

Review Article

Factors Influencing Dengue Hemorrhagic Fever Incidence in the Ambacang Primary Health Center Area, Padang: A Critical Review Article

Nur Ainun Pateda ^a, Salahuddin A. Palloge ^{b,*}

^a Universitas Muslim Indonesia, Makassar, Indonesia, nurainunpateda22@gmail.com

^b Universitas Muslim Indonesia, Makassar, Indonesia, salahuddin.andipalloge.fk@umi.ac.id

Correspondence should be addressed to Salahuddin A. Palloge; salahuddin.andipalloge.fk@umi.ac.id

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Abstract:

Dengue hemorrhagic fever remains a major public health problem in tropical urban settings, where climatic conditions, vector ecology, household environments, and human behavior interact to sustain transmission. This review critically synthesizes a journal appraisal concerning factors influencing dengue hemorrhagic fever incidence in the Ambacang Primary Health Center area of Padang, Indonesia. The reviewed study used a qualitative phenomenological approach with in-depth interviews among seven participants who had experienced dengue hemorrhagic fever. The main finding was a marked gap between knowledge and preventive behavior: participants generally understood dengue symptoms, danger signs, transmission through *Aedes* mosquitoes, and the importance of prevention, but preventive actions were mostly performed only after personal or family experience of illness. Low routine practice of source reduction, delayed preventive behavior, environmental conditions that support mosquito breeding, and behavior change triggered by negative health experience were identified as important themes. Methodological appraisal showed strengths in contextual exploration but limitations in sample size, selection-bias control, reporting of saturation, triangulation, and transparency of qualitative analysis. This review emphasizes that dengue prevention should move beyond knowledge dissemination toward sustained community engagement, household-level vector control, behavioral reinforcement, and stronger primary health-care surveillance.

Keywords: Dengue hemorrhagic fever; *Aedes aegypti*; Health behavior; Primary health care; Qualitative review.

1. Introduction

Dengue hemorrhagic fever is an acute mosquito-borne viral disease transmitted mainly by *Aedes aegypti* and *Aedes albopictus* mosquitoes (1),(2),(3),(4). The disease has become a persistent public health challenge in tropical and subtropical regions because vector breeding is supported by warm temperatures, rainfall variability, water storage practices, and dense human settlements (3),(5),(6).

Indonesia is one of the countries where dengue has remained endemic, with periodic increases in cases and deaths reported across provinces (3),(7),(8). Urban areas such as Padang are particularly vulnerable because population density, household water containers, inconsistent environmental sanitation, and fluctuating rainfall can increase mosquito breeding opportunities and human-vector contact (9),(10).

Public health control of dengue requires more than clinical management of infected individuals because transmission is strongly influenced by household behavior, environmental management, and vector-control practices (10),(11),(12). Effective prevention depends on sustained household and community behaviors, including eliminating mosquito breeding sites, covering water containers, maintaining environmental cleanliness, and promptly seeking care when warning signs occur (9),(10),(11).

The journal appraisal reviewed in this article highlights an important behavioral problem: community members may possess adequate knowledge about dengue but still fail to implement prevention consistently before experiencing illness (11),(13). This knowledge-practice gap is clinically and socially relevant because preventive behavior that begins only after infection may not be sufficient to interrupt transmission at the community level (11),(12).

This review aims to reorganize and critically discuss the reviewed Indonesian qualitative study on factors influencing dengue hemorrhagic fever incidence in the Ambacang Primary Health Center area, with emphasis on host behavior, environmental determinants, methodological quality, and implications for community-based dengue prevention (13).

2. Methods

This article was developed as a critical narrative review based on a journal appraisal document concerning the study “Faktor Yang Mempengaruhi Kejadian Demam Berdarah Dengue di Puskesmas Ambacang Padang” by Erni Musmiler and Risa Meliarni Ermi (13). The appraisal was prepared as part of a public health and community medicine assignment and examined the background, objective, design, sampling procedure, determinants, analysis, findings, conclusions, and methodological limitations of the original study.

The reviewed study used a qualitative phenomenological design. Data were collected through in-depth interviews with seven participants who had experienced dengue hemorrhagic fever in the Ambacang area of Padang (13). The qualitative data were processed using content analysis to explore participant knowledge, attitudes, preventive actions, and environmental factors related to dengue transmission.

For this review article, the appraisal content was reorganized into an international review format (13). The synthesis focused on four domains: epidemiological context, host-related factors, environmental and vector-related factors, and methodological appraisal (13). Because the source was a journal review rather than a new field study, no additional human-subject data were collected for this manuscript.

3. Results

Characteristics of the Reviewed Study

The appraised study addressed the high incidence of dengue hemorrhagic fever in the Ambacang Primary Health Center area and the need to understand factors associated with dengue occurrence (13). The central objective was to identify factors related to dengue hemorrhagic fever among community members in the Ambacang area of Padang.

The original study used a qualitative phenomenological approach involving seven participants who had experienced dengue hemorrhagic fever (13). The study emphasized host factors, particularly knowledge, attitudes, and preventive practices, while also acknowledging environmental conditions that enable mosquito breeding.

Table 1. Summary of the reviewed journal

Component	Description
Reviewed title	Factors influencing dengue hemorrhagic fever incidence in the Ambacang Primary Health Center area, Padang.
Original authors	Erni Musmiler and Risa Meliarni Ermi.
Publication source	Jurnal Al-Asaniyah.
Reviewer	Nur Ainun Pateda.

Component	Description
Study design	Qualitative phenomenological study using in-depth interviews.
Participants	Seven community members who had experienced dengue hemorrhagic fever.
Setting	Ambacang Primary Health Center area, Padang, Indonesia.
Main focus	Knowledge, attitudes, preventive practices, and environmental determinants related to dengue hemorrhagic fever.

Main Findings of the Appraised Article

The principal finding was a mismatch between knowledge and prevention practice (13). Participants generally had good knowledge about dengue hemorrhagic fever, including its causes, signs and symptoms, critical phase, danger, and transmission through *Aedes* mosquitoes (2),(4),(13),(14)(12).

However, knowledge did not automatically translate into preventive behavior. Before experiencing dengue, many participants did not consistently drain water containers, maintain environmental cleanliness, eliminate mosquito breeding sites, or perform household mosquito-control practices (9),(10),(13).

Personal or family experience of dengue became a major stimulus for behavior change (11),(13). Participants were more likely to practice prevention after becoming ill or after caring for affected family members, indicating that perceived risk increased after direct exposure to the disease.

Environmental factors were also identified as relevant determinants. The presence of water containers, unmanaged waste, standing water, rainfall variability, and humid tropical conditions can support mosquito breeding and increase the risk of dengue transmission (15),(16).

Table 2. Key determinants and public health implications

Determinant	Finding from the appraisal	Implication for prevention
Knowledge	Participants generally understood dengue symptoms, danger, and transmission.	Education should be maintained but connected to practical behavior-change strategies.
Attitude	Preventive attitude was weak before illness experience.	Risk communication should increase perceived susceptibility and seriousness before outbreaks occur.
Preventive action	Prevention was mostly performed after experiencing dengue.	Routine household vector control should be reinforced through repeated community engagement.
Environment	Conditions supporting <i>Aedes</i> breeding were present or possible.	Source reduction, environmental sanitation, and community clean-up should be sustained.
Methodological reporting	Sampling, saturation, bias control, and analysis were not fully reported.	Future studies should follow qualitative reporting standards and include direct quotations.

Methodological Findings

The qualitative phenomenological design was suitable for exploring lived experience and perceptions related to dengue prevention (13). However, the appraisal found that the study did not clearly describe specific procedures to reduce selection bias, did not fully report inclusion and exclusion criteria, and did not explain how data saturation was determined.

The small sample of seven participants may be acceptable for focused qualitative inquiry if saturation is achieved, but the report should justify sample adequacy and describe participant characteristics (13). The appraisal also noted that direct interview quotations were not sufficiently presented, limiting the transparency of the link between raw data and thematic interpretation.

4. Discussion

Interpretation of the Knowledge-Practice Gap

The most important implication of this review is that dengue prevention cannot depend on knowledge alone (13)[1,9]. Although participants knew about dengue, preventive behavior was delayed until after illness experience. This suggests that knowledge must be reinforced by perceived susceptibility, perceived severity, family support, community norms, and practical cues to action (12).

Public health education should therefore move beyond information delivery. Community programs need to transform awareness into routine household practices, such as draining water containers, covering water storage, recycling or removing unused items, and cleaning potential breeding sites before cases increase (17).

Environmental and Vector-Control Implications

Dengue transmission is sustained by the interaction between human behavior, mosquito ecology, and environmental conditions (3),(15),(18). In tropical urban areas, artificial water containers around households can become breeding sites, and short mosquito flight distances allow neighborhood-level transmission to continue when source reduction is inconsistent (15),(16).

The 3M strategy, including draining water containers, closing water storage, and removing or recycling unused items, remains central to dengue prevention (17). However, household-level action must be combined with community coordination because one neglected breeding site can affect nearby families in densely populated environments (16),(17).

Methodological Appraisal and Reporting Quality

The reviewed study provides useful contextual insight into community perceptions and behavior, but its methodological reporting requires strengthening (13). Qualitative research reports should describe recruitment, participant characteristics, inclusion and exclusion criteria, interview procedures, coding steps, reflexivity, triangulation, and saturation to improve credibility and transferability.

Future studies should also provide representative participant quotations for each theme (13). Quotations allow readers to evaluate whether interpretations are grounded in the data and make the findings more transparent for scientific publication.

Implications for Primary Health-Care Practice

Primary health-care teams can strengthen dengue prevention by integrating health education with breeding-site mapping, routine larval inspection, household risk communication, and collaboration with local leaders (17). Interventions should be delivered before seasonal increases and reinforced after reported cases to prevent reactive-only behavior (17),(18).

Behavioral interventions should also address perceived barriers (13). Families may know what to do but fail to act because of competing priorities, limited time, low perceived personal risk, or lack of social reinforcement. Practical reminders, neighborhood accountability, and household checklists can help sustain preventive habits (12),(17).

Future Research Directions

Future research should include larger and more diverse samples across different neighborhoods, clear inclusion and exclusion criteria, triangulation with health-worker or household observations, and standardized qualitative reporting (13). A mixed-methods approach would allow researchers to explore why people do or do not act while also estimating the magnitude of associations between behavior, environment, and dengue occurrence (7),(19).

Further studies should evaluate interventions that specifically target the knowledge-practice gap, including community-based source reduction, behavior-change communication, school and family engagement, and digital reminders for mosquito control (11),(17). Measuring behavioral outcomes and entomological indicators would help determine whether interventions produce sustainable change (17).

5. Conclusion

This review of the Ambacang dengue journal appraisal shows that dengue hemorrhagic fever prevention is strongly influenced by the relationship between knowledge, attitude, behavior, and environment. Although participants had good knowledge about dengue, preventive action was often delayed until after personal or family experience of illness. This indicates that health education must be strengthened with behavioral reinforcement, community participation, household vector control, and environmental management. From a methodological perspective, the reviewed qualitative study provides valuable contextual insight but requires stronger reporting of sampling, saturation, bias control, analytic procedures, and participant quotations. Future dengue prevention programs in primary health-care settings should prioritize sustained behavior change before outbreaks occur, not only reactive prevention after cases appear.

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