

# Assessing Community Readiness for Dengue Fever Prevention in Prongil Commune, Pursat Province, Cambodia: A Cross-Sectional Study

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## Abstract

Dengue fever (DF) remains a significant global public health issue, particularly in Asia, which bears 70% of the global disease burden. In Cambodia, recurrent dengue epidemics have severe societal and economic impacts. We assessed the level of community readiness to prevent dengue fever in Prongil Commune, Pursat Province, using the Community Readiness Model (CRM). A cross-sectional survey of 98 participants from seven villages evaluated five dimensions: knowledge of the issue, knowledge of efforts, community climate, leadership, and resources. Our finding indicates an overall readiness level of «Initiation» (Stage-6), with high scores in knowledge and community climate but limitations in leadership and resources. The findings underscore the need for targeted interventions to enhance community leadership and mobilize resources. We recommend strengthening community engagement and reallocating resources for sustainable dengue prevention.

**Keywords:** Dengue Fever, Dengue Fever Prevention, Community Readiness, Prongil Commune

## 1. Introduction

Dengue fever (DF), an arboviral disease transmitted by *Aedes* mosquitoes, affects over 3.6 billion people globally, with 50-100 million infections reported annually. Asia accounts for 70% of the global dengue burden, and Cambodia has one of the highest per-capita incidence rates, primarily affecting children. DF has both health and economic consequences, straining families and healthcare systems. Despite advancements in vector control, significant challenges persist. WHO's global strategy for dengue prevention emphasizes the need for integrated, community-based approaches tailored to local contexts [1,4].

Previous studies have highlighted the importance of community engagement in DF prevention. Harapan et al. found that knowledge, attitudes, and practices regarding dengue significantly affect prevention outcomes in Indonesia, emphasizing the role of education in improving community readiness. Similarly, Kumaran et al. demonstrated that rural Cambodian communities benefit from knowledge dissemination and active participation in vector control activities [5,6].

However, barriers such as limited resources and ineffective leadership often hinder sustainable prevention efforts. Leadership plays a vital role in mobilizing communities for dengue prevention. As noted by Bryan RT et al., proactive leadership enhances community participation in vector control initiatives. Additionally, studies by Wong LP et al. and Selvarajoo S et al. reveal that integrating local knowledge and health beliefs into public health programs fosters more effective outcomes. Socioeconomic factors, such as education and income levels, are also critical determinants of dengue prevention practices. Research by Roslan et al. and Harapan et al. highlights how higher socioeconomic status correlates with better knowledge and practices related to DF [7-10].

However, communities with lower socioeconomic levels often struggle with resource limitations, which Boyer et al. identified as a significant barrier to sustaining prevention programs. Although extensive research has been conducted on dengue fever prevention and control, gaps remain in understanding the specific readiness levels of rural communities in Cambodia. Additionally, while many studies address community knowledge and practices, few incorporate comprehensive frameworks of Community

readiness Model (CRM). CRM is assessed using five key dimensions, which collectively determine the extent to which a community is prepared to address a public health issue like dengue prevention. These dimensions include. Knowledge of the issue, which evaluates the community's awareness of dengue fever, its causes, and prevention strategies. Knowledge of efforts, which assesses the community's understanding of existing prevention initiatives. Community climate, reflecting the general attitudes, beliefs, and level

