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Health Communication Strategies in Dengue Fever Prevention at Wonokusumo Health Center Surabaya

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Abstract

This study aims to analyze the implementation of health communication strategies as well as the supporting and inhibiting factors affecting communication effectiveness in the Dengue Hemorrhagic Fever (DHