ORIGINAL ARTICLE

Assessment of Knowledge about First Aid, Diagnosis and Prevention of Snake Bite among Medical Students: A Cross Sectional Study

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ABSTRACT

Introduction: Snakebite is a global health problem and important medical emergency encountered in many parts of the world with considerable morbidity and mortality. Knowledge and awareness about snake bite directly impacts outcome. **Aims:** To assess the knowledge about first aid, diagnosis and prevention of snake bite among medical students. **Methods:** A cross sectional study was conducted among the MBBS students of Nepalgunj Medical College. Semi-structured questionnaires were used to assess the knowledge about first aid, diagnosis and prevention of snake bite among medical students of both non-clinical and clinical group. **Results:** Total students enrolled were 321. Among them 230 (71.7%) were male and 91 (28.3%) were female with male preponderance Majority of students belonged to clinical level 61.4% as compared to non-clinical 38.6%. Regarding first aid knowledge, majority of clinical students responds correctly as compared to non-clinical. Clinical diagnosis of snake on the basis of recognizing signs and symptoms, both clinical and non-clinical groups had satisfactory response. Similarly regarding preventive measures, results showed majority of the students from both the groups were aware about preventive measures against snake bite. **Conclusion**: Both clinical and non-clinical students have adequate knowledge regarding clinical diagnosis and preventive measures against snake bite but first aid knowledge was more among clinical students. Integrating snake bite topic from early non-clinical stage will positively reflect on the care for snakebite victims.

Keywords: First aid, Knowledge, Medical students, Prevention, Snake bite

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INTRODUCTION

Snakebites are emergent and life-threatening injuries that may require intensive care. The annual number of snakebites around the globe is estimated to be around 1.2-5.5 million. Of this, 81-95% occur in tropical regions of South Asia, South-East Asia, Sub- Saharan Africa and Latin America.[1] It mostly affects the farmers and those who work in the fields and thus one of the occupational injury. The public health issues of snakebite is neglected globally and it has only been added to WHO's list of neglected tropical diseases in June 2017.[2] In Nepal, 80% of the snakebite deaths occurred either in villages or during transport to the health care facility.[3] These observations highlight an urgent need to understand the healthcare seeking behavior of the community for snakebites. Inappropriate perception, the practice of unproven traditional methods and inadequate knowledge about snakes and snakebites may increase mortality due to snakebite envenoming.[4,5] However, most of these deaths are preventable, and hence community awareness is crucial. This study focused on the assessment of the level of knowledge on first aid measures, diagnosis and prevention regarding snakebites among medical students, who will be part of the healthcare providers in the future.

METHODS

A cross sectional study was conducted among the MBBS students of Nepalgunj Medical College. All the students present at the time of collection of the questionnaire and consenting for participation were included in the study. The students were approached by the authors after the end of their regular class and explained about the objectives of the study and the way to answer the questionnaire. They were encouraged to fill up the questionnaire to the best of their knowledge and perception. They were also informed that the responses would be confidential, and no any identifiers will used in the forms while fill-

ing up the questions so that the students will be encouraged to answer confidently. A questionnaire including the participants' knowledge about the first aid methods for snake bite was prepared based on the WHO protocol of management of snake bite.[6] Further demographic characteristics of medical students, preventive measures and clinical features were also included in questionnaire. At the college, the students were categorized as clinical from third year MBBS (VII semester), fourth year (IX semester) and interns. On non-clinical were includes first year MBBS (I st and II nd semester). The responses for the knowledge-based questions was "yes" or "no".

The study was conducted after receiving ethical approval letter from Institutional review committee of Nepalgunj Medical College. (Date: 13 Jan 2023, Ref no: 50/079-080). Informed consent was obtained from all participants before their inclusion in the study.

Statistical analysis

Data collected in structured proforma was entered in Microsoft Excel and statistical analysis was done using SPSS software.