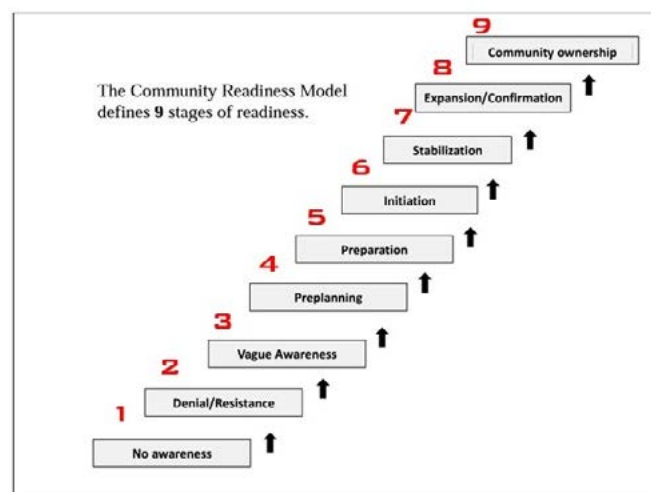
of concern regarding dengue prevention. Leadership, which measures the involvement and commitment of local leaders in mobilizing community action, and Resources, which examines the availability of financial, material, and human resources to support prevention efforts [1-5]. By analyzing these five dimensions, public health officials can tailor interventions to enhance community engagement and effectiveness in vector control figure 1 [12].



**Figure 1: Five Dimensions of Community Readiness**

Community Readiness Model categorizes community preparedness into nine progressive stages, indicating different levels of awareness, motivation, and capacity to implement public health interventions. These stages include No Awareness, where the issue is not recognized; Denial/Resistance, where minimal acknowledgment exists but with resistance to change; Vague Awareness, where people recognize the issue but lack motivation to act; Preplanning, where some community members acknowledge the problem and begin discussions on action; Preparation, where active planning starts with initial leadership involvement;

Initiation where programs are implemented but may still lack strong organization and resources; Stabilization; where initiatives are well-organized and community support is growing; Confirmation/Expansion, where programs are stable and expansion efforts begin and High Level of Community Ownership, where interventions are deeply embedded, sustainable, and largely community-driven [1-9]. Understanding these stages helps policymakers and health workers implement strategies appropriate to the community's current level of readiness (Figure 2) [12].



**Figure 2: Nine Stages of Community Readiness**

This study fills these gaps by providing targeted insights into the strengths and weaknesses of community readiness in a rural Cambodian context. The primary aim of this study is to evaluate community readiness to prevent dengue fever in Prongil Commune, Pursat Province. Specifically, the study seeks to assess community knowledge about dengue fever and its prevention, analyze community attitudes and practices related to prevention efforts, evaluate the role of community leadership in facilitating vector control, and identify resource availability and constraints that impact the effectiveness of dengue prevention measures. These objectives provide a comprehensive framework for understanding the factors that influence community readiness and identifying areas for improvement.

## 2. Materials and Methods

We conducted a community-based cross-sectional study from January 7–9, 2022, in Prongil Commune, Pursat Province. The sample size for this study was calculated using a single proportion formula. As the anticipated percentage frequency of dengue knowledge in the population was unknown, a conservative estimate of 50% was assumed as the proportion. A margin of error of 10% and a 95% confidence interval were applied in the calculation. A multistage random sampling method was employed to select 98 participants from seven villages.

Data for this study were collected using a structured questionnaire and a checklist adapted from the CRM. The questionnaire was divided into five key sections designed to comprehensively assess various aspects of community readiness. The Socio-Demographic section gathered information on participants' gender, age, marital status, education, occupation, and income. The second

section focused on participants' knowledge of dengue fever, including their awareness of symptoms, modes of transmission, and prevention methods. Attitudes and practices related to dengue fever prevention were explored in the third section, which examined community members' perceptions and behaviors. The fourth section assessed leadership and engagement, capturing participants' views on the role of local leadership in dengue prevention efforts. Finally, the resource availability section evaluated the financial and material resources accessible for vector control activities. This comprehensive approach ensured that all critical dimensions of community readiness were thoroughly examined. Double data entry was performed to ensure accuracy and keep the error to the least. Average score of each dimension was adjusted and used to determine the level of readiness for each dimension. The overall mean score of all dimensions was used to determine the overall level of community readiness. Rating answers were used for reliability analysis. Ethical approval was obtained from the National Ethic Committee of Health Research of the Ministry of Health of Cambodia (N154 NECHR). Participants provided verbal informed consent, and confidentiality was maintained throughout the study.

