

THE SOCIO-ECONOMIC CONSEQUENCES OF SNAKEBITE: CASE STUDIES FROM KILIFI COUNTY, KENYA



BACKGROUND

In Sub-Saharan Africa, up to 32,000 snakebite deaths are estimated to happen every year. However, due to underreporting and a lack of research, the true burden remains unknown. Snakebite envenoming mainly affects the young and productive population groups of impoverished communities living in rural regions, who often have low access to quality healthcare.¹⁻³ Availability of antivenom is low here, especially in lower-level facilities that usually cater to rural areas. In Kenya, the cost of one vial of antivenom, the only effective treatment of snakebite envenoming, was found to be up to 19,996.00 KSH, which is 44.2 days of wage for the lowest paid government worker.⁴

The long-term health effects after snakebite envenoming include amputations, deformities, muscular weakness, neurological impairment, blindness, chronic ulceration, chronic renal failure, depressive symptoms and post-traumatic

stress disorder.⁵ Families may have to deal with a loss of income, increased caregiving needs, and high treatment costs pushing them into debt or poverty.^{2,6,7} Further, there are likely to be many social consequences of living with a snakebite-related impairment, or being a caregiver to the snakebite victim. At this point, little is known about how people's lives are affected after a snakebite, and what the societal impacts of snakebite are on the household's work, social position, financial position, and (in)formal care needs.

HAI has studied healthcare workers' (HCW) and health facilities' capacity to manage snakebites, as well as the burden of snakebite in affected communities (see [Snakebite in Kenya: Evidence from the Field](#)). This research showed that there are long-term consequences of snakebite that have not yet been documented in Kenya. The voices of those still suffering from snakebites or from the impact it has had on their life, and

their experiences need to be heard. This research therefore studied the acute and long-term socio-economic consequences of snakebite in Kilifi County.

The Kilifi County government has made promising initial steps to reduce the burden of snakebite by allocating funding for snakebite community education and sensitisation. Further, HCW champions developed action plan priorities for Kilifi County at a HCW Training of Trainers workshop on snakebite care, management and treatment in February 2021. The findings and recommendations provide evidence on the lived experiences of snakebite victims to policy makers and inform further prioritisation of snakebite funding and resources to snakebite mitigation efforts.

METHODS

In September 2021 ten interviews and six focus group discussions were held in Magarini sub-county, with both snakebite victims and caregivers of snakebite victims. A total of 44 community members (27 victims, 17 caregivers) participated. An interview guide was used for the semi-structured interviews, while a script was used for the focus group discussions. Questions were asked related to the snakebite event, its treatment and rehabilitation, and health outcomes, followed by questions on the long-term impact of the snakebite. These latter questions asked about changes in livelihood, financial, socio-cultural and caregiving because of the snakebite.

RESULTS

Snakebite Event and Health-seeking Behaviour

Snakebite victims who participated in this research were bitten while performing a variety of activities. Thirteen were walking outside at night when bitten, seven were farming, seven were in their homes, six were walking outside during the day, four were doing chores such as cutting firewood, sweeping, or carrying the garbage outside, three were grazing cattle, two of the victims were asleep when bitten, and one was doing construction work. One participant did not specifically mention the activity performed when bitten.

After their snakebite, victims used a combination of traditional first aid methods and formal healthcare. Four of the victims made use of only traditional healing. A few directly sought care at a health facility, while almost all victims tied-off the bitten area or put a black stone on the wound, both of which are traditional and ineffective first aid methods, after which they travelled to a health facility:

“My brother was the one who encountered the snakebite. He was farming and the snake came and bit him on the left leg. He started screaming and we took him to a traditional doctor. The stone was placed on his wound but there was no difference. We later on took him to the hospital where the doctor said that we were already late because the poison had spread due to delay, so the leg had to be cut off.” (FGD 4.2)

One family member of a snakebite victim shared the difficulty they experienced finding antivenom, leading to the death of the snakebite victim:

