, mice, frogs, lizards, etc.	165	97.63	4	2.37
15.	Storing paddy inside the house attracts rats and mice.	149	88.17	20	11.83
16.	Hang rolled up mat from roof.	132	78.11	37	21.89
17.	Snakes cannot creep inside mats on the floor.	85	50.30	84	49.70
18.	Snakes can enter into the house through drains and pipes.	149	88.17	20	11.83
19.	Outlets of drains and pipes should not be covered with mesh.	101	59.76	68	40.24
20.	Keep the doors and windows well fit.	162	95.86	7	4.14
21.	Doors and windows should be kept closed at night.	165	97.63	4	2.37
22.	Households should avoid people sleeping on the floor.	2.37	79.88	34	20.12
23.	Use a mosquito net for person sleeping on the floor.	162	95.86	7	4.14
24.	Get help of trained people to handle snakes.	160	94.67	9	5.33

C.	FIRST AID MANAGEMENT	Correct response	%	Incorrect response	%
1.	Move the victim beyond the snake's striking distance.	154	91.12	15	8.88
2.	Help the victim to remain still.	128	75.74	41	24.26
3.	Help the victim to be calm (to prevent the spread of venom).	134	79.29	35	20.71
4.	Remove jewellery on the affected arm.	127	75.15	42	24.85
5.	Remove tight clothing before it starts to swell.	142	84.02	27	15.98
6.	Position the site at or below the level of heart.	148	87.57	21	12.43
7.	Cover site with a clean, dry dressing or cloth.	140	82.84	29	17.16
8.	Support the arm with splint using available item.	128	75.74	41	24.26
9.	Gently tie the arm with splint using available cloth.	147	86.98	22	13.02
10.	Arrange transport to shift to the hospital.	163	96.45	6	3.55
11.	Do not wash site with soap and water.	73	43.20	96	56.80
12.	Make incision at the site of snake bite.	71	42.01	98	57.99
13.	Suck the wound of snake bite.	99	58.58	70	41.42
14.	Apply herbal juice over the site of snake bite.	71	42.01	98	57.99
15.	Place ice cubes on the site of snake bite.	107	63.31	62	36.69
16.	Take photograph of snake and bring to hospital, if possible.	147	86.98	22	13.02
17.	Catch and bring the snake to hospital, if possible.	67	39.64	102	60.36

**Table 2:** Of the subjects 91.72% were aware about poisonous snakes, 92.82% reported clearing the area around the house, while 91.12% responded appropriately that the victims had to be moved away from the site.

**Figure 1: Distribution of participants based on adequacy of**

**knowledge regarding general awareness, snake bite prevention and first aid management (n=169)**

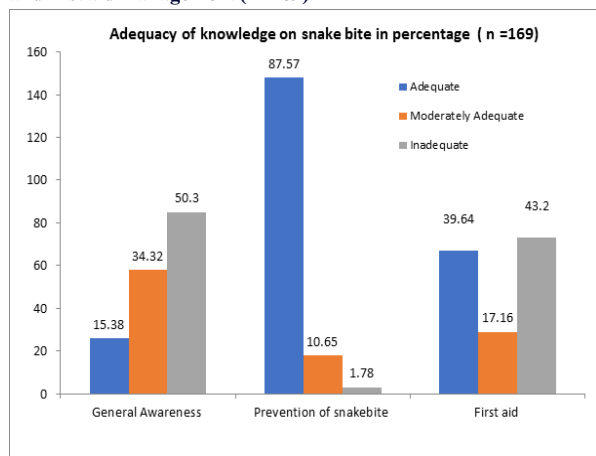


Figure 1 highlights that 15.38% of the participants had adequate knowledge on general awareness about snakes. Most of the participants (87.57%) had adequate knowledge on prevention of snake bite. Only 39.64% of the participants had adequate knowledge on first aid management for snake bite. These findings are congruent with the study on awareness and perceptions on prevention, first aid and treatment of snake bites among 176 Sri Lankan farmers, which revealed awareness on preventive measures, was noted among 85.93% of participants, treatment 65.87% and first aid 82.14% (Silva et al., 2014).

