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Snakebites and First Aid Practices among Forest-Dwelling Tribal Communities: A Community-Based Study in Bhimpur Block, Betul District, Madhya Pradesh

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ABSTRACT:

Snakebite poisoning is a big public health problem that people often ignore, especially in tribal areas that are hard to get to and don't have access to modern medical care. This study looks at what happens when snakes bite people in forest-dwelling tribal communities in Bhimpur block, Betul district, Madhya Pradesh. It looks at how traditional first-aid methods, how the community responds, and how long it takes to get formal medical care. Using a community-based cross-sectional approach, data were collected from a wide range of people, such as survivors, families of victims who died, traditional healers, and people who work in the health system.

The results show that about 80% of people who were bitten by snakes first went to traditional medicine, where village healers used herbal remedies and rituals based on native beliefs. The study shows that medical referrals take a long time, with a median response time of more than five hours to get to a healthcare facility. Bad transportation, a culture that relies on traditional healing, and not knowing how important it is to get professional medical care quickly often make this worse. These kinds of delays have a direct effect on how many people die and get sick, especially when poisonous bites are involved.

This study shows how important it is to treat snakebites in a way that respects cultural differences. Some ideas are to get traditional healers and health care workers to work together more, make antivenom easier to get, and give health care workers on the front lines more training. The study calls for educational programs in the community to get people to seek treatment quickly. The ultimate goal is to lower the number of deaths and complications from snakebites in vulnerable tribal populations.

Keywords: Snakebite, Tribal health, First aid, Traditional medicine, Betul, Bhimpur, Referral delay, Community-based study

Introduction

In a lot of rural and forested places around the world, snakebite poisoning is a serious health emergency that people often ignore. India has a lot more snakebite deaths than other countries do. Tribal and forest-dependent people are even more at risk because of a mix of geographic, economic, and cultural factors. The Korku and Gond tribes live in the Bhimpur block of the Betul district in Madhya Pradesh. The forests around them are very important to their daily lives and livelihoods. These communities are often at risk of being bitten by snakes because they work in farming, gather forest products, and live outside.

The government is trying to improve healthcare infrastructure in rural areas and make antivenom available through public health centers (PHCs), but there is still a big gap between the services that are available and the people who use them. Most of the time, when someone gets bitten by a snake, they still go to traditional healers first. These healers use local customs and spiritual beliefs to help people. In addition to relying on village-based healers, who are known as "vaidyas" or "tantrics," there are also problems with infrastructure, such as bad roads, lack of transportation, and long wait times for medical referrals. These things make it harder for people to get the antivenom and professional medical care they need to stay alive.

This study looks at how the Bhimpur tribal communities' traditional first aid practices, long wait times for referrals, and treatment outcomes all come together in snakebite cases. The study's goal is to document lived experiences, traditional remedies, and systemic health problems in order to create culturally appropriate interventions that can help bridge the gap between community beliefs and scientific medical care. The study stresses that traditional healers and formal healthcare providers need to work together and trust each other in order to improve survival rates and lower the risk of long-term problems from envenomation.

Objectives

- To determine survival and morbidity outcomes of snakebite victims in Bhimpur block.
- To document traditional remedies and first-aid practices used in tribal villages.
- To identify causes and durations of delays in accessing professional medical care.
- To recommend strategies for integrating community knowledge with modern health systems.

Methodology

A mixed-methods cross-sectional design was employed for the study.
Study Area: Bhimpur block, Betul district, Madhya Pradesh, comprising predominantly tribal villages.
Sample: Data were collected from 76 individuals, including 38 snakebite survivors, 10 families of deceased victims, 10 traditional healers, 8 ASHA workers, and 10 PHC personnel.

Data Collection:

- Structured interviews with survivors and family members.
- Key informant interviews with traditional healers and health workers.
- Field observation and documentation of traditional remedies.
- Use of semi-structured tools to capture timeline, bite characteristics, and treatment-seeking behavior.

Ethical Considerations: Informed consent was obtained from all participants. The study respected cultural sensitivities and ensured confidentiality.

Findings

- **Snakebite Incidence and Outcomes:** Out of the 48 total documented snakebite cases across various villages in Bhimpur block, 12 resulted in fatalities, representing a 25% mortality rate. These deaths were exclusively linked to significant delays—typically over 4 hours—in reaching a primary healthcare facility. Survivors, in contrast, often accessed treatment sooner; notably, all 14 individuals who reached a PHC and received antivenom within 2 hours of the bite survived and reported faster recoveries. Several survivors also reported partial complications such as localized tissue damage or mild paralysis, especially in cases involving delayed care. Additionally, multiple respondents expressed psychological distress and fear of recurrence following the bite incident, reflecting the traumatic impact beyond physical health.
- **Traditional Remedies Used:** Traditional healing was the immediate response in approximately 80% of the cases. Village-based healers (locally known as 'vaidyas' or 'tantrics') administered herbal concoctions or applied poultices derived from plant species such as Pterocarpus marsupium, Aegle marmelos, and Terminalia arjuna. Techniques such as incisions at the bite site, application of ash or oil, chanting rituals, and limb binding were also observed. These methods were generally applied within 15–30 minutes of the bite, often replacing scientifically validated treatments. In some cases, patients were prevented from being taken to health centers due to strict reliance on traditional beliefs, especially among older family members. While some of these practices are culturally significant and have a calming psychological effect, none are proven to neutralize venom and often lead to dangerous delays in effective treatment.

