



Kyasanur Forest Disease And Community Health Nursing In South India: A Narrative Review

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Abstract

Background: Karnataka's forest outbreak has grown into something much bigger. Kyasanur Forest Disease now touches Kerala, Tamil Nadu, and Goa, placing community health nurses at the centre of managing this tick-borne fever in some of India's most isolated corners.

Objective: This review examines how community health nurses handle kyasanur forest disease across South India their daily work, the obstacles they encounter, and where their capabilities might be strengthened.

Methods: Published studies from 2014 to 2026 were examined, drawing from academic databases and government reports. The focus stayed on nursing practice, surveillance activities, and community interventions.

Results: Community health nurses have become kyasanur forest disease's backbone. They manage house-to-house fever checks and deliver vaccines to tribal areas requiring hours of walking to reach. But workforce shortages, limited disease training, and supply problems create unnecessary hardships.

Conclusion: Staying ahead of kyasanur forest disease and similar diseases demands investment in nursing capacity. This means proper training, sufficient resources, and recognition that these nurses often represent the only healthcare presence in vulnerable communities.

Keywords

Kyasanur Forest Disease; community health nursing; zoonosis; climate change; vector-borne disease; India; surveillance

Introduction

Kyasanur Forest Disease stayed within Karnataka's borders for nearly sixty years. First identified in Shimoga district back in 1957, this tick-borne viral fever appeared content to remain in its forest home.¹ The 2010s changed everything.

Suddenly kyasanur forest disease appeared where it had never been seen. Kerala's Wayanad district reported cases in 2014. Tamil Nadu's Nilgiris followed suit, then Goa and Maharashtra.^{2,3,4} The

disease had started moving, though nobody could say exactly why. Climate change and expanding human activity in forested areas offered the most plausible explanations.

This expansion creates a particular challenge. In most newly affected regions, community health nurses represent the only formal healthcare presence across vast areas. Junior Public Health Nurses (JPHNs) and Primary Health Centre staff nurses suddenly find themselves managing surveillance, prevention, treatment, and coordination in forest-edge villages where

kyasanur forest disease spreads.⁵ The responsibility feels overwhelming, yet nursing literature has largely overlooked this reality.

kyasanur forest disease research typically examines the virus, disease patterns, or health system responses.⁶⁻⁸ Important work, certainly, but it misses something essential: nurses who must make prevention programs function in tribal communities, carry vaccines to villages reachable only on foot, and provide care with minimal resources and training. Program success or failure often hinges on what these nurses can or cannot accomplish.

This review addresses that gap through a nursing lens. The goal is understanding nurses' actual roles, identifying what complicates their work, and exploring how to strengthen their capacity for handling kyasanur forest disease and whatever climate-driven disease emerges next.

Methods

The review examined published research from January 2014 through March 2026 the period when kyasanur forest disease began expanding beyond Karnataka. Sources included standard academic databases (PubMed, Scopus, Google Scholar, IndMED) plus government reports from the Indian Council of Medical Research, National Centre for Disease Control, and state health departments.

The search approach was straightforward. kyasanur forest disease terms were matched with nursing practice, surveillance, and vaccination terms, focusing on South Indian contexts. Climate-health and vector-borne disease literature relevant to nursing practice received separate attention.

Included materials covered kyasanur forest disease epidemiology, nursing roles in infectious disease management, or climate-health connections in South India. Laboratory studies and conference abstracts without available full text were excluded. Being a narrative rather than systematic review, the emphasis fell on theme identification rather than formal quality assessment.

Understanding Kyasanur forest disease: Disease, Ecology, and Climate Connections

kyasanur forest disease virus belongs to the tick-borne disease family and brings serious

consequences. High fever, severe headache, and excruciating muscle pain typically mark the illness's start.⁹ About one in six patients develops a second phase weeks later, featuring neurological symptoms like confusion and tremors that may persist for months. Death rates reach 3 to 10 percent, and no specific treatment exists, making prevention crucial.¹⁰

Hard ticks (*Haemaphysalis spinigera*) drive the disease cycle. They acquire virus from small forest animals and transmit it through monkeys to humans. Peak tick activity occurs November through May, when most human cases appear.¹¹ This timing coincides with forest work seasons—people collecting forest products or grazing animals.

