

Evaluation of snakebites and their treatment in the Bonginda/Bikoro DR Congo

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Abstract

The study attempts to elucidate the problem of the management of snakebites and envenomations in rural areas. It aims to assess the management of snakebite cases in the Bonginda group in Equateur, DR Congo.

A survey was conducted during the period from January 2019 to December 2020. In addition, doctors from the Bonginda Health Zone, traditional healers and a few resource persons such as herbalists and people who have been treated for cases bites were contacted.

The nature of the retrospective study required the administration of a questionnaire to those involved in the investigation. These include traditional healers and doctors from the health structures of the General Reference Hospital of Bikoro, Ntende, Moheli, Iyembemoke and Momboyo.

The healing score recorded by traditional healers in the event of envenomation is estimated at 93.94% against 23.94% in medical structures. The low score recorded in the latter would be justified by the lack of an appropriate protocol for the specific cases thus diagnosed on the basis of modern equipment. Thus, the care provided by traditional healers seems more effective.

Keywords: Snakebites; Treatment; Doctors; Traditional Healers; Bonginda Health Zone; DR Congo

1. Introduction

Worldwide, the number of deaths from snakebites is around 125,000 per year, including 100,000 in Asia, 5,000 in America and 20,000 in Africa resulting from one million accidents each year [1].

Africa is well known for its poisonous animals: scorpions and snakes, such as cobras, mambas and vipers. In rural areas, farmers, foresters and their families face the risk of encounters with scorpions and poisonous snakes [2].

From time immemorial, snakes have been the most fearsome poisonous animals for humans. In Côte d'Ivoire, in 1982, the number of bites was estimated at 168 per 100,000 inhabitants per year, with a mortality rate of 1.5 per 100,000 inhabitants per year [3].

Approximately 5 million snakebites, scorpion stings and anaphylactic reactions to insect stings occur each year worldwide and cause more than 100,000 annual deaths. In Africa, where few accurate data are available, there is a large

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margin of uncertainty about the number of snakebites and deaths occurring each year [4]. However, it has recently been estimated that one million snakebites causing more than 20,000 deaths could occur each year in Africa [5].

In the Bonginda groupement, DR Congo, the prevalence of snakebites is greatly underestimated by medical structures. The declaration of bites is by no means obligatory. Therefore, there are no reliable health statistics. Medical surveys conducted only in health facilities do not reflect the realities on the ground on the snakebite index. It should be associated with those carried out with households and traditional healers to better specify:

- The impact on human activities in the study area;
- More or less valuable and complementary information on the population at risk;
- Traditional biotherapeutic needs;
- The circumstances of the accidents;
- The moment of peak and the use of care;
- Plant or animal resources used in the preparation of indigenous medicinal recipes.

The study attempts to elucidate the problem of the management of snakebites and envenomations in rural areas.

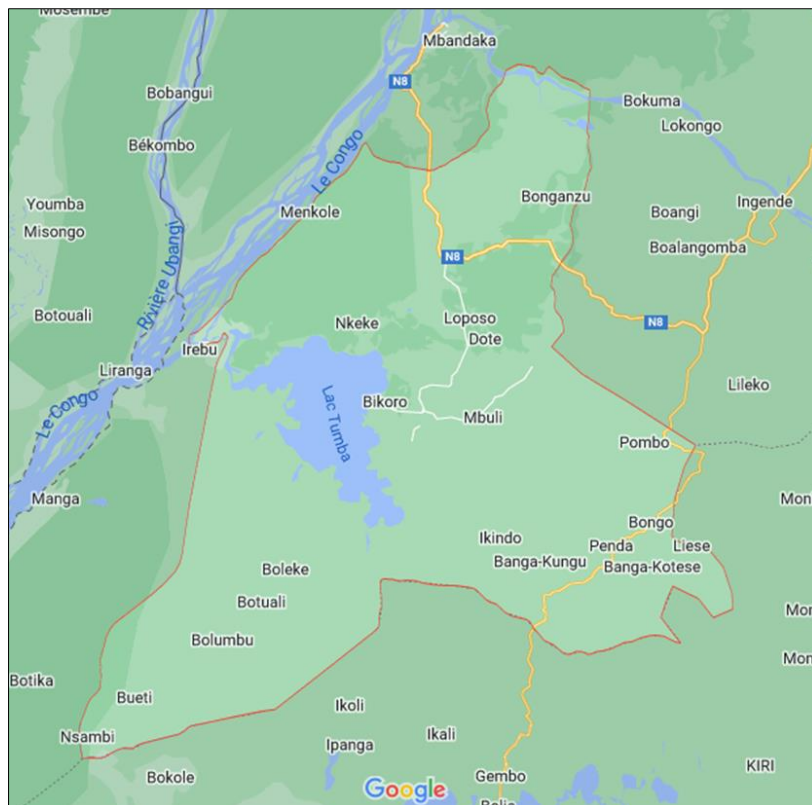
The aim is to document the follow-up of patients who are victims of snake bites in rural areas and to compare the results obtained in modern structures with those received by traditional herbalists.

