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ORIGINAL ARTICLE

Knowledge of Snake Bite Management among Health Service Providers at a Rural Community of Bangladesh

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Abstract

Background: Snake bile is a very common incidence among the rural people. **Objective:** This study was aimed to assess the pattern of snakebite in rural community through community engagement. **Methodology:** It uses the methodological triangulation qualitative and quantitative approach as well as a case study design in analyzing data, whereby the exploratory-descriptive design is followed. The findings from survey study on snake bite have been elicited from face to face interview with 243 number of medical professionals/health service providers consisting of 113 number of MBBS doctors, 86 number of nurses and 46 number of other health practitioners. The study area consisted of 5 zilla sadar hospitals and 15 upazilla health complexes. We purposively select the 243 sample(Doctors, Nurses, Paramedics ,Others) from the selected districts and its consisting random upazillas from the govt. sector hospitals keeping in mind gender balance (Male -Female) as a primary total target population. So in total, 5division and itsconsisting random upazilas hospital including union health complex hospital personnel will be interviewed throughout mention areas of Bangladesh. **Result:** Most of the health professionals (93.8%) stated that the existence of facilities in their respective hospitals is not adequate to manage the treatment of snake bite victims. Of the total number of medical personnel - around 30.0% of the health professionals had the opportunity to manage snake bite in their respective span of service (50.4% of MBBS docs + 11.6% of nurses + 11.4% of other practitioners).The findings show that majority of 87.6% of doctors, 85.0% of nurses and 95.5% of other practitioners mentioned rainy season as the most prevalent time for occurrence of snake bite in rural areas of Bangladesh. As for whether all snake bites are poisonous- around 17.0% of doctors followed by 18.6% of nurses and 16.0% of other practitioners are found to have wrong notion about mentioning that all snake bites are poisonous but in reality this is not true. **Conclusion:** There is insufficient knowledge, skill and experience of how to treat snake bite victims. [*Journal of Current and Advance Medical Research 2017;4(1):17-22*]

Keywords: Snake bile; rural community; management

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Introduction

Snake bite is a result of an unfortunate accidental interaction between a snake and a human victim[1]. It is the single most important toxin-related injury, causing substantial mortality in many parts of the Africa, Asia, and the Americas. Snake bite is a burning public health issue in Bangladesh as a disaster prone country and its geographical position and climatic conditions[2]. Snake bite, particularly in the rural Bangladesh is a major cause of mortality and morbidity, and it has a significant impact on human health and economy through treatment related expenditure and loss of productivity[3]. Most often the victim of snake bite is a poor, young and active individual.

Biting occurs mostly when individuals are at work, engaging in activities such as cultivation, fishing, plantation, wood collection, or tending crops or gardens. Among snake bites 30 (60%) were venomous and 20 (40%) snake bite cases were non-venomous. The common victims were farmers (53%) and housewives (13%). The bites were commonly encountered during rural foot walking (32%) followed by sleeping (15%). 55% were bitten during outdoor and agriculture related activities. 65% had sustained bite in lower limbs[4]. The majority (82%) of the snakebites were observed during the rainy season. Total 98% patients applied multiple tight tourniquets in the affected limb[5]. A common local practice (seen in 85%) was to receive pre hospital treatment from 'Ohzas'.

In the absence of any epidemiological survey data, there was a dearth of information about snake bite from Bangladesh. During 1988-89, a small survey was conducted in 50 Upazillas (sub-districts) of Bangladesh recorded 764 occurrences of snake bite, of which 168 (22%) died and a postal survey conducted in 21 of the 65 administrative districts in 1995–1996 estimated an annual incidence of 4.3 per 100,000 populations and a case fatality of 20%[3]. In this study, Chittagong Division and Barisal Division had the highest annual incidence of snake bites[6]. These estimates were based on data from small studies and due to methodological limitations; the estimates were unlikely to be representative of the whole country population. Treatment of snake bite was largely dominated by traditional snake charmers (Ozha). People used to be content with their traditional methods of tight tourniquet, multiple incisions at bite site, application of herbal products and different rituals. It was felt that the skill and knowledge of management has to be transmitted amongst the general physicians attending the victims at the primary level of health care. This study was undertaken to assess the pattern of snakebite in rural community through community engagement.

