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Assessment of Health - Seeking Behaviour among Snakebite Victims in a Rural Community of Kaltungo Local Government Area, Gombe State, Nigeria

Article by Rabiu Ibrahim[1], Karat D. I[2], Ismail Y. Y[3], Danladi U. M[4]
[1,2]*Department of Community Medicine, Gombe State University*
[3]*College of Medical sciences Gombe state University*
[4]*Department of Biological Sciences, Gombe State University*
E-mail: ibrahimrabiu69@gmail.com[1]

Abstract

Background of the study: *Snakebite is one of the devastating NTDs, the outcome of its management depends on the health-seeking behavior of the victims. There are many factors that influence healthcare seeking behavior in general, which of these factors that influence the health-seeking behavior of snakebite victims in communities of Kaltungo local government area is not clearly known.*

Aim: *The aim of this study is to assess predisposing factors to snakebite, and the health-seeking behavior of the snakebite victims in kaltungo LGA, Gombe.*

Methodology: *A descriptive cross-sectional study was conducted among 398 participants in a community of Kaltungo local government area. Pre-tested and standardized questionnaires were used to obtain relevant information by trained research assistants.*

Result: *Visits to traditional healers (48%) was most common source of healthcare sought after snakebite. This was followed by visits to hospital (41.7%), spiritual healers (4.8%) and Chemist (5.5%). About a third (33.2%) of the respondents considered treatment effectiveness as the most important factor affecting health-seeking behaviour. This was followed by affordability (20.9%), proximity (11.8%), relative cost of treatment (10.8%) and service availability (6.0%). Educational level ($X^2 = 7.584$, $p=0.05$) is significantly associated with seeking healthcare from formal source*

Conclusion*: Appropriate health-seeking behaviour among snakebite victims was found to be high among the educated. Thus, those with lower levels of education need to be targeted during health education program to improve health-seeking behaviour among snakebite victims. In addition, health insurance schemes should be extended to cover more of the population.*

Keywords: *health-seeking; behaviour; neglected tropical diseases; snakebite victims; outcome; rural.*

Introduction

Snakebites are environmental and occupational health hazards that mainly affect rural population worldwide[1]. And because of serious misreporting, the true worldwide burden of snakebite is not known which is why WHO in 2017 recognized snakebite as one of the Neglected Tropical Disease (NTD)[2,3]. It is a serious and important problem affecting rural areas of tropical and subtropical developing countries[4]. Snakebites are more frequent in young men and generally occur on lower limbs. The incidence of snakebite is higher during the rainy season and during the periods of intense agricultural activity. It is an occupational injury affecting farmers, plantation workers, herders and fishermen. It is common among agricultural workers because they don't usually take necessary precautionary measures to avoid snakebite such as wearing gloves, boots etc. Open style habitation and the practice of sleeping on floor also expose people to bites from nocturnal snakes[2, 4].

The Outcomes of snakebites could be associated with the health seeking behaviour of victims following the bite, and the decision on health seeking behaviour can be influenced by the victims' social and natural environment. The understanding of health care seeking behaviours

is critical to determine how it affects the diagnosis and the treatment of snakebite in this context. Healthcare seeking behaviour (HSB) has been defined as, "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy"[5].

Health-seeking behaviour can be discussed at the level of households and health systems. At the level of the household, health may be dependent on the availability of time, resources, priority allocated to health, cultural norms and access to finances; at the level of health system, issues like quality of health care delivery, that is human resources and organizational arrangements and environment influences care seekers' decisions. [6]

This study was conducted to assess factors predisposing to snakebite and health-seeking behaviour of snakebite victims. The strength of this study was the ability to measure multi outcomes and risk factors within the period of this study and within the limited resources at our hand. And also, we are able to hypothesized factors responsible for health seeking behaviour among snakebite victims. Potential limitation of this study is the fact that some of the snakebite victims in the household might have moved to a distance location and could not be reached during the period of data collection, while others had died.

Material and methods

Study design

A descriptive cross-sectional study was carried out in a randomly selected community of Kaltungo local government area of Gombe state. It was conducted during the month of August 2019 which involved the collection of information through the use of structured questionnaire to assess respondents on the study objectives.

Study area

Kaltungo is a Local Government Area (LGA) in Gombe State, of North-eastern Nigeria with an area of 881km^2. It has an estimated population of 220,900 (2016 population projection), mostly subsistent farmers and scattered nomads. It has a total of 10 political wards comprising of many communities. It has vast fertile land for cultivation, with rainy season spanning from May and extends to late October. Some areas are mountainous and rocky making the practice of terrace farming a key. There are many types of vegetation in this area; the one worth mentioning is the Palmyra Palm trees (*Borassus aethiopum C. Martins*) which are of many economic values. The trunk and leaves of the Palmyra palm is used in roofing houses, the fruit is eaten fresh because it is juicy and sweet while the seed is further left to germinate into a type of root tuber and eaten as a delicacy or even as a meal. Thus, it has become a means of livelihood in Kaltungo community as such many people go about especially at night, gathering the Palmyra palm in one way or another putting them at risk of snakebite.