RESULTS

Sex	Frequency	Percent
Female	91	28.3
Male	230	71.7
Total	321	100
Year of study	**Frequency**	**Percent**
FIRST	124	38.6
THIRD	132	41.1
FOURTH	26	8.1
INTERN	39	12.1
Total	321	100
Level of Student	**Frequency**	**Percent**
Non clinical	124	38.6
Clinical	197	61.4
Total	321	100

Table I: Demographic characteristics of medical students

Total students enrolled in the study were 321. Among them 230 (71.7%) were male and 91 (28.3%) were female with male preponderance. Most of the participation from third year 41.1% and first year 38.6% then followed by interns 12.1% and least by fourth year 8.1%.Majority of students belongs to clinical level 61.4% as compared to non-clinical 38.6%.

Is telling the victim to stay calm beneficial?	Frequency	Percent
NO	4	1.2
YES*	317	98.8
Can envenomation be cured by antivenom therapy?		
NO	51	15.9
YES*	270	84.1
Should the wound of bite site be rinsed (not scrubbed) with water as soon as possible		
NO	64	19.9
YES*	257	80.1
Are all snakebites associated with envenomation?		
NO*	237	73.8
YES	84	26.2
Should pressure immobilization bandages be applied around the bite site?		
NO	83	25.9
YES*	238	74.1
Should healthy volunteers suck the venom out of the wound?		
NO*	268	83.5
YES	53	16.5
Should the site of the bite be raised above the level of the person's heart?		
NO*	229	71.3
YES	92	28.7
Should tight bands (tourniquets) be applied around the limb proximal to the bite site?		
NO*	152	47.4
YES	169	52.6

Denotes correct response

Table II: Knowledge regarding first aid in case of snakebites

When the first aid knowledge among the clinical and nonclinical students was compared, correct response was found more among clinical students.

Knowledge	Clinical	%	Non Clinical	%	P
Is telling the victim to stay calm beneficial?					
Incorrect response	2	1.0	2	1.6	
Correct response	195	99.0	122	98.4	1
Can envenomation be cured by antivenom therapy?					
Incorrect response	11	5.6	40	32.3	
Correct response	186	94.4	84	67.7	<0.001

Should the wound of bite site be rinsed (not scrubbed) with water as soon as possible?					
Incorrect response	26	13.2	38	30.6	
Correct response	171	86.8	86	69.4	<0.001
Are all snakebites associated with envenomation?					
Incorrect response	21	10.7	63	50.8	
Correct response	176	89.3	61	49.2	<0.001
Should pressure immobilization bandages be applied around the bite site?					
Incorrect response	44	22.3	39	31.5	
Correct response	153	77.7	85	68.5	0.069
Should healthy volunteers suck the venom out of the wound?					
Incorrect response	8	4.1	45	36.3	
Correct response	189	95.9	79	63.7	<0.001
Should the site of the bite be raised above the level of the person's heart?					
Incorrect response	48	24.4	44	35.5	
Correct response	149	75.6	80	64.5	0.032
Should tight bands (tourniquets) be applied around the limb proximal to the bite site?					
Incorrect response	75	38.1	94	75.8	
Correct response	122	61.9	30	24.2	<0.001

Chi square test. Questions were adapted from a previous study [7, 14]

Table III : Comparison of first aid knowledge among clinical and non-clinical students

Signs and Symptoms	Clinical (n=197)	%	Non-clinical (n=124)	%	P
Swelling pain blistering					
NO	5	2.5	10	8.1	
YES	192	97.5	114	91.9	0.022
Blurring of vision					
NO	3	1.5	18	14.5	
YES	194	98.5	106	85.5	<0.001
Unconsciousness					
NO	19	9.6	16	12.9	
YES	178	90.4	108	87.1	0.362
Heaving of eyelids					
NO	15	7.6	29	23.4	
YES	182	92.4	95	76.6	<0.001
Weakness of neck muscle					
NO	31	15.7	48	38.7	
YES	166	84.3	76	61.3	<0.001
Difficulty respiration					
NO	16	8.1	34	27.4	
YES	181	91.9	90	72.6	<0.001
Severe muscle ache					
NO	25	12.7	27	21.8	
YES	172	87.3	97	78.2	0.031
Shock or collapse					
NO	12	6.1	24	19.4	
YES	185	93.9	100	80.6	<0.001

Chi square test. Questions were adapted from a previous study [15, 16]

Table IV: Medical students who recognized signs and symptoms of snakebite

As shown in table V, both clinical and non-clinical students have adequate knowledge regarding preventive measures against snake bite.