Methodology

It uses the methodological triangulation qualitative and quantitative approach as well as a case study design in analyzing data, whereby the exploratory-descriptive design is followed. The findings from survey study on snake bite have been elicited from face to face interview with 243 number of medical professionals/health service providers consisting of 113 number of MBBS doctors, 86 number of nurses and 46 number of other health practitioners. The study area consisted of 5 zilla sadar hospitals and 15 upazilla health complexes. We purposively select the 243 sample (Doctors, Nurses, Paramedics, Others) from the selected districts and its consisting random upazillas from the govt. sector hospitals keeping in mind gender balance (Male - Female) as a primary total target population. So in total, 5division and its consisting random upazilas hospital including union health complex hospital personnel (From District, Upazilla & Community Hospitals) will be interviewed throughout mention areas of Bangladesh. It uses the methodological triangulation qualitative and quantitative approach as well as a case study design in analyzing data, whereby the exploratory-descriptive design is followed. This study carry out to see the common type of snakes in local area with clinical presentations, complications and outcome of snake bite patients in service. Firstly, all eight administrative divisions were selected. Afterwards, one districts and upazila from each selected division are randomly selected and also focus to be given in the Community clinic is the lowest administrative unit in both Urban and rural areas in Bangladesh. After obtaining the respondent's written consent, information was collected on snake bites and their consequences, and treatment seeking behavior following snake bites from the respondents. The respondents answered for every member who spent any part of the past year in the selected hospital. All information were collected using an interviewer administered pre-tested partially close ended questionnaire through face to face interview. Frequency of snake bite(s) on each member and their length of management in months in that hospital during past 12 months were collected from the respondents. Later on, person-time was converted from person-month to person-years to calculate annual incidence density of snake bites in rural Bangladesh.

Result

The findings from survey study on snake bite have been elicited from face to face interview with 243 number of medical professionals/health service providers consisting of 113 number of MBBS doctors, 86 number of nurses and 46 number of other health practitioners. The study area consisted of 5 zilla sadar hospitals and 15 upazilla health complexes. The field/survey findings are illustrated under the following tables.

Most of the health professionals (93.8%) stated that the existence of facilities in their respective hospitals is not adequate to manage the treatment of snake bite victims. Of the total number of medical personnel - around 30.0% of the health professionals had the opportunity to manage snake bite in their respective span of service (50.4% of MBBS docs + 11.6% of nurses + 11.4% of other practitioners). Of the total 243 health professionals only 17.3% had scope to manage snake bite victim/case last one year and only 13.2% of them had experienced in the management of nocturnal snake bite case.

Table 1: Receipt of Training and Need for Management on Snake Bite

Receipt of training and management on snake bite	Type of Health Service Providers							
	Doctor (n=113)		Nurse (n=86)		Others (n=44)		Total (n=243)	
	Yes	No	Yes	No	Yes	No	Yes	No
Receipt status of training on snake bite	15.0%	85.0%	8.1%	91.9%	15.9%	84.1%	12.8%	87.2%
Need for training on snake bite management	85.0%	7.0%	90.7%	3.3%	90.9%	1.6%	88.1%	11.9%
Existence of adequate facilities in hospital for snake bite management	8.8%	91.2%	5.8%	94.2%	.0%	100.0%	6.2%	93.8%
Management any snake bite case yet	50.4%	49.6%	11.6%	88.4%	11.4%	88.6%	29.6%	70.4%
Management of any snake bite last one year	30.1%	69.9%	3.5%	96.5%	11.4%	88.6%	17.3%	82.7%
Any experience on management of nocturnal snake bite case	21.2%	78.8%	5.8%	94.2%	6.8%	93.2%	13.2%	86.8%

Of the 72 health professionals who experienced management of snake bite case, only 55.6% of them had managed snake bite victim/case last one year and 40.3% of them had experienced in the management of nocturnal snake bite case.