Traditional Healing Practices Observed in Snakebite Cases

Aspect	Details
Prevalence	Used in approximately 80% of snakebite cases
Local Healers Involved	Tribal heelers { Bhagat } local priest
Common Medicinal Plants Used	Pterocarpus marsupium, Aegle marmelos, Terminalia arjuna
Methods of Application	Herbal concoctions, poultices, incisions, ash/oil application, chanting, limb binding
Time of Application	Within 15–30 minutes after bite
Reasons for Use	Cultural belief, immediate accessibility, trust in tradition
Consequences	Delays in hospital referral, potential worsening of envenomation symptoms
Influence of Family	Older family members often insisted on traditional remedies before modern care was considered
Effectiveness	No evidence to support neutralization of venom; only psychological reassurance observed

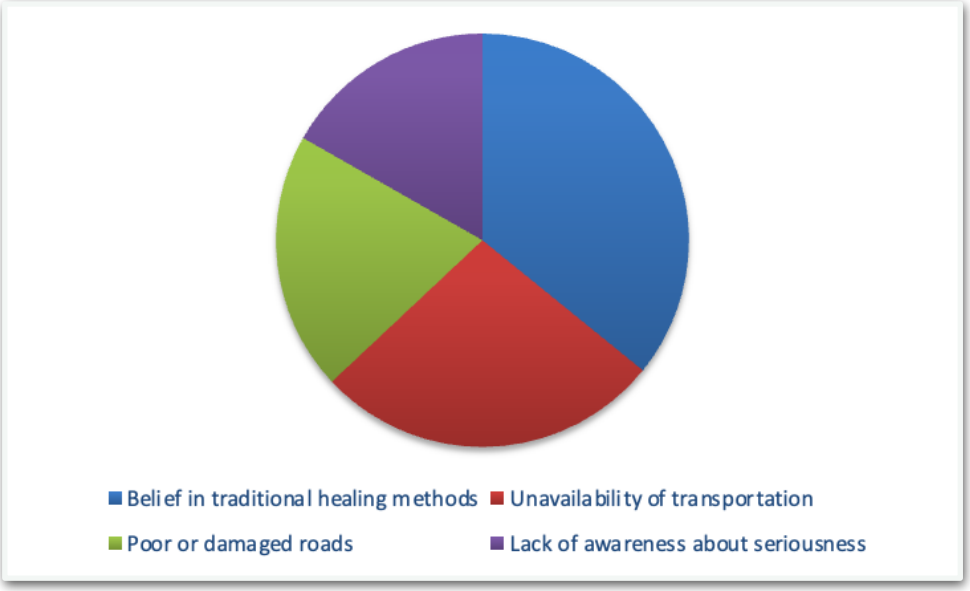
Common Medicinal Plants Used

Terminalia arjuna

Aegle marmelos

Pterocarpus marsupium

Referral Delays: It took an average of 5.2 hours to get to a PHC or government hospital after being bitten by a snake. In some cases, it took up to 10 hours. The main reasons for the delays were a strong belief in traditional healing methods (62% of cases), not having a way to get there (47%), bad or broken roads (35%), and not knowing how serious snakebite symptoms are (29%). Families often waited to see how traditional remedies worked before getting medical help, which wasted a lot of time. It was even more dangerous to get bitten at night because it was hard to move and see. Interviews with at least five patients showed that they tried to walk several kilometers because they couldn't get to their destination by car or road, which made the spread of venom worse.



Role of Health Workers: 4.4ASHA workers and local ANMs were very helpful in cases where victims got medical care right away. There are many records of ASHAs helping to arrange transportation or going with the patient to the PHC. But a lot of FLW were unhappy that they didn't get enough training on how to handle snakebites and that antivenom wasn't always available at sub-health centers. During the monsoon months, when snakebites happen more often, PHC staff also said there were problems with the supply chain and it took longer to get more antivenom. In many communities, health workers were trusted people, even though they had some problems. This shows how important they could be in linking old ideas with new ways of treating them.

Discussion

The study found that treating snakebites needs to take cultural differences into account. People still go to traditional healers because they are hard to get to, because of strong cultural beliefs, and because they haven't learned about modern medicine. Still, the most important thing that affects outcomes is how long it takes to get treatment. It's clear that the community trusts traditional practices, but we need to talk about their limits in treating venomous bites in a respectful way and teach people about them.

Healthcare providers might be able to make more referrals if they work with traditional healers. It is very important to make transportation better, make

sure antivenom is available, and give health workers on the front lines more training. The results also show that community education campaigns, especially those run by trusted village leaders and ASHAs, can help people change how they look for health care to include treatments that can save their lives. .

Recommendations

- Conduct village-level awareness campaigns emphasizing urgency in snakebite response.
- Collaborate with traditional healers to serve as first responders trained in basic first aid and referral.
- Ensure antivenom stock and trained personnel are available at all PHCs.
- Promote community-based transport systems for emergency referrals..

Conclusion

This study shows that snakebites are still a big problem in tribal communities in forested areas like Bhimpur, and that they can be avoided. The results show that people still use traditional healing methods, and that problems with infrastructure and logistics make it harder to get medical care quickly and effectively. These delays cause deaths and long-term problems that could have been avoided.

A plan that respects cultural traditions and puts evidence-based care first is needed for a long-term solution. Adding traditional healers to the referral network, building community trust in modern healthcare, and making sure that health facilities that are easy to get to always have antivenom on hand are all important steps in the right direction. It's just as important to put money into transportation infrastructure, give health workers on the front lines targeted training, and run community education campaigns led by trusted local figures.

It is possible to greatly lower the number of deaths from snakebites by getting the health system and the community to work together and by addressing both cultural and logistical issues that make people less likely to seek medical help. A culturally sensitive, participatory approach will not only help people who have been bitten by snakes right away, but it will also make the health system in tribal areas stronger so that it can handle future public health problems.

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