“My brother and I were herding goats and he was hunting some birds. ... He was so focussed with the birds that he did not bother checking where he was stepping. He then accidentally stepped on a snake and it bit him on the leg. ... I rushed home and called my parents since I couldn't locate the snake and he was too heavy for me to carry him alone back home. When we came back they helped me tie a rope around the wound and we rushed him to the hospital. At the hospital they only did first aid as we were told that there were no drugs to treat snakebites; [the antivenom] had to be transported from Malindi, and also for it to arrive in Malindi it had to come from Watamu. Unfortunately, due to the delay my brother passed away.” (FGD 2.1)

Physical Consequences and Death

For many of the victims, the snakebite impacted their physical abilities. Many experienced loss of strength, numbness, pain, deformities or itchiness in affected limbs, while some were also suffering due to amputation. In a few cases, family members shared details about the death of their family member after the snakebite.

As illustrated by one of the victims:

“The incident happened to my grandfather who is a palm wine brewer. As he was preparing the palm wine for his customers, the snake was hiding behind the containers where he stored the palm wine in and it bit him. The people that were with him there took him home and called a traditional healer who helped him, but the following day at around noon, the wound had swollen, so we took him to the Magharini dispensary where he was injected and we were told to bring him home. After three days unfortunately my grandfather died as a result of the snakebite.” (FGD 4.6)

Socio-economic Consequences

Socio-economic consequences can be serious for snakebite victims and their families. Victims and their families can be hit particularly hard emotionally and economically. Not all participants experienced emotional distress as a consequence of the snakebite, but for those who did, it was due to their worry about full recovery, or being fearful of another snake attack and of snakes in general:

“As sisters of a snakebite victim, none of us can go alone to the forest for firewood. We usually group ourselves into three or four and we don’t go deep in the forest because of the fear of being bitten by a snake. We also fear walking in darkness.” (FGD 2.4)

Related to this, ten of the snakebite victims specifically indicated that the snakebite, and its physical consequences, have had a significant impact on their ability to work. They are no longer able to do the same work because they lack strength in the bitten limb, because they are in too much pain, or they get tired very easily. As one family member described:

“But from time, it’s like the wounded place didn’t completely heal because at times the wound oozes black blood followed by a clear liquid like water. During such occasions, she stays home for a month and when the wound closes again she goes back to her normal duties.” (FGD 5.3)

Not only did the snakebite affect the victims’ work, but family members were also affected. Multiple family members of snakebite victims shared how they had to stay home for a few weeks to take care of the victim, or that they had to change jobs to be closer to home to take care of the victim.

“When the incident happened, I was a house help in town, but I had to go back home and do charcoal business so as to take care of my sister.” (FGD 4.3)

Moreover, and in line with the above, the snakebite also had a significant impact on the financial situation of some of the victims and their family because of the effect on their work. Worryingly, this could have a trickle-down effect on the education of children in the family. One participant, for example, shared the impact the snakebite had on their child’s education:

“For the one to two weeks that I stayed at home, my family suffered and my wife had to take responsibility for the things I used to take care of, which included paying school fees. It was not that easy. I remember my second born who was in standard 4 but then was sent home for school fees and she had to stay home until when I went back to work and paid her school fees.” (FGD 5.1)

Others also shared how they had to sell animals or take out a loan to pay the treatment costs, which they were still paying off at the time of the interview. One participant illustrated how the snakebite is still impacting them financially:

“It was a difficult time, we had no money but our neighbours were able to lend us money, and we had to sell goats to pay off the debts, plus the transportation to and from the hospital was very expensive, we had to look for ways to pay the rider who took us to the hospital.” (FGD 6.2)

This illustrates how detrimental catastrophic healthcare expenditure can be on the long-term financial situation of the family.