Table 2 shows the percentage of statement/ responses of medical/ health service providers with regard to their knowledge on signs and symptoms of poisonous/venomous snake-bite. It is observed that the doctors could indicate most of the signs and symptoms (72.0% to 94.0%) of snake bite followed by the nurses who could indicate around 50% to 90% of the signs and symptoms of snake bite and other practitioners could indicate signs and symptoms of snake bite ranging from 54.0% to 89.0%.

It is seemingly evident from the findings that the MBBS doctors are more knowledgeable about the signs and symptoms of snake bite victims than those of the knowledge level of nurses and other practitioners on signs and symptoms of snake bite. However findings show that health professionals are not aware of all of the signs and symptoms of snake bite. So, refreshers courses and practical learning lessons may be imparted to medical professionals to understand the signs and symptoms of snake bite both venomous and non-venomous easily and effectively.

Table 2: Percentage of Health Service Providers' Knowledge on Signs and Symptoms of Poisonous Snake Bite

Knowledge on signs and symptoms of poisonous snake bite	Type of health service providers								
	Doctor (n=113)			Nurse (n=86)			Others (n=44)		
	Yes	No	DK	Yes	No	DK	Yes	No	DK
Swelling with pain and blistering	92.9%	6.2%	.9%	82.6%	15.1%	2.3%	88.6%	6.8%	4.5%
Dizziness and vomiting	92.0%	6.2%	1.8%	89.5%	8.1%	2.3%	88.6%	4.5%	6.8%
Blurring of vision	92.0%	6.2%	1.8%	90.7%	7.0%	2.3%	84.1%	9.1%	6.8%
Convulsion	78.8%	18.6%	2.7%	75.6%	20.9%	3.5%	65.9%	18.2%	15.9%
Unconsciousness	85.0%	10.6%	4.4%	89.5%	9.3%	1.2%	72.7%	11.4%	15.9%
Heaviness of eyelids	85.0%	6.2%	8.8%	76.7%	7.0%	16.3%	72.7%	2.3%	25.0%
Weakness of neck muscle	81.4%	7.1%	11.5%	73.3%	11.6%	15.1%	68.2%	2.3%	29.5%
Difficulty in swallowing	74.3%	13.3%	12.4%	64.0%	18.6%	17.4%	61.4%	9.1%	29.5%
Nasal regurgitation/voice	72.6%	15.0%	12.4%	59.3%	23.3%	17.4%	61.4%	6.8%	31.8%
Difficulty in respiration	82.3%	8.0%	9.7%	87.2%	9.3%	3.5%	79.5%	4.5%	15.9%
Bleeding from gum and vomiting	66.4%	19.5%	14.2%	55.8%	26.7%	17.4%	54.5%	15.9%	29.5%
Persistent bleeding from bite site	80.5%	14.2%	5.3%	82.6%	8.1%	9.3%	84.1%	4.5%	11.4%
Severe muscle pain	83.2%	8.0%	8.8%	67.4%	10.5%	22.1%	63.6%	11.4%	25.0%
Dark colored urine	71.7%	12.4%	15.9%	46.5%	29.1%	24.4%	52.3%	13.6%	34.1%
Scanty or no urine output	75.2%	9.7%	15.0%	50.0%	23.3%	26.7%	54.5%	11.4%	34.1%
Shock/collapse	93.8%	3.5%	2.7%	87.2%	5.8%	7.0%	84.1%		15.9%

DK- don't know even after being prompted

Table 3 shows the responses of medical/health service providers with regard to their knowledge on type of lab investigations conducted for diagnosis of snake bite. Majority of doctors mentioned about eight type of lab investigations ranging from 47.0% to 86.7% followed by nurses ranging from 51.2% to 88.4% and other health practitioners mentioned about lab investigations ranging from 43.0% to 61.4%.

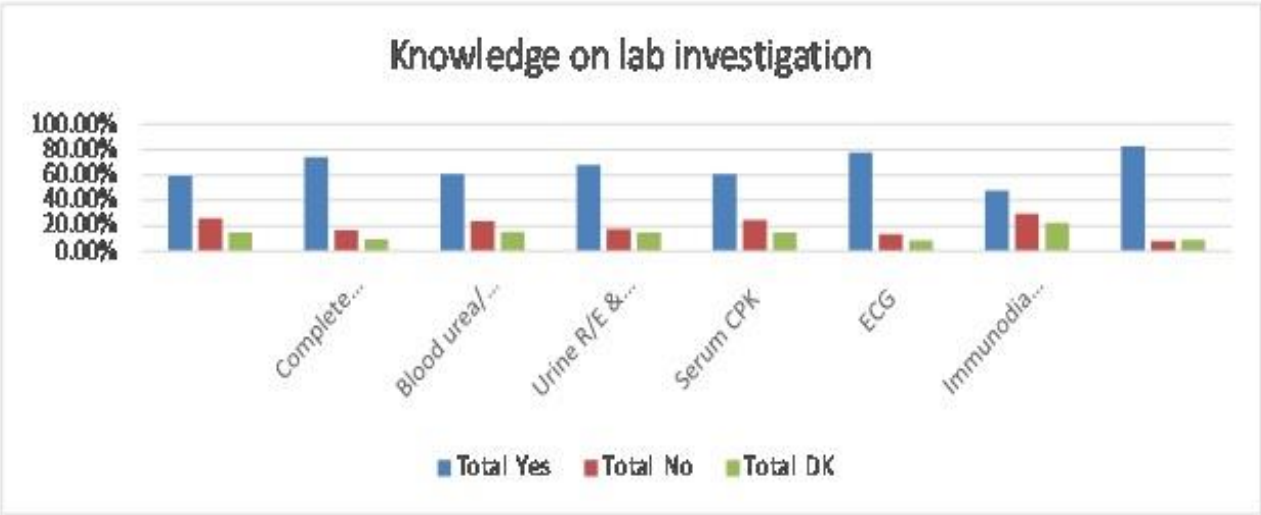

Figure I: Knowledge of Lab Investigations

In sum, it is observed that almost 8.2% to 25.9% health professional are found to have wrong notion about some of the lab investigations followed by 9.1% to 15.0% of health professionals did not make any response about some of lab investigations. This is a clear indication that the health professionals as whole are not aware of different lab investigations needed for diagnosis of snake bite. So, it is obvious from findings that need for more adequate information and awareness amongst the medical professionals should be ensured for enhancing their knowledge about lab investigations for proper and prompt diagnosis of snake bite.

Table 4 provides information with regard to knowledge level of health professionals about complication of injecting anti-venom to snake bite victims. The findings show about 61.1% to 70.8% of the doctors could mention all the three complications induced due to injecting anti venom to the snake bite victims followed by 38.4% to 50.0% of the nurses could mention about complication likely to occur after the injection of anti-venom to the snake bite victims and only 43.2% of the practitioners could mention about complication of anti-venom injection.

Table 3: Knowledge on type of lab investigation for snake bite by health service providers

Knowledge on lab investigation	Type of health service providers								
	Doctor (n=113)			Nurse (n=86)			Others (n=44)		
	Yes	No	DK	Yes	No	DK	Yes	No	DK
20 minutes whole blood clotting	61.9%	29.2%	8.8%	62.8%	19.8%	17.4%	45.5%	29.5%	25.0%
Complete blood count	77.9%	15.0%	7.1%	81.4%	12.8%	5.8%	50.0%	27.3%	22.7%
Blood urea/ creatinine & electrolyte	64.6%	30.1%	5.3%	66.3%	11.6%	22.1%	40.9%	31.8%	27.3%
Urine R/E	80.5%	15.0%	4.4%	62.8%	17.4%	19.8%	45.5%	22.7%	31.8%
Serum CPK	60.2%	35.4%	4.4%	68.6%	11.6%	19.8%	45.5%	22.7%	31.8%
ECG	85.0%	11.5%	3.5%	80.2%	14.0%	5.8%	54.5%	18.2%	27.3%
Immunodiagnosis	46.9%	38.1%	15.0%	51.2%	22.1%	26.7%	43.2%	22.7%	34.1%
Blood grouping & Rh typing	86.7%	9.7%	3.5%	88.4%	3.5%	8.1%	61.4%	13.6%	25.0%

It is also observed that the health professionals as a whole could mention about 49.8% to 57.6% of the complication of anti-venom injection. So this implies that health professionals should be more informed about complication of anti-venom injection so that fatal consequence from venomous snake bite may be effectively reduced and controlled.

Table 4: Knowledge about complication of injecting anti-venom

Knowledge on complication of injecting anti-venom	Type of health service providers								
	Doctor			Nurse			Others		
	Yes	No	DK	Yes	No	DK	Yes	No	DK
Early anaphylaxis (urticaria, dyspnoea and hypotension)	70.8%	8.0%	21.2%	47.7%	4.7%	47.7%	43.2%	4.5%	52.3%
Diarrhoea and vomiting	61.1%	15.0%	23.9%	38.4%	14.0%	47.7%	43.2%	9.1%	47.7%
Pyrogenic reaction(fever &chill)	68.1%	2.7%	29.2%	50.0%	2.3%	47.7%	43.2%	4.5%	52.3%

Discussion

Snake bite in Bangladesh is a public health problem. The lack of anti-venom makes the case worsier. There is insufficient knowledge, skill and experience of how to treat snake bite victims. It is recommended that training package (based on the WHO AFRO guidelines/National Guideline) should be given to HPs, including first-aid and preventive measures (for local community education), emphasizing the need for early referral

and appropriate care, case documentation and reporting and public awareness creation and preserving the dead snake inform aldehyde, labeled with patient's details for later expert identification. A change of attitude on traditional knowledge by training or awareness should be provided to traditional healers and community elders.

Furthermore, the government should take urgent measures to ensure the sustainable availability of appropriate type of anti-venom which is specific to locally know venomous snake in the country. Finally, local production of anti-venom from most dangerous species in the country is recommended and the government should facilitate technology transfer from developed country for local anti-venom production.

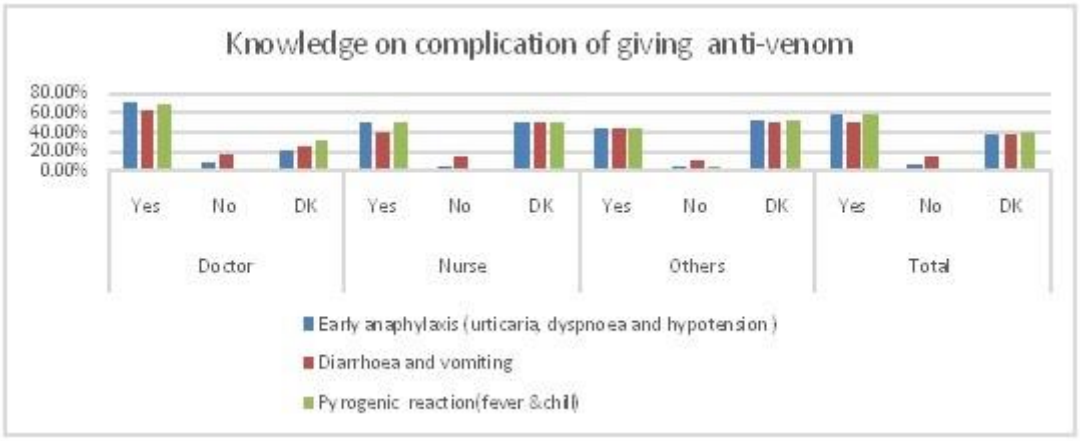

Figure II: Knowledge on Complications of giving Anti-Venom

Conclusion

There is insufficient knowledge, skill and experience of how to treat snake bite victims. It is recommended that training package (based on the WHO AFRO guidelines) should be given to HPs, including first-aid and preventive measures (for local community education), emphasizing the need for early referral and appropriate care, case documentation and reporting and public awareness creation and preserving the dead snake inform aldehyde, labeled with patient's details for later expert identification.

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