This study aims to evaluate the management of snakebite cases in the Bonginda group in Equateur, DR Congo.

2. Material and methods

2.1. Study area

The map of the Bikoro Territory is shown in Fig.1



<https://www.google.com/maps/place/Bikoro/>

Figure 1 Map of Bikoro Territory

2.2. Method of investigation

A survey was conducted during the period from January 2019 to December 2020. In addition, doctors from the Bonginda Health Zone, traditional healers and a few resource persons such as herbalists and people who have been treated for cases bites were contacted.

The nature of the retrospective study required the administration of a questionnaire to the people involved in the investigation. These include traditional healers and doctors from the health structures of the General Reference Hospital of Bikoro, Ntende, Moheli, Iyembemoke and Momboyo.

The data was collected by the standardized interview method. The individual interview technique was preferred. Thus, a questionnaire was developed with four sections:

- An introductory note section
- A section of the socio-demographic characteristics of the respondent
- A section of the survey itself
- A section of ethical considerations

3. Results

3.1. Sociodemographic characteristics of the traditional healers surveyed

Sociodemographic characteristics of the traditional healers concern:

- Distribution of respondents by gender and age
- Distribution of respondents according to their marital status
- Distribution of respondents according to their ethnicity

Figure 2 shows the distribution of respondents by gender and age. It reveals that 3 out of the 8 female herbalists belong to the age group between 31 and 40 years old. The number of those aged over 50 is 2. The other age groups are represented by a single woman.

Among the 17 male traditional healers, 6 are between 41 and 50 years old. The age group between 26 and 30 is represented by 4 people.

In total, the survey covered 25 traditional healers. The age group between 41 and 50 predominates over the others with a workforce of 7 people. It is closely followed by that of 31-40 years (6 people). The age group under 26 is the least represented (3 people).