When participants were asked about support and acceptance by their respective communities, almost all of them described positive experiences. They did not feel isolated or like they were no longer accepted by their family and friends. They described how community members came to visit them, helped them out with chores, provided food, and sometimes helped with paying hospital bills:

“They [community members] visited me a lot. First my friends who we work with always came, some would also bring me food saying ‘let me go and see my friend to see how you’re faring’, until I went back to our work station.” (FGD 1.3)

However, in some cases victims and their families did not receive support or help from the community:

“We would have wished to be helped but the community did not help at all.” (FGD 2.6)

Government Support Needs

Many of the participants believed that the government could provide more support to snakebite victims. Things they would like to see from the government in terms of support included compensation for the victims and supporting victims in paying hospital bills. As one participant described:

“For my brother, I think he really needs help, maybe from the government, because his leg at times hurt so much and we as the family are the ones who incur costs at the hospital and take care of him.” (FGD 4.2).

They also urged that the government should ensure availability of antivenom at health facilities

close by, as having to go from facility to facility causes delays in treatment, which might lead to more serious health outcomes or even the death of the snakebite victim. Participants also raised the issue of bad roads, which make it difficult to reach health facilities quickly:

“What can be done for now is to first ensure that the medicines for snakebite treatment are available. Sometimes these medicines go out of stock in these public facilities, and I must admit that I was lucky because I remember my uncle got bitten by a snake but there were no medicines here at Gongoni hospital. So, he was just given painkillers and was transferred to Malindi using the ambulance. And even while in Malindi after explaining to them the type of snake that had bitten him, they had to call another man who was in Watamu who had the medicines. After paying for the medicine to be released, that was when he was injected, on the second day. Imagine staying for 24 hours without the right treatment... He ended up staying there for two weeks before he became well.” (FGD 5.1)

Finally, participants also believed in the need for educating communities about snakes, snakebites, first-aid methods, and effective health-seeking behaviour:

“I would like for the people in our communities to be sensitised such that if there is a snakebite victim they know where they should immediately rush them to, such that they stop taking victims to places where they would not get proper treatment. Most of us take the snakebite victims to the witchdoctors and pastors instead of directly taking them to hospital for treatment. Then when the situation worsens is when we take them to the hospital.” (FGD 1.4)

RECOMMENDATIONS

SNAKEBITE CASES, TREATMENT AND HEALTH-SEEKING BEHAVIOUR

We found that snakebite victims were often bitten while performing a variety of activities in different settings; that a combination of traditional first aid methods and formal health services was often used; and lengthy journeys to several health facilities were undertaken to find the emergency treatment and care required.

- Strengthen the capacity of HCWs in snakebite management care and treatment, including community health volunteers, by undertaking frequent trainings, training of trainers and education sessions.
- Disseminate the national management guidelines on care, management and treatment of snakebites among HCWs through the above trainings.
- Train and sensitise a range of first responders, including traditional healers, community leaders and community health volunteers in snakebite prevention, first aid, treatment and referral pathways to improve timely health services and reduce complications and specialised care.
- Hold frequent community engagement meetings in order to bridge the gap between community and health system responses and disseminate both new and existing educational tools at these meetings to increase community awareness, health-seeking behaviours and first aid.

SOCIO-ECONOMIC AND PHYSICAL CONSEQUENCES

Our research found that many victims suffered from a range of debilitating disabilities due to the snakebite and experienced permanent social and economic consequences, such as lasting emotional distress, permanent working limitations, and financial hardship. Yet, support and acceptance among the community for snakebite victims were often high.

- Incorporate snakebite-related injuries and impairments within established clinical rehabilitation services.
- Ensure that snakebite victims are exempt from any out-of-pocket payments and expenses to reduce the chances of poverty and economic hardship.
- Partner with civil society organisations and community leaders to undertake further qualitative research to understand better the physical, societal, and economic impacts on snakebite victims and their families.
- Request county health officials to engage in advocacy to ensure all eligible snakebite victims receive financial support through the human-wildlife compensation scheme following the Kenyan Government's announcement to reinstate snakebite into the support package in 2021.
- Ensure budget allocation to snakebite interventions by the County Government for implementation of all abovementioned recommendations.

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