## 3. Results

### 3.1 Baseline Characteristics of Participants Included

The study involved 98 participants from Prongil Commune, predominantly female (77.6%), with an average age of  $44.7 \pm 14.3$  years. The majority of respondents were married (89.8%) and engaged in farming (39.8%) or selling goods (33.7%) as their primary occupation. The median monthly income among participants was USD 138 (270), reflecting the rural socioeconomic conditions of the study area.

Characteristics	N 98		
	%	Mean (SD)	Median (IQR)
Age in years		44.7 ± 14.3	
<b>Gender</b>			
Female	77.6%		
Male	22.4%		
<b>Ethnicity</b>			
Khmer	99%		
Khmer Islam	1%		
<b>Marital status</b>			
Married	89.8%		
Single	9.2%		
Widow	1%		
<b>Education level</b>			
Primary school	45.9%		
Secondary school	22.4%		
High school	16.3%		
No schooling	14.3%		
Pagoda	1.0%		

Occupation			
Farmer	39.8%		
Seller	33.7%		
Homemaker	13.3%		
Labor worker	5.1%		
Government staff	3.1%		
Sculptor	2.0%		
Tailor	2%		
Taxi driver	1.0%		
<b>Monthly income (USD)</b>			138 (270)

**Table 1: Socio-Demographic Status**

Dimensions	Score (%)	Mean score (SD)
Knowledge of dengue	73.0%	8.8 ± 1.3
Attitude toward dengue prevention	88.0%	4.4 ± 0.8
Behavior toward dengue prevention	88.0%	7 ± 0.9
Practice toward dengue prevention	60.0%	8.3 ± 2.2

**Table 2: Participants’ Percentage Scores in Knowledge, Attitude, Behavior Toward Dengue Fever**



**Figure 3: Staging of Community Readiness to Prevent Dengue Fever in Prongil Commune, Pursat Province**

**4. Discussion**

The findings from this study indicate that the community exhibits a moderate level of preparedness for dengue fever prevention, corresponding to Stage-6 ("Initiation") on the Community Readiness Model (CRM). Strengths were observed in knowledge of the issue, awareness of ongoing efforts, and community climate, suggesting a foundational level of awareness and active participation in dengue prevention initiatives. However, notable deficiencies persist in leadership engagement and resource allocation, underscoring critical areas requiring strategic intervention. These findings align with the study of Hassan et al. in Kassala,

Sudan, where weaknesses in surveillance and laboratory diagnostics contributed to an inadequate outbreak response, highlighting the necessity of stronger leadership, resource mobilization, and intersectoral collaboration. Similarly, the study conducted in Dhaka, Bangladesh, identified significant gaps between awareness and action, reinforcing the importance of community engagement strategies such as environmental campaigns in fostering proactive dengue prevention behaviors [13,14].

Furthermore, the study by Nguyen-Tien et al. in Hanoi, Vietnam, emphasized budgetary constraints as a major

impediment to dengue prevention efforts, limiting the scalability of community-driven interventions. This underscores the urgent need for effective resource mobilization, including financial investments, skilled personnel, and infrastructural support, to ensure the long-term sustainability of dengue prevention programs [15].

## 5. Conclusion

The community readiness level in Prongil Commune is in a transitional phase in dengue prevention efforts, exhibiting foundational engagement yet facing critical gaps in leadership and resource sustainability. While awareness and participation are evident, overcoming structural and financial limitations remains essential for achieving sustained prevention. Strategic investment in leadership capacity, multi-sector collaboration, and targeted resource mobilization will be key to advancing beyond the initiation phase toward a self-sustaining and resilient community response.

## Areas for Further Research

Future research should explore the deeper behavioral and structural barriers that affect community readiness in Prongil Commune. Mixed-methods studies could provide nuanced insights into the interplay between socioeconomic, educational, and cultural factors influencing community dynamics. Additionally, longitudinal studies are recommended to track changes in readiness levels and evaluate the long-term impact of targeted interventions.

## Declaration of Interest

No conflicts of interest to declare.

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