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Knowledge and Attitude on highly Venomous snakes by Questionnaire survey among the Students of Rajarata University, Mihintale, Sri Lanka

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Abstract

We interviewed 840 students from the Rajarata University, Mihintale, Sri Lanka, to reveal their knowledge and attitude about the Sri Lankan highly venomous snakes using a pre tested structured questionnaire. We found that many students feared on snakes. According to findings, the most commonly missed identified species was Sri Lankan Krait.Around 77% students said that snakes should be conserved, while three students said no due to fear of them. Because of their family members died due to snakes bite (Russles Viper Bite).Among the students 97% stated that they felt afraid of snakes. Approximately more than 80% of interviewees said that their fear depended on whether the snakes were venomous or not, and alsosaid fear depended on the way they move and size of the snake.The survey finding indicated that most of the students have an idea of the first aid for snakes bite except several questions such as apply a tourniquet, give some aspirin, give large amount of water and food and remove skin from where snake bite. However they have keen knowledge on preventing the snake bite. Students had positive idea on participating to an education programe on snakes (74%), that will help to conserve this remarkable fauna in Mihintale area and also that will help to conserve Sri Lankan snakes.

Keyword: Venomous snakes, snakes bite, first aid for snakes bite, conservation

Introduction

Sri Lanka is an Island that harbors a rich biodiversity, which includes high number of snakes[1-7]. Up to date, the number of snake species which have been found in Sri Lanka is 103 (Including the sea snakes). Scientifically 89 species have been identified as terrestrial snakes in Sri Lanka which belongto 11 families and 38 genera. Out of these, 49 species and 3 genera are endemic to Sri Lanka. *Aspidura, Balanophis*and *Pseudotyphlops* are the three genera[3,4]. Snakes are important for many ecosystems in Island wide and also they play major role in rodent control, medicinal purpose and cultural values. Despite their importance, snake populations are declining locally in response to habitat degradation due to rapid development in Sri Lanka, killing snakes on sight due to fear of snakebite and biocide, considerable number of snakes are also killed on roads by being run over by road traffic[4,7-11]. Among them, direct human killing has been identified as a major reason of population decline of Sri Lankan snakes. The majority of, mostly groundless, kills of snakes occurred in rural areas, where human deaths occur from snake bites may be common. Sri Lanka is one of popular South Asian countries for considerable number of human deaths due to snake bites. Reliable data on morbidity and mortality due to snake bites in Sri Lanka are scarce because of the lack of proper community-based surveys, however existing reporting system of snake bite in Sri Lanka relies only on hospital based data that around 37000 snakes bites and nearly 132-194 estimated deaths annually[12,13]. Of the five highly venomous terrestrial snakes living in the Sri Lanka, that including *Naja naja* (Indian Cobra), *Bungarus caeruleus* (Common Indian krait), *Bungarus ceylonicus* *(Sri Lankan Krait), *Daboia russelii* (Russell's Viper), *Echis carinatus* (Saw-scaled Viper). However the following snakes cause severe envenoming, thus these *Hypnale hypnale* (Merrem's Humped-nosed Pit Viper), *Hypnale nepa* (Millard's Humped-nosed Pit Viper), *Hypnale zara*, *Trimeresurus trigonocephalus* (Green pit Viper) and the entire sea snakes category under medically important species live in Sri Lanka. Island widely hospital based epidemiologic studies revealed that most envenomed patients had signs of heomo toxicity and neurotoxicity respectively usual consequence of Russell's Viper and Common Indian krait bites[14-17]. According to kellert and berry[18], Snakes were the fifth most dislike fauna in Animal kingdom due to fear. Altogether it is a challenge to educate people (University Students) about snakes because of the fear they have towards snakes. Most people know little about snakes. The lack of knowledge is dangerous for both human and snakes because when people get frightened they tend to make irrational decisions that often results in snake death or increased risk of snake bite, this also became a human snakes conflict[19]. Within Rajarata University premises there are comparative number of snakes species recorded. This is due to the university boundary borders with the Mihintale Sanctuary. These snakes are killed by student son sight (figure-1). Data collection on this was a very difficult task, because of the fully information and lack of personnel at ground level students to record kills. Authors observed during 2007-2012 period there are 24 the non-venomous and venomous snake kills (table-1). Here this information gives us useful data to design this research based on questionnaire survey.

Table-1
Snakes killed and rescue data on 2007 to 2012 period in the University premises

Snake species	Year											
	2007		2008		2009		2010		2011		2012	
	Killed	Rescue	Killed	Rescue	Killed	Rescue	Killed	Rescue	Killed	Rescue	Killed	Rescue
Family - Elapidae												
Naja naja (Indian cobra)		1			1				1	1		
Bungarus caeruleus (Common krait)												
Family - Viperidae												
Daboia russelii (Russell's viper)	1		1	1		1	1		1			
Hypnale hypnale (Merrem's hump-nosed viper)	1		1		1	1		1	1			
Family - Uropeltidae												
Rhinophis oxyrynchus (Schneider's earth snake)			1			1				1		
Family - Colubridae												
Amphiesma stolatum (Buff striped keelback)					1							
Boiga ceylonensis (Sri Lanka cat snake)		1								1		
Chrysopelea ornate (Ornate flying snake)		1				1						
Coeloganthus helena (Trinket snake)							1		1			
Dryocalamus gracilis (Scarce bridal)					1							
Dryocalamus nympha (Bridal snake)			1									
Lycodon aulicus (Wolf snake, house snake)	1	1						1				1
Oligodon arnensis (Common kukri snake/ Banded Kukri)	1					1					1	
Sibynophis subpunctatus (Jerdon's polyodent)					1				1			3
Coelognathus Helena (Trinket Snake)								1				
Macropisthodon plumbicolor (Green Keelback)						1						
Xenochrophis piscator (Checkered Keelback)									1			
Family - Boidae												
Python molurus (Indian python)			1						1			3
Family Cylindrophiidae												
Cylindrophis maculatus (Sri Lankan Pipe Snake)												1

In Sri Lanka, there are no proper conservation programmes that focused on snake conservation. Therefore we planned to develop a snakes education programme within the university students. The main goals of this study are to get an idea of knowledge, conservation attitudes and first aid about snakes and to determine a plan to start an education programme in Rajarata University students' community. This will help to formulate future awareness programmes on conservation and management of snakes in Rajarata University.

Methodology

This study was conducted in Rajarata University of Sri Lanka adjacent to the Mihintale Sanctuary and Mihintale Village, Mihintale, Anuradhapura, North Central Province, Sri Lanka. Questionnaires were conducted during the period of 2012 January to April. We were referring to 840 students as oral interviews to gather data. The oral interviews consisted of open-ended questions that were designed to reveal university students' identification knowledge on highly venomous snakes, knowledge in snake bite prevention, experience they have had about snakes and finally their knowledge about first aid for snakes bites. All informants were interviewed on a one-to-one basis in relaxed and informal settings, usually in their hostels rooms. We showed collective subjects photograph of highly venomous snakes together with non-venomous snakes for identification. We also asked questions about the importance of snakes in the environment as to get information about their general knowledge. At the end of each interview, we asked if any student were interested in attending a conservation awareness program about Sri Lankan snakes. If all the sections were applicable, it took approximately 25-35 minutes to complete.

We used the chi squared test to determine if there were any difference in correct identification of snakes between demographic group and sex.

Results and Discussion

A total of 840 students were interviewed during the research period, male female ratio was around 1:3. Answers were analyzed as a whole and by sex because there were no significant differences in answers from other demographic groups. Section one consists of five questions (question no 1-5) that consisted simple demographic questions. Interviewees provided their Name Address, District, Age, Province and their faculty in the university because in case it would be required to contact them for further research.

Section 2: was majorly for identification of highly venomous snakes that consists of four questions (question no 6-9). Question six was for identification of highly venomous snakes, responsesare given in table-2. Answers were analyzed as a whole and only by sex because there were no significant differences in answers from other demographic factors such as age group. The most commonly miss identified species were *Bungarusceylonicus* (Sri Lankan Krait). Out of all the interviewerswere able to identify the Indian cobra except one male student.

Question 7: Common Rat Snakes (*Ptyas mucosa*) was the first named by all the interviewees seeing inside the University premises. Also all interviewees reported seeing Green Wine Snake (*Ahaetullanasuta*), Indian Rock Python (*Python molurus*) [In the natural environment (32 students), in captive such as National Zoological Garden, Snake charmers and Someone's hand (680 Students)], Brown Wine Snake (*Ahaetullapulverulenta*) (132 Students), Cat Snakes (*Boiga*sp.) (9 Students). When the interviewees saw the snake, the snakes usually moved away from them self (123 Students), the snakes sitting still (19 Students), biting or aggressive strike position (11 Students). Most students said that they have seen snakes on the road, open area and in the house and few in the forest.

Question 8: Among the students 97% stated that they felt afraid of snakes. Approximately more than 80% of interviewees said that their fear did not depended on whether the snake is venomous or not, but it depended on the way they move and size of the snake.

Question 9: Only 37 students have touched at least one snake out of them five students have touched more than one snake. Most of the students have touched non-venomous snakes and it was Indian Rock Python. Two students also said that they have had touched moderate venomous Merrem's Humped-nosed Pit Viper. Among these student 75% were representing the Faculty of Applied Sciences. Because of this students have several field causes related to herpetology as well as field visits with wild life experts.

Section three of the quaternary was consisting of six questions for conservation measures (figure-2). Around 77% students said that snakes should be conserved, while 44 students say no due to fear of them. Among them three students' family members has died due to snakes bites (Russles Viper Bite) and 17% students said that they have no idea on that. Eight hundred thirty five students said that snakes were important to environment balance, while two students said that they were not. Three students didn't have an idea of that. Most of the students know Sri Lanka consists of high biodiversity but most of them didn't know Sri Lanka together with Western Ghats is a biodiversity hotspot region.

Table-2
Analysis of answers by interviewees to oral interview question 6

	Proportion Answering Correctly			**Proportion Answering wrongly**		
Snakes to be Identification	Total	Male	Female	Total	Male	Female
Indian Cobra	839/840	219/220	620/620	1/840	1/220	0/620
Russell's Viper	480/840	160/220	320/620	360/840	60/220	300/620
Saw scaled viper	488/840	208/220	280/620	352/840	12/220	340/620
Common krait	200/840	108/220	92/620	640/840	112/220	528/620
Sl Krait	120/840	67/220	53/620	720/840	153/220	567/620

And also they have no knowledge on how many snakes inhabiting Sri Lanka. The top reason for 'why snakes were considered personally important' to interviewers included pest/rodent control specially in house rat control (800 students), to keep the food chain and food web in balance (789 students), Sri Lankan cultural value (45 students) or to medicinal purpose (9 students). They have observed many road kills of reptiles and amphibians in and around Mihintale area. According to the observations made by several students, most of the snakes and other reptiles die due to man-made fires for modern *chena cultivation* and other farm practices in their village areas. One student said that use of rotary machines and four wheel tractors has contributed to the killing fossorial snakes when ploughing. Students who are following the environment sciences have a higher knowledge on how misuse of agrochemical and weedicides affect the herpetofauna through the food chain and food web. The major reason to consider snakes as a threat to human is that they bite and kill people who live in rural area (446 students). More than 23% students said that due to clearance of natural forest/habitat, these snakes are now adapted to live in home gardens, cultivation land and plantation.

Question 15 and 16: Thirty-two students reported that they killed snakes and around 170 students have been seen snakes killed by others (In house and their villagers). Most of the students have killed snakes to avoid bites and due to scare. Most students (84%) said that they prefer to attend a conservation awareness program about snakes.

The final section of the question sheet was the first aid for snakes bite and how to prevent snakes bites. The survey finding indicated that most of the students have an idea of the first aid for snakes bites except several questions such as apply a tourniquet, give some aspirin, give large amount of water and food and remove skin from where snake bite. However they have keen knowledge on preventing the snakes bite. The widespread developing inside the university premises and destruction, extensive environmental perturbation, drought and flood conditions inside the university often bring students and snakes together under unusual circumstances. Therefore, rapid developments are sometimes associated with killing snakes on sight. As summarizing of their answers they said that, Wearing appropriate protective shoes or boot, that provide some level of protection against snakebites when walking through bushes area and forest area. Also should avoid putting our hands and feet in places that cannot be visually inspected for goods and other things. In an event where a snake is encountered in the walking path, it is best to slowly move out ofthe snake's strike range.

Conclusion

We were able to gainreliable information on students' knowledge and attitude on highly venomous snakefauna of Sri Lanka. Survey results of this interview administrated that in certain situations students are not concerned about the snakes and some students do not even like to see these creatures. The most commonly missed identifiedspecies was Sri Lankan Krait. Of the respondents, 97% stated that they felt afraid of snakes and how ever they (77%) wanted to conserve this remarkable animal. Thirty-two students reported that they killed snakes on sight due to fear of snakes bite. Most students (74%) said that

Figure-1

Snakes killed by students inside the University. (A- *Daboia russelii*, B- *Lycodon aulicus*, C- *Oligodon arnensis*, D- *Xenochrophis piscator*, E- *Sibynophis subpunctatus*, F-*Naja naja*, G- *Python molurus*, H- *Rhinophis oxyrhynchus*)

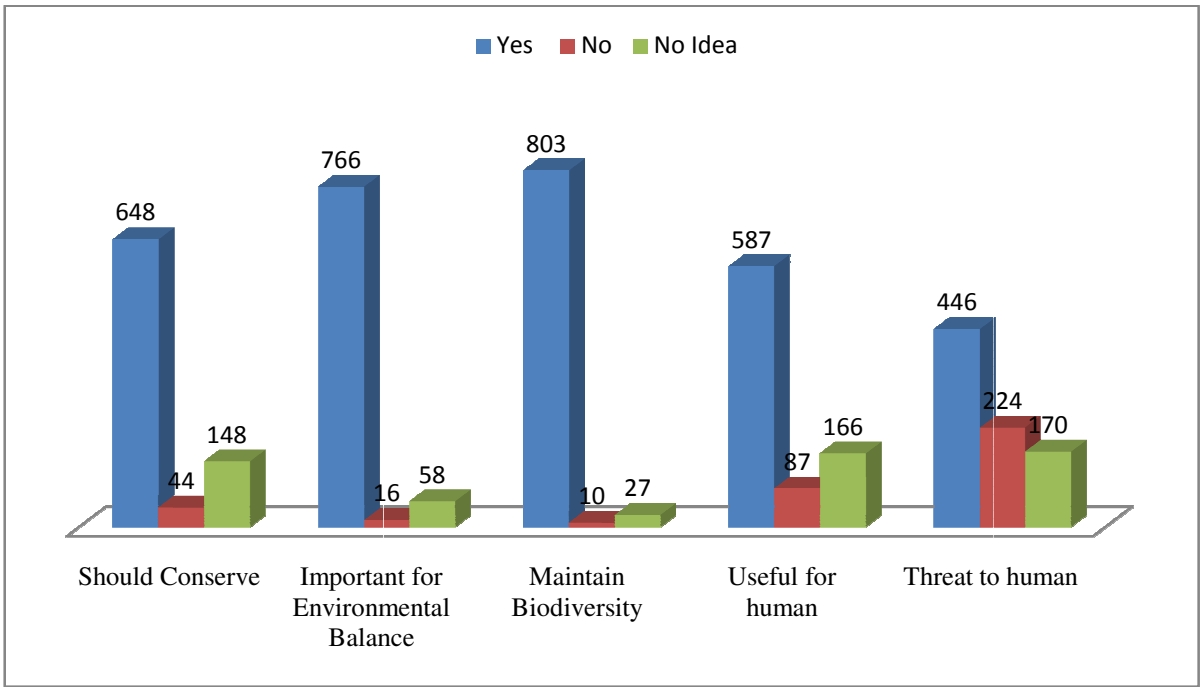

Figure-2
Analysis of knowledge on conservation measures among the students

they prefer to attend a conservation awareness program about snakes.Therefore it is important to conduct a series of educations and awareness programes on snakes among the students.

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