**Figure 2: Distribution of participants based overall knowledge regarding snake bite (n=169)**

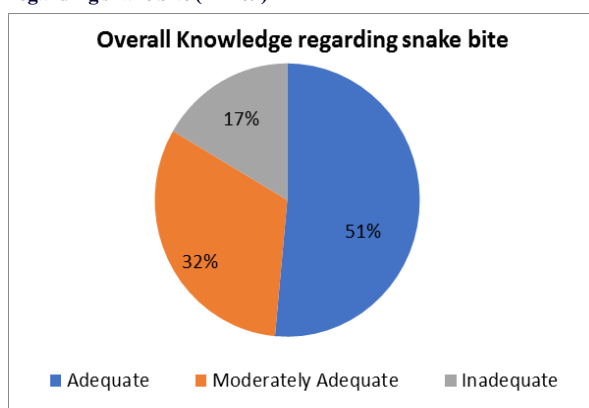


Figure 2 indicates that 17% of the subjects had inadequate knowledge.

A study was conducted by Subedi et al., (2018), to determine the knowledge of first aid methods in snake bite and the perception of snake bite among 302 medical students of Nepal. The knowledge score of clinical students was significantly higher than the preclinical students (76.5%). Most of the preclinical students had inadequate knowledge of first aid of snake bite. Another study by Krishnaleela, (2018) to determine the knowledge, attitude and practice on snake bite among 200 adults of Tirunelveli district, reported that 62% of adults had no knowledge on complications of snake bite while 54% of them had knowledge on availability of Anti snake venom.

**Table 3: Association between knowledge regarding snake bite prevention and first aid management with demographic variables**

Variables	Types	Inadequate		Moderately adequate		Adequate		Chi square	p value
		No.	%	No.	%	No.	%		
Gender	Male	19	15.57	40	32.79	63	51.64	0.3595	0.835-0.845
	Female	9	19.15	14	29.79	24	51.06		
Religion	Hindu	24	18.05	42	31.58	67	50.38	1.1744	0.882-0.905
	Christian	3	10	10	33.33	17	56.67		
	Muslim	1	16.67	2	33.33	3	50		
Location	Rural	8	11.59	23	33.33	38	55.07	2.1032	0.349-0.375
	Urban	20	20	31	31	49	49		
Type of House	Tiled	8	18.6	9	20.93	26	60.47	7.9796	0.240-0.234
	Thatched	0	0	6	50	6	50		
	Concrete	13	17.81	28	38.36	32	43.84		
	Terraced	7	17.07	11	26.83	23	56.1		
Bitten by snake	Yes	2	50	2	50	0	0	5.2906	0.071-0.041
	No	26	15.76	52	31.52	87	52.73		
Seen snake bite victim	Yes	10	17.86	20	35.71	26	46.43	1.7253	0.786-0.828
	No	18	15.93	34	30.09	61	53.98		
Assisted snake bite victim	Yes	19	22.89	27	32.53	37	44.58	5.4624	0.065-0.066
	No	9	10.47	27	31.4	50	58.14		
Heard about management	No	3	12	7	28	15	60	2.582	0.630-0.645
	Yes	25	17.36	47	32.64	72	50		
Aware of Indian snakes	Yes	13	16.67	27	34.62	38	48.72	3.9045	0.690-0.726
	No	15	16.48	27	29.67	49	53.85		

Table 3 denotes that there is no significant association between the knowledge among adults regarding snake bite prevention and first aid management with socio demographic variables. There was paucity of published literature in this aspect.

**Conclusion:**

Snake bites should be prevented. If and when they occur, effective first aid should always be given to snake bite victims. It will prevent or minimize spread of venom that may have been introduced into the tissues as well as the complications resulting from the bite. Incorrect first aid may cause harm. Hence, it was important to assess the existing knowledge on snake bite prevention and first aid management in order to formulate awareness programs for the general public to prevent further deaths and associated morbidity that result from snake bites. A pamphlet on prevention and first aid management of snake bite prepared by experts of Medicine I unit was distributed to every

participant. This information will enable members of the community to take first aid measures to prevent severe envenoming complications and poor outcomes.

**Ethics approval**

The study was ethically approved by the Institutional Review Board of College of Nursing, Christian Medical College, Vellore and written informed consent was obtained from the participants prior to the study. Confidentiality of the subjects was maintained.

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