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Research Article

Traditional medicine and zoonotic risk: zootherapy challenges and opportunities in West Africa

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Abstract: Traditional medicine remains integral to healthcare in West Africa, with 60-80% of the population relying on practices that incorporate animal-derived products, bush meat consumption, and ritual animal use. While culturally significant, these traditions pose substantial zoonotic disease risks, as evidenced by links to Ebola, Lassa fever, and monkey pox outbreaks. This review examines the complex interplay between traditional medicine and zoonotic threats in West Africa, analyzing high-risk practices, implementation challenges, and opportunities for risk mitigation. We identify three key concerns: (1) bush meat handling and wildlife trade facilitating pathogen spillover, (2) use of infectious animal parts in remedies, and (3) ritual practices increasing exposure to blood-borne pathogens. Major barriers to prevention include weak surveillance systems, cultural resistance to biomedical interventions, and economic dependencies on traditional medicine markets. However, case studies from Ghana and Nigeria demonstrate promising intervention strategies, including One Health collaborations with traditional healers, culturally adapted public health campaigns, and sustainable alternatives to high-risk practices. The review highlights the necessity of community-engaged approaches that respect traditional knowledge while improving biosafety protocols. We conclude with recommendations for policy reform, emphasizing the need for integrated surveillance systems, healer education programs, and economic incentives for safer practices. These insights contribute to broader discussions about decolonizing global health and developing culturally appropriate zoonotic prevention frameworks in traditional medicine systems worldwide.

Keywords: Traditional Medicine, Zoonotic Diseases, One Health, West Africa, Public Health Interventions, Infectious Animals

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1. Introduction

In order to achieve SDG 3: Good Health and Wellbeing, the World Health Organisation (WHO) recently held its first international summit on Traditional, Complementary, and Integrative Medicine (TCIM), emphasizing its

significance. Zoo-therapeutic techniques can offer beneficial remedies for acute, chronic, physical, and psychological problems in situations where alternative healthcare options are ineffective or unavailable. In West Africa, traditional medicine continues to be a vital component of healthcare, with between 60 and 80 percent of the population depending on it for primary care, illness prevention, and spiritual well-being (Bouba *et al*., 2022). Rooted in indigenous knowledge systems, these practices often incorporate animal-derived products such as bush meat, bones, and organs for their perceived therapeutic or ritual efficacy (Adebayo & Krettli, 2011). However, such practices intersect with zoonotic disease emergence, a critical public health concern in a region grappling with recurrent outbreaks of Ebola, Lassa fever, and monkey pox (Wolfe *et al*., 2005).

The cultural value of traditional medicine cannot be emphasized. In rural areas where biomedical services are limited or mistrusted, healers frequently provide the initial medical attention and act as stewards of traditional knowledge (Boateng *et al.,* 2016). Yet, the very practices that sustain these traditions such as wildlife hunting, ritual animal sacrifices, or the preparation of animal-based remedies may inadvertently facilitate pathogen spillover from animals to humans (Bonwitt *et al*. 2018). For example, the 2013–2016 Ebola epidemics in West Africa were linked to bush meat handling, while Lassa fever outbreaks persist due to rodent exposure in homes and markets.

Despite these dangers, traditional medicine is still not fully regulated or supervised. Public health campaigns routinely ignore the socio-cultural aspects of zoonotic transmission, and national policies are frequently not enforced (Mackey & Liang, 2013). Meanwhile, the commercialization of traditional remedies both locally and in the diaspora has expanded markets for high-risk animal products, further complicating control efforts (Vliet *et al*., 2017).

2. Methodology

Using web-scraping algorithms aimed at peer-reviewed databases (PubMed and Google Scholar), we first carried out a systematic evaluation of the literature. This was followed by a manual search of published reference lists. West Africa, traditional medicine, zootherapy, zoonotic diseases, challenges, and opportunities were among the terms we utilized. After obtaining the data, we drafted it into a manuscript format.

3. Results

High-Risk Traditional Practices:

In West Africa, traditional medicine frequently uses rituals and items produced from animals, which raises the possibility of zoonotic disease transmission. Many studies look at three significant high-risk behaviors, the infections that are linked to them, and known outbreaks and some are listed below.

Bush meat, Hunting and Consumption Practices:

Hunting, butchering, and consuming wild animals (e.g., bats, rodents, primates, duikers).