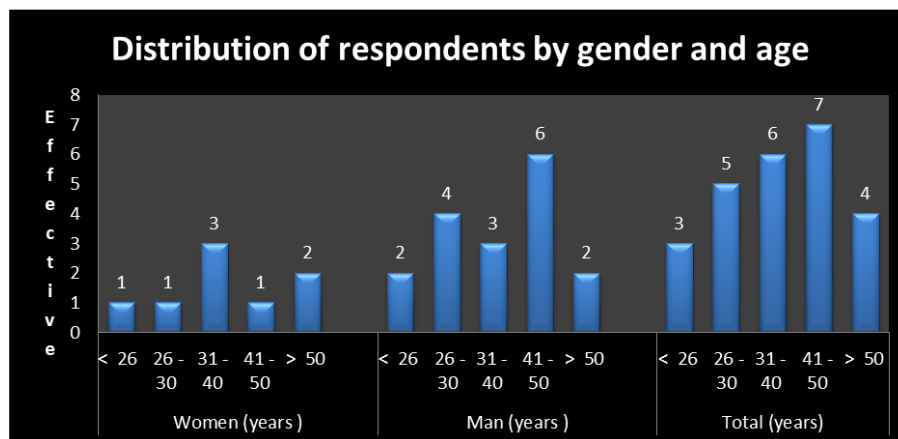


Figure 2 Distribution of respondents by gender and age

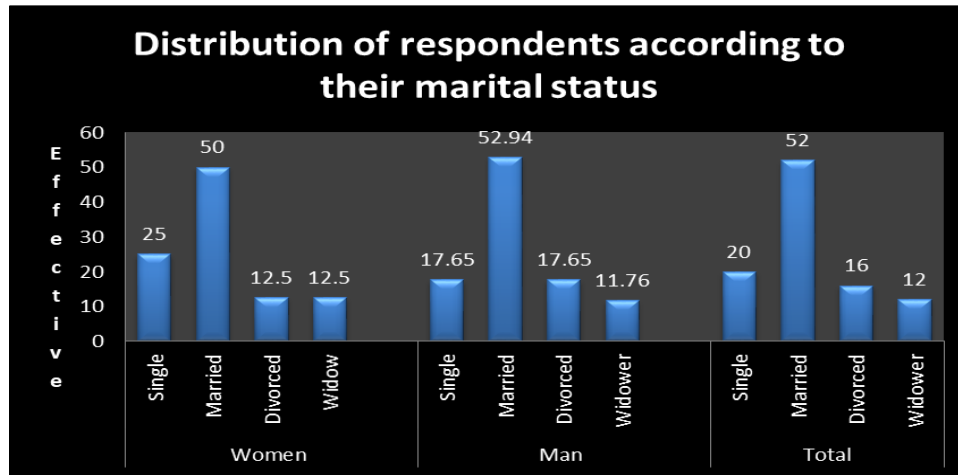


Figure 3 Distribution of respondents according to their marital status

Table 1 Distribution of respondents according to their ethnicity

1. Province of Equateur										
Women				Man				Ethnicity total		% Province
City	Ethnic group	Eff	%	City	Ethnic group	Eff	%	Eff	%	
Mbandaka	Ngele-antando	02	25	Mbandaka	Ngele-antando	02	11.76	04	16	88
	Mwe				Mwe	01	05.88	01	04	
	Libinza				Libinza	01	05.88	01	04	
	Ndobo				Ndobo	01	05.88	01	04	
	Ngombe				Ngombe	01	05.88	01	04	
Bikoro	Ntomba			Bikoro	Ntomba	01	05.88	01	04	
	Ekonda	01	12.50					01	04	
Lukolela	Bobangi	01	12.50	Lukolela	Bobangi	02	11.76	03	12	
	Mpama				Mpama	01	05.88	01	04	
Mankanza	Mangala			Mankanza	Mangala	01	05.88	01	04	
Basankusu	Mongo	01	12.50	Basankusu	Mongo	01	05.88	02	08	
Ingende	Bokatola	01	12.50	Ingende	Bokatola	01	05.88	02	08	
	Ngombe				Ngombe	01	05.88	01	04	
	Tswa	01	12.50					01	04	
Bolomba	Tswa	01	12.50	Bolomba				01	04	
2. Province of Sud-Oubangui										
Women				Man						12
Akula				Akula	Ngwaka	01	05.88	01	04	
Budjala				Budjala	Ngombe	01	05.88	01	04	
Nkungu				Nkungu	Likoka	01	05.88	01	04	
Total		08	100	Total		17	99.96	25	100	100

Figure 3 shows that married people represent 50% of women and 52.94% of men. Single women are estimated at 25% against 17.65% of men. In total, the status of married people predominates over the other categories (52%). Widowers come last (12%). The analysis of Table 1 shows that 2 provinces are concerned by the survey: Equateur (88%) and Sud-Oubangui (12%).

Among the Equator ethnic groups that participated in the survey, the Ngele-a-ntando predominate with 16%. In descending order, the other ethnic groups are: Bobangi (12%), Mongo (8%), Ngombe (8%), Bokatola (8%), Tswa (8%), Ntomba (4%), Mangala (4%), Mpama (4%), Ekonda (4%), Mwe (4%), Libinza (4%) and Ndobu (4%).