Preventive measures	Clinical (n=197)	%	Non-clinical (n=124)	%	P
Avoiding of storing paddy harvest inside houses					
NO	12	6.1	17	13.7	
YES	185	93.9	107	86.3	0.02
Controlling rodents inside the houses					
NO	4	2.0	14	11.3	
YES	193	98.0	110	88.7	<0.001
Storing firewood outside the houses					
NO	4	2.0	41	33.1	
YES	193	98.0	83	66.9	<0.001
Clearing an area, devoid of leaf litter and grass around the houses					
NO	3	1.5	6	4.8	
YES	194	98.5	118	95.2	0.08
Tapping the ground with a stick, while walking outside at dusk					
NO	5	2.5	14	11.3	
YES	192	97.5	110	88.7	0.001
Carrying a torch or a flame while walking outside at dusk					
NO	0		6	4.8	
YES	197	100	118	95.2	0.003*

Wearing protective shoes while walking outside at dusk and while farming activities					
NO	1	0.5	10	8.1	
YES	196	99.5	114	91.9	<0.001

Chi square test, *fisher exact test Questions were adapted from a previous study[13]

Table V: Knowledge of preventive measures among medical students

DISCUSSION

The current questionnaire-based, cross-sectional study was conducted among medical students of NGMC. This study assessed the knowledge about first aid, clinical diagnosis and preventive measure of snake bite among medical students. Total participation of students, both clinical and non-clinical were 321. We found that majority of students responded correctly regarding first aid knowledge in snake bite cases. On comparison among clinical and non-clinical group, considerable number of students among clinical group showed adequate knowledge of first aid as compared to non-clinical group which was also statistically significant. Similar observation was also reported by Subedi et al.[7] The relatively adequate knowledge about first aid among clinical students might be due to exposure to cases during clinical posting and studied in clinical text books which might be lacking in non-clinical students. Some traditional way of first aid techniques like healthy volunteers should suck the venom out of wounds, bite site should be raised above the level of the patient's heart and tight tourniquets should applied around the limb proximal to the bite site etc. also practiced in Nepal as reported by Pandey et al.[8] Application of deleterious methods of first aid was also reported by Halesha et al[9] in Indian study and Alirol et al[10] in South Asia region. In our study a high percentage of the participants both clinical and non-clinical group were aware of common signs and symptoms of snake bite. In a study conducted by Kharusha IK et al[11] among nursing students from Palestine also revealed correct response in recognizing signs and symptoms of snake bite. Awareness regarding clinical features of snake bite impacts great value as early recognition and early intervention might be lifesaving. In our study, we found significant number of students both clinical and non-clinical group having adequate knowledge regarding preventive measures against snake bite. Study conducted by Chaaithanya IK et al[12] in Maharashtra, India among the tribal community and health care providers, it was found that although both the group were aware of preventive measures against snake bite but majority of the tribal community is following unproven household methods (sprinkling of DDT, Thimet powder) for the prevention of snakebites as compare to healthcare providers which follows use of torch, wearing protective shoes, carrying wooden sticks which was comparable to our study. Similarly study conducted by Silva A et al[13] among Srilankan farmers found that preventive measure against snake bite is not practical. As we know that, snake bites can be especially dangerous to outdoor workers or people spending more time outside during the warmer months of the year. Most snakebites occur when people accidentally step on or come across a snake, frightening it and causing it to bite defensively. However, by taking extra precaution in snake-prone environments, many of these bites are preventable by following proper preventive measures.

LIMITATIONS

This is a single hospital based study, results may not be generalized among all medical students from different Medical College as study curriculum might vary as per University.

CONCLUSION

The overall knowledge of signs and symptoms and preventive measures against snake bite among clinical and non-clinical students was found comparable and adequate but regarding first aid knowledge, correct response was found more among clinical students as compare to non-clinical ones. Medical students are likely to encounter such cases in their professional and practical life in future so that this subjected could not be neglected and better to include this topic in curriculum from preclinical stage.

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