Study population

Study population were resident of the selected community who are 15 years and above as of the time of this study. It excluded those who fulfilled the inclusion criteria but have spent less than 6 months in the study area**.**

Sample size determination

The calculated sample size was 362 using the Cochran's formula and with a non- response of 10%, minimum sample size was 398.

Sampling method

A multi stage sampling technique was used to select a ward in the first stage from the list wards using simple random sampling technique by balloting. In the second stage, a community was selected. Systematic random sampling was used to select the study households. Where there is more than one eligible participant in a household, one was randomly selected.

Data collection

The questionnaire was pretested in a community in Kwame local government with 60 participants. Questionnaires were administered after obtaining verbal consent with the aid of 5 research assistants who were trained for 5 days.

Data analysis

The data were coded, checked, and processed with version 20 Statistical Package for the Social Sciences. Descriptive statistics, such as means, standard deviations (SD), frequencies, and proportions, were used to summarize variables. Chi-square tests were used to identify

associations between categorical variables using a P-value of 0.05 at 95% confidence interval as the significance level.

Ethical consideration

Institutional approval for the conduction of the study was obtained from Gombe state ministry of health. The study was conducted according to the Principles of the Helsinki Declaration. Before the questionnaire was applied to the respondents, permission was obtained from the Kaltungo local government primary health care department and verbal consent was obtained from all the respondents who participated in the study. The respondents were specifically informed regarding their entitlement to information regarding the study, voluntary participation, privacy issues, their right to refuse to divulge information, and to terminate their participation at any time.

Results

Table 1. Socio-demographic characteristics

Characteristics	Frequency (n=198)	Percentage (%)
Age		
≤20		
21-30	61	15.3
31-40	209	52.5
41-50	62	(15.6
51-60	35	8.8
>60	22	5.5
Sex		
Male	207	52.0
Female	191	48.0
Marital Status		
Single	242	60.8
Married	143	35.9
Divorced	7	1.8
Widowed	6	1.5
Tribe		
Tangale	32	82.4
Fulani	3	0.8
Hausa	15	3.8
Others	52	13.1
Occupation		
Indoor	360	90.5
Outdoor	38	9.5
Level of Education		
Literate	384	96.5
Illiterate	14	3.5

Table 2. Risk factors associated with snakebite

Characteristics	Frequency (n=198)	Percentage (%)
Dwelling place related		
Made of mud	71	17.8
Made of block	179	45.0
Walls/floor have cracks/holes	51	12.8
Keep hens/cattle in the house	43	10.8
Store too much firewood in the dwelling place	30	7.5
Cultivate around the dwelling place	24	6.0
Life style related (regularly practice)		
Sleeping on the floor	155	38.9
Walk out bare footed	75	18.8
Putting hands in the holes/fields	66	16.6
Collection of firewood/Palmyra palm fruit in the bush	77	19.3
Grazing/hunting	25	6.3

Table 3. Association between socio-demographic profile, life style and snakebite

Characteristics	Have ever been bitten by a snake		$\chi 2$	df	p value
	Yes n (%)	No n (%)			
Age Group					
≤20	25(6.3)	36(9.0)	3.366	5	0.644
21-30	96(24.1)	113(28.4)			
31-40	23(5.8)	39 (9.8)			
41-50	13 (3.3)	22 (5.5)			
51-60	12 (3.0)	10 (2.5)			
>60	4 (1.0)	5 (1.3)			
Sex					
Male	96 (24.1)	111 (27.9)	1.486	1	0.223
Female	77 (19.3)	114 (28.6)			
Occupational Status					
Indoor	146(36.7)	214(53.8)	13.009	1	0.000*
Outdoor	27(6.8)	11(2.8)			
Household description					
Made of mud	38 (9.5)	33 (8.3)	18.448	5	0.002*
Made of Block	63 (15.8)	116 (29.1)			
Household description Made of mud Made of Block	31 (7.8)	20 (5.0)			
Keep hens/cattle in the house	23 (5.8)	20 (5.0)			
Store Firewood in the dwelling Place	11 (2.8)	19 (4.8)			
Cultivate around the Dwelling place	7 (1.8)	17 (4.30)			
Life style					
Sleeping on the Floor	50 (28.9)	105 (46.7)	15.950	4	0.003*
Walk out bare footed	40 (23.1)	35 (15.6)			
Putting hands in the Holes/fields	30 (17.3)	36 (16.0)			
Collection of firewood /Palmya palm fruit in the bushes	37 (21.4)	40 (17.8)			
Grazing/hunting	**16 (9.2)**	**9 (4.0)**			