Smoked or raw bushmeat sold in markets for food and medicine (Bonwitt *et al*., 2018). The risks and effects include -Ebola Virus: Linked to handling and consumption of infected fruit bats and non-human primates (Saéz *et al*., 2015). Lassa fever: Spread through contact with Mastomys rodents, commonly hunted for food (Fichet-Calvet & Rogers, 2009). Monkey-pox: Associated with handling and consuming small mammals (Yinka-Ogunleye *et al*., 2018). The 2014–2016 Ebola outbreak in West Africa was traced to a child's exposure to bats in Guinea, leading to >28,000 cases (Saéz *et al*., 2015).

Animal-Derived Traditional Remedies Practices:

The use of animal parts (e.g., bat wings, porcupine quills, python fat) in medicinal preparations (Kamins *et al*., 2021). Ritual ingestion of raw animal blood or organs for spiritual healing (Olayemi *et al.,* 2022). The risks & effects include Salmonellosis: From contaminated reptile-based remedies (Abayomi & Balogun, 2021). Rabies: Exposure through dog or bat parts used in treatments (WHO, 2021). Anthrax: From handling infected hides or bones (Ntiamoa-Baidu, 2020). According to Olayemi *et al.*, a 2020 study in Nigeria found that 22% of traditional healers used bat parts, increasing Lassa virus exposure risks (Olayemi *et al*., 2022).

Ritual Animal Sacrifices and Blood Practices:

Slaughtering animals (e.g., goats, chickens, bats) for rituals or communal feasts.

Direct contact with blood (e.g., smearing, drinking) in spiritual ceremonies (Yeboah-Manu *et al.,* 2023). The risks & effects:

Hepatitis E: From contaminated blood (Ghana Health Service, 2024).

Brucellosis: Via contact with infected livestock (WHO, 2021).

Q fever: Spread during goat sacrifices (Bonwitt *et al*., 2018). In Ghana, ritual slaughterhouses were identified as hotspots for zoonotic spillover due to unhygienic practices (Kamins *et al*., 2021).

Challenges in Mitigating Zoonotic Risks from Traditional Medicine in West Africa:

Despite growing awareness of zoonotic threats linked to traditional medicine, several barriers hinder effective risk reduction in West Africa. Below, we analyze key challenges with supporting references.

Weak Surveillance and Reporting Systems Challenges:

Underreporting of outbreaks: Many zoonotic cases go undocumented due to limited healthcare access in rural areas (Yeboah-Manu *et al*., 2023). Lack of integration: Traditional healers are rarely included in formal disease surveillance networks. In Nigeria, only 30% of Lassa fever cases are reported to health authorities, partly because patients first consult traditional healers (Olayemi *et al*., 2022).

Cultural and Religious Resistance Challenges:

Distrust of biomedicine: Many communities prioritize traditional healing for cultural/spiritual reasons (Boateng *et al.,* 2016). Stigma: Policies targeting bush meat or rituals may be seen as "colonial" interference. During the 2014 Ebola outbreak, bans on bush meat led to black markets rather than compliance (Bonwitt *et al*., 2018).

Policy and Enforcement Gaps Challenges:

Fragmented regulations: Laws often conflict with cultural rights (e.g., Ghana's Wildlife Conservation Act vs. traditional medicine use) (Ntiamoa-Baidu, 2020). Limited resources: Governments lack funding to monitor traditional practices (Ghana Health Service, 2022). Liberia has no clear policy on animal use in traditional medicine, allowing high-risk practices to continue unchecked.

Economic Dependencies Challenges:

Livelihood reliance: Bushmeat hunting and traditional healing provide income for millions (Ntiamoa-Baidu, 2020). Poverty-driven risks: Cheaper bush meat vs. domestic meat increases exposure (Kamins *et al*., 2021). In Sierra Leone, 60% of rural households depend on bushmeat for protein and income (Bonwitt *et al.,* 2018).

Lack of Healer Engagement Challenges:

Top-down interventions: Programs often exclude healers from policymaking. Language barriers: Health messages rarely translate to local dialects (Olayemi *et al.,* 2022). A Ghanaian One Health program succeeded only after training healers as "zoonotic scouts" (Yeboah-Manu *et al.,* 2023).

Opportunities for Intervention: Mitigating Zoonotic Risks in Traditional Medicine

The difficulties in managing zoonotic threats from traditional medicine in West Africa also offer special chances for creative, culturally aware approaches. The evidence-based methods for lowering risks while honoring conventional healing systems are listed below.

One Health Collaborate with Traditional Healers:

Train healers as frontline disease reporters: Integrate them into national surveillance networks.