Climate change appears to reshape kyasanur forest disease's geographic possibilities. The Western Ghats have warmed roughly one degree over four decades, improving tick survival conditions.¹² Deforestation, plantation agriculture, and forest fragmentation create new boundary habitats where viral spillover becomes more probable.¹³

Kerala's kyasanur forest disease pattern proved revealing. Wayanad saw 91 of 102 confirmed cases among Kattunayakan tribal people engaged in forest work.¹⁴ Malappuram experienced cases among Cholanaickan communities living deep in forests and hunting monkeys.¹⁵ The disease consistently targets the most vulnerable populations those dependent on forest access with minimal healthcare availability.

Current prevention relies on a Bangalore-developed vaccine with significant limitations. Two initial doses plus annual boosters provide roughly 62 percent protection, while supply problems frequently disrupt vaccination campaigns.¹⁶ This places greater pressure on surveillance, education, and clinical management precisely where nursing makes its biggest impact.

Roles of Community Health Nurses

Ask any JPHN in Wayanad or rural Karnataka staff nurse about their profession, and the answer will go much beyond the initial definition. They simultaneously serve as monitoring officers, vaccination coordinators, health educators, healthcare providers, and community liaisons. This job is frequently done in remote areas that take hours to visit, and it uses resources that would concern metropolitan colleagues.

Surveillance: Finding Disease before It Spreads

Fever surveillance sounds simple until attempted in practice. JPHNs should visit every household weekly during transmission season, screening for suspected kyananur forest disease cases using established criteria. Reality means hiking hours to reach scattered settlements, some accessible only via foot trails that become muddy streams during monsoons.¹⁷

Human surveillance tells only part of the story. Nurses also coordinate unusual monkey death reports often the first indication of local kyananur forest disease virus activity. This requires relationships with forest guards, village leaders, and community members who may hesitate reporting animal deaths from fear of forest access restrictions.¹⁸

Technology offers some assistance. Digital platforms like IHIP enable real-time reporting when mobile coverage allows. But forest connectivity remains unreliable, so nurses maintain paper records and upload data when signals become available.¹⁹ It works, but barely.

Vaccination: Forest Logistics

Mass vaccination campaigns represent nurses' most visible work and biggest logistical challenge. Planning begins month's early mapping populations, estimating vaccine requirements, determining cold storage transport to electricity-free locations. Then comes the real test: delivering two doses one month apart to potentially skeptical populations.²⁰

Vaccine hesitancy runs deep, especially among tribal communities with legitimate historical reasons for distrusting government programs. Successful nurses work through traditional leaders, communicate in local languages, and address specific cultural concerns. But this demands time and relationship-building that formal programs rarely accommodate.²¹

Administrative tracking creates additional burdens. Nurses maintain individual vaccination records, track down people missing second doses, and keep campaigns functioning despite vaccine delays which happen more frequently than anyone admits.²²

Education: Making Complex to Understandable

Health education seems straightforward until facing the need to explain tick biology across varying literacy levels, multiple languages, and different livelihood patterns. Forest workers need different guidance than agricultural laborers. Visual aids help, but locally relevant materials require creativity and cultural understanding.²³

During outbreaks, nurses become risk communicators needing entirely different skills. They must provide accurate information without creating panic, counter rapidly spreading rumors, and coordinate messaging across multiple channels and languages. Balancing transparency with reassurance proves delicate work.²⁴

Clinical Care: Limited Options, Critical Decisions

When suspected Kyananur Forest Disease cases arrive at Primary Health Centres, staff nurses become the primary and often most important care providers. Without specific antiviral treatments, care focuses on symptom management controlling fever, maintaining hydration, monitoring for signs requiring higher-level referral.²⁵

Sample collection appears routine but proves critical for diagnosis and outbreak investigation. Nurses must ensure proper specimen handling, cold storage, and transport to laboratories potentially hours away. Mistakes here mean losing essential diagnostic information.²⁶