*Statistically significant

Table 4. Care received by snakebite victims

Characteristics	Frequency (n=198)	Percentage (%)
First aid measures		
Ligature with tourniquet	96	24.1
Ingestion of concoction	74	18.6
Incision of the bite site	56	14.1
Black stone application	23.6	23.6
suction of the bite site	9	2.3
Immobilization of the body part involved	60	15.1
Washing with soap	9	2.3
First care		
Traditional healers	191	48
Spiritual healers	19	4.8
Chemist	22	5.5
Hospital	166	41.7
Time taken before hospital presentation		
<1hr	85	21.4
1-4hrs	82	20.6
5-10hrs	87	21.9
11-24hrs	86	21.6
>24hrs	20	5.0
N/A	38	9.5
Dose of anti-snake venom giving		
1 dose	171	43.0
2 doses	114	28.6
3 doses	18.1	18.1
>3 doses	3	0.8
N/A	38	9.5
Hospital treatment other than ASV		
Analgesic	108	27.1
Antibiotics	158	39.7
Anti-tetanus	94	23.6
N/A	38	9.5
Recovery Time		
< 24hrs	21	5.3
1-5days	127	31.9
6-10days	114	28.6
> 10days	98	24.6
N/A	38	9.5
Further Medical Care		
Hospital	360	90.5
Traditional	38	9.5

Discussion

The respondent's mean age in this study which is31 ± 11.8 year is in keeping with studies in Bangladesh and West Bengal and lower than a study in rural north-eastern Nigeria which is 20 year. [7, 8-9]

The cases of snakebites were found to be higher in males (55.5%) and those between the ages of 21and 30years (55.5%). Significant percentage snakebites occurred in the afternoon/evening hours 41.0% and during the field work mostly in farmers and herdsmen, a reflection of the agrarian nature of the

communities under survey. Seasonal variation found in this study influences anthropological activities (e.g. farming, fruit gathering and wood gathering) and reptile habits. Carpet viper was the predominant offending snake and higher percentages of the bites involve lower limbs (60.1%). The most common symptom in our study is swelling of the affected part (60.7%). These findings agree with studies done in other places [7-12].

In our study household characteristics (mud house, cracked wall, storage of firewood around the house and farming close to the house), lifestyle characteristics (sleeping on the floor, walking barefooted, fruit gathering, farming, grazing and inserting of hands into hole) and occupations (indoor and outdoor) as risk factors were found to have statistical significant association with snakebites with p=0,001, p=0.003 and p=0.001 respectively. These findings are similar to a study conducted in Nepal. [13]

In agreement with other studies [9, 14, 15], our study reported that immediate first aid often takes by the snakebite victims are tourniquet application 24.1%, black stone application 23.4%, concoction ingestion18.6%, immobilization of the affected body part 15.1%, incision of bite site 14.1% and suction of the bite site 2.3%. This is in contrast to the study conducted in Bangladesh by where none of the victims had immobilization. [8]

In this study up to 48% of people bitten by snakes consult first traditional practitioners and subsequently resort to modern medicine, this health-seeking behavior and the above first aid treatment account for the long delays before they receive proper treatment. The study done in Nepal reported similar findings. [13] The main reasons reported for the health-seeking behaviour in the present study include cost of treatment, closeness of treatment site to victim's house, availability of anti-snake venom and treatment effectiveness. Studies in other places reported similar results. [14, 15]

The treatment outcomes in the study was quite similar to study done in Sri-Lanka and Nigeria [16, 17] where 77.1% of the victims were completely healed, 18.1% had some complication and dead was recorded in 4.8%.

Conclusion

Snakebite has been demonstrated even in this study to be environmental and occupational health hazards that mainly affect rural population worldwide. And majority of the victim are the actively and productive young adult, farmers who do not take necessary precaution to avoid bite from snakes. The outcome of snakebite is dependent on the cultural believe of the people, level of education, time taken before presentation to the hospital, first aid measures giving, availability of ASV, and the income of the care giver. Education of the Respondents was significantly associated with seeking appropriate health seeking behaviour. Providing good services, affordability of such services and proximity were considered the most important service characteristics in seeking health seeking behaviour. Thus, policy formulation and implementation should be directed towards improving access to healthcare services. Issues concerning affordability of such health services can be addressed by up-scaling the coverage of the National Health Insurance Scheme, the country's flagship insurance scheme. This would provide financial protection for households with lower socioeconomic status in order to encourage use of appropriate healthcare sources during episodes of snakebite.

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