

Optimizing dog bite management through telemedicine in resource limited primary health care: insights from Sindh and Balochistan

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Dog bites are a significant global public health concern, causing an estimated 55,000 deaths annually, with approximately 31,000 reported from Asia, primarily affecting children under 15. In low- and middle-income countries, like Pakistan, rabies, often termed “the disease of the impoverished” remains endemic due to delayed medical care and poor access to post exposure prophylaxis, particularly in rural areas.

Telemedicine, as implemented by ChildLife Foundation (CLF), has emerged as a promising tool to bridge healthcare gaps in underserved settings. By facilitating accurate case categorization, standardized treatment decisions, and timely delivery of essential interventions, it supports Pakistan's alignment with the One Health approach recommended by WHO to achieve rabies elimination by 2030. The study explores its roles in improving protocol adherence and clinical outcomes in pediatric dog bite cases managed at primary health centers in Sindh and Balochistan.

Objectives: To evaluate the burden of pediatric dog bite cases and the role of telemedicine in optimizing management through protocol adherence and treatment modification in resource-limited primary health care centers across Sindh and Balochistan.

Methodology: This was a retrospective study, conducted over a 6 months period from December, 2024 to May, 2025. Data were collected through confidential electronic medical records. Children presenting with dog bite injuries received second opinion from a specialist-level physician through CLF telemedicine satellite centers operating via fiber optic / VSAT screen with high definition cameras and IP phones on both sides. Each case was accessed based on WHO dog bite categorization, and data were extracted on exposure type, treatment advised (wound care, anti- rabies vaccine (ARV), and rabies immunoglobulin (RIG) and physician modifications to management.

Results: A total of 2,121 dog bite cases were managed through telemedicine during the study period. Of these, 14.3% ($n = 303$) were advised immediate wound washing, indicating the basic care had been missed at the initial point of contact. 4.6% ($n = 97$) were classified as Category II exposures, requiring ARV only and 95.4% ($n = 2,024$), classified as Category III exposures, requiring ARV and RIG.

Conclusion: Telemedicine proved to be an effective tool for guiding frontline healthcare workers in the accurate classification and management of pediatric dog bite cases across underserved regions of Sindh and Balochistan. The high prevalence of Category III exposures highlights the severity of cases presenting at the primary care level. Through real time consultations and essential interventions – including wound care, ARV, and RIG – were initiated in accordance with WHO protocol. These findings emphasize the utility of telemedicine in standardizing emergency care, bridging clinical knowledge gaps at the periphery, and potentially reducing the risk of rabies-related mortality in children.

Keywords: ChildLife foundation, telemedicine satellite centers, World Health Organization.