The province of Sud-Oubangui displays 3 ethnic groups (Ngwaka, Ngombe and Likoka) each represented by a single male traditional healer (4%).

3.2. Management of cases of envenomation

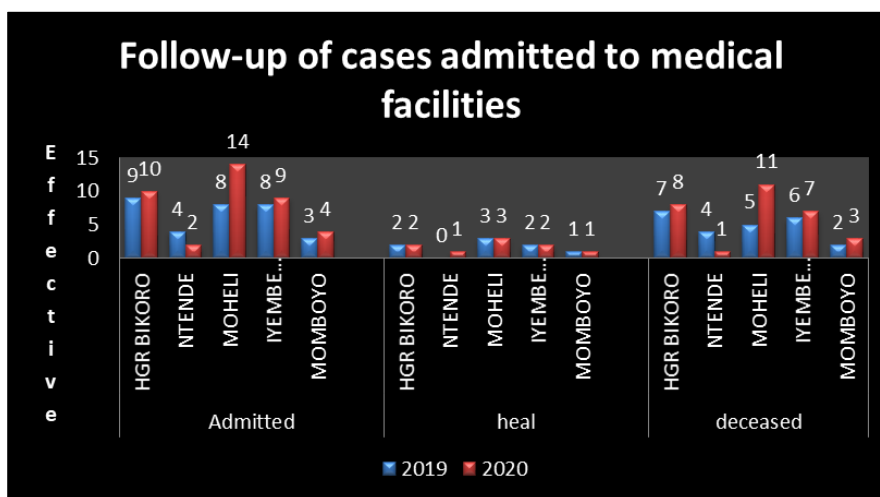


Figure 4 Follow-up of cases admitted in medical structures. Source: Bonginda/Bikoro Health Zone

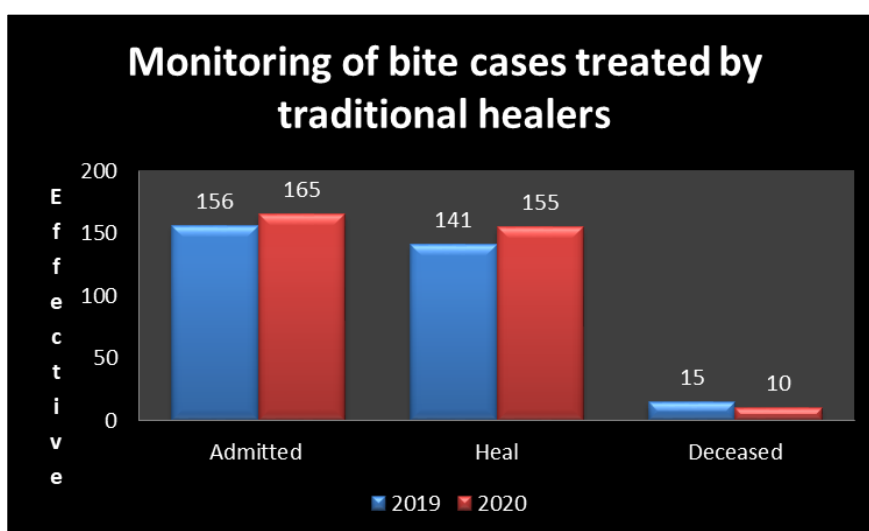


Figure 5 Monitoring of bite cases treated by traditional healers; Source: Our surveys

Figure 4 presents the cases of envenomation admitted to medical facilities and their follow-up. It reveals that the number of cases admitted to medical facilities stands at 71 patients during the period from January 2019 to December 2020. Moheli center recorded 14 patients in 2020 compared to 8 in 2019. It is followed by the HGR of Bikoro which admitted 10 and 9 respectively.

The number of cured patients does not exceed 3 for each of the medical facilities. Therefore, the number of deaths is sensitive. Moheli recorded 11 in 2020 against 5 in 2019 (16 in total). At the Bikoro General Reference Hospital, it amounted to 8 in 2020 compared to 7 in 2019. This reflects the shortcomings in the management of envenoming.