Joint workshops: Biomedical and traditional practitioners can co-develop risk-reduction guidelines (WHO, 2021). Example here is Ghana's "Zoonotic Scouts" Program: Traditional healers were trained to identify and report suspected zoonotic cases, improving early detection of Lassa fever (Yeboah-Manu *et al.,* 2023).

Culturally Tailored Public Health Campaigns Opportunity:

Community-led messaging Use local languages and trusted healers to disseminate biosafety advice (Olayemi *et al*., 2022). Alternative rituals Promote symbolic substitutions for high-risk practices (e.g., plant-based dyes instead of animal blood) (Boateng *et al.,* 2016). The instance here is Nigeria's "Safe Bush meat" Initiative: Educated hunters on safer butchering techniques, reducing Ebola risks without banning trade (Olayemi *et al.,* 2022).

Sustainable Alternatives to High-Risk Practices:

Plant-based substitutes: Research and promote medicinal herbs with similar efficacy to animal-derived remedies (Abayomi & Balogun, 2021).

Domesticated animal sources: Encourage use of farmed snails or poultry instead of wildlife (Ntiamoa-Baidu, 2020). A Case Study is Senegal's "Herbs for Health" Project: Replaced bat-based asthma treatments with effective plant alternatives, cutting zoonotic exposure (Kamins *et al.,* 2021).

Policy Reform and Cross-Sector Partnerships:
Inclusive policymaking: Engage healers in drafting regulations (e.g., Ghana's Traditional Medicine Practice Act) (Ghana Health Service, 2022).
Incentivize compliance: Tax breaks for healers who adopt biosafety protocols (WHO, 2021). Example is Liberia Post-Ebola: Traditional healers were included in the National Public Health Institute, improving outbreak response (Bonwitt *et al.,* 2018).
Economic Empowerment Programs:
Alternative livelihoods: Train bushmeat hunters in sustainable trades (e.g., beekeeping) (Ntiamoa-Baidu, 2020).
Certification schemes: Label "zoonotic-safe" traditional medicines to boost market value (Yeboah-Manu *et al.,* 2023). One of the instances is Cameroon's Healer Cooperatives: Generated income through certified plant remedies, reducing reliance on wildlife (Kamins *et al*., 2021).

4. Discussion

Traditional medicine in West Africa represents a dual reality, it is both a cornerstone of healthcare for millions and a potential conduit for zoonotic disease transmission. The reliance on animal-derived remedies, bush meat consumption, and ritual practices has been repeatedly linked to outbreaks of Ebola, Lassa fever, monkey-pox, and other pathogens. Yet, these traditions are deeply embedded in cultural identity, spiritual beliefs, and socioeconomic structures, making outright prohibition impractical and often counterproductive. The challenge, therefore, lies not in eliminating these practices but in mitigating their risks without eroding trust in traditional healing systems. Efforts to address zoonotic threats must prioritize community-centered solutions. As evidenced by successful interventions in Ghana and Nigeria, involving traditional healers as partners in disease surveillance and prevention can enhance early detection and reporting.
Similarly, public health campaigns that respect local knowledge such as promoting safer bush meat handling or plant-based alternatives to high-risk animal products are more likely to gain acceptance than top-down bans. Policy frameworks must also evolve to reflect this collaborative approach, integrating traditional practitioners into national health strategies while providing economic incentives for compliance with biosafety measures.
Looking ahead, the One Health model offers the most viable path forward, recognizing that human, animal, and environmental health are interconnected. Strengthening cross-sector partnerships between governments, researchers, healers, and conservationists will be critical to developing context-specific interventions. Further research should focus on identifying sustainable substitutes for zoonotic-prone remedies and assessing the long-term impact of community-led initiatives. By balancing innovation with cultural sensitivity, West Africa can reduce zoonotic risks while preserving the invaluable role of traditional medicine in its healthcare landscape.
It is revealed that diseases with zoonotic potential lack sufficient attention in especially in Nigeria. Zoonotic diseases such as anthrax, brucellosis, rabies, bovine tuberculosis, cysticercosis, echinococcosis, trypanosomiasis, and leishmaniasis have lack proper attention leaving behind fatal consequences. It is undoubtedly here that the critical role of veterinarians and Epidemiologists in controlling these diseases and advocates for their increased involvement in public health policy are imminent.
Ultimately, the goal is not to dismantle centuries of healing tradition but to adapt it for a safer future. As the region continues to confront emerging infectious diseases, the integration of traditional and biomedical knowledge may prove essential not just for outbreak prevention, but for building more resilient and inclusive health systems. The lessons from West Africa's experience could also inform global strategies for addressing zoonotic risks in other traditional medicine systems worldwide.

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