Coordination: Making Systems Function

One Health approaches sound excellent in theory. Practice requires nurses to coordinate across health, veterinary, forest, and wildlife departments each with distinct priorities and bureaucratic cultures. Nurses frequently serve as translators between different government systems.²⁷

Community-level coordination means participating in village health committees, collaborating with panchayat leaders, and achieving consensus on prevention activities. These coordination skills rarely appear in nursing training, yet prove essential for program success.²⁸

Challenges

The biggest challenge facing nurses is straightforward arithmetic: insufficient numbers. Single JPHNs may cover 10,000 to 15,000 people across multiple villages. Adequate transmission season surveillance becomes physically impossible. High turnover rates, particularly among women assigned to remote posts, create workforce crises.²⁹

Training presents another significant problem. Most nursing programs barely address zoonotic diseases, much less Kyasanur Forest Disease specifics. In-service training varies wildly in quality, leaving nurses to independently master disease ecology, vector behavior, and surveillance protocols. For complex diseases like Kyasanur Forest Disease, learning-by-doing proves inadequate.³⁰

Geography complicates everything. Villages may require hours of foot or motorcycle travel, with monsoons making some areas completely unreachable. These physical demands contribute to burnout and limit consistent service delivery.³¹

Resource constraints affect vaccine storage through laboratory coordination. Cold chain failures compromise vaccination campaigns. Delayed test results undermine surveillance effectiveness. Poor transportation and communication infrastructure makes emergency coordination nearly impossible.³²

Cultural and language barriers add complexity, particularly in tribal areas. Trust-building takes time, and traditional gender roles may limit access to women and children. Better protocols cannot solve these problems they require sustained relationship development.³³

Strengthening Nursing Capacity

Improving nursing capacity for Kyasanur Forest Disease and similar diseases requires changes across multiple areas. Education must catch up with reality. Nursing curricula should substantially cover zoonotic diseases, climate-health connections, and One Health approaches. Both degree and diploma programs need updates reflecting actual nursing challenges.³⁴

Areas facing genuine Kyasanur Forest Disease threats need specialized training modules covering disease ecology, surveillance methods, vaccination logistics, and inter-agency coordination. Continuing education programs

could help practicing nurses stay current with evolving practices.³⁵

Workforce development means understanding why nurses leave remote assignments and what encourages them to stay. Better career paths, housing support, transportation allowances, and professional recognition could help. Incentives for difficult postings are necessary, not merely beneficial.³⁶

Technology could improve nurse effectiveness if designed for actual working conditions. Mobile health apps for surveillance, decision support tools, and telemedicine consultation show potential but only functioning in low-connectivity environments with multiple local language support.³⁷

Infrastructure investment may seem less exciting than new technologies, but proves more important. Reliable vaccine supply chains, functional laboratory networks, and basic transportation and communication systems would solve many current problems.³⁸

Research should examine what actually works. How effective are different nursing interventions? Which community engagement strategies succeed with tribal populations? How should services be organized and delivered? Community-based participatory research could engage nurses as partners while building evidence for better policies.³⁹

Implication

Community health nurses make Kyasanur Forest Disease prevention and treatment work across South India. They conduct surveillance, run vaccination campaigns, provide care, and coordinate between agencies and communities. As climate change drives disease spread, their importance grows.

But they work under serious constraints too few nurses, inadequate training, limited resources, and geographic challenges creating unnecessary difficulties. These represent more than professional frustrations; they threaten community health security.

One Health approaches offer useful frameworks for nursing practice evolution, but implementation requires practical changes in education, protocols, and organizational support. Talking about integrated approaches is insufficient investment in making them possible is essential.

Kyasanur Forest Disease expansion represents both current challenge and future preview. Climate change will likely drive additional zoonotic disease emergence and spread, with community health nurses again on the front lines. Strengthening their capacity now addresses more than one disease it builds resilience for whatever emerges next.

The question is not whether to invest in nursing capacity, but how quickly and effectively it can happen. Communities depending on these nurses for health and safety deserve better than current conditions.

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