Figure 5 illustrates the cases of bites treated by traditional healers. It appears that 165 cases were treated by traditional healers in 2020 compared to 156 in 2019, i.e. 321 in total. After treatment, the number of deaths is respectively estimated at 10 and 15 during the same period.

The number of patients admitted to medical facilities (71 cases) is significantly lower than that treated by traditional healers (165 cases). Snakebite victims show an attraction to traditional medicine. This affective disposition is stimulated by the positive results obtained by the latter. Naturopathy seems more effective and inspires more confidence.

4. Discussions

Snakebites pose diagnostic, complication, and treatment challenges for physicians [6].

During the period from July 1990 to June 1991, the intensive care unit of the University Hospital of Cocody recorded 53 patients who were bitten by snakes. This makes an average of 4.41 patients per month. [7] This figure is close to that of the medical facilities in Bonginda. Indeed, the latter recorded 71 cases in 24 months, or about 3 patients per month.

General treatment depends on the time of arrival and the complications observed. It poses the problem of antivenom serum therapy and heparin therapy [7] recovery of 23.94%. This low rate would be justified by the lack of an appropriate protocol for the specific cases thus diagnosed on the basis of modern equipment.

Today, several specific protocols are known in modern medicine. However, these specific protocols are not applied in rural areas. It would be a shame if all these hospitals did not have one. The lack of a specific protocol would disqualify the management of cases of envenomation by medical structures, because the latter only resort to symptomatic treatment.

Modern treatment for snakebites and/or envenomations is based on immunotherapy [8] which is still not available due to:

- Insufficient anti-venom serum;
- Ignorance of anti-venom requirements;
- The misuse of anti-venom serums;
- Insufficient training of health personnel on anti-venoms;
- The high price of the product, which can sometimes represent several months of income for a peasant household.

The effectiveness of anti-venom serotherapy is significant before the first 20 minutes. After this time, doses should be increased [9, 10];

In rural Africa, the role of traditional medicine and medicinal plants in the management of snakebites is well established [11]. Indeed, in Africa, the majority of people bitten by snakes say they resort to traditional treatment rather than modern medicine (antivenom) [12] The success of the treatment of snakebites in rural areas requires the involvement of traditional health practitioners [13].

The high number of victims of envenomation attending traditional healers is revealing. The massive adherence of the population of Bonginda to traditional medicine rather than to medical structures is only the consequence of this observation.

During the period from January 2019 to December 2020, 321 cases of snake bites were recorded at the level of traditional healers in our study environment against 71 recorded in hospital structures. The frequency recorded by traditional healers can be explained, among other things, by the socio-economic and cultural situation and the remoteness of hospitals from the various agro-pastoral production, hunting and fishing areas where cases of bites are plethoric.

5. Conclusion

The objective of the study was to elucidate the problem of the management of snakebites and envenomation's in rural areas. It consists of documenting the follow-up of patients who are victims of snake bites in the Bonginda group and comparing the results obtained in medical structures with those treated by traditional herbalists.

During the period from January 2019 to December 2020, i.e. 2 years of study, the cases of snakebite amounted to 392, including 321 cases treated with phytotherapists and 71 admitted to hospital structures. The frequency recorded by traditional healers can be explained, among other things, by the socio-economic and cultural situation and the remoteness of hospitals from the various agro-pastoral production, hunting and fishing areas where cases of bites are plethoric.

The healing score recorded by traditional healers in the event of envenomation is estimated at 93.94% against 23.94% in medical structures. The low score recorded in the latter would be justified by the lack of an appropriate protocol for the specific cases thus diagnosed on the basis of modern equipment. Thus, the care provided by traditional healers seems more effective.

Compliance with ethical standards

Acknowledgments

We thank all the stakeholders who participated in this study. Our thanks go more particularly to the traditional healers for their agreement.

Disclosure of conflict of interest

There is no conflict of interest be the authors of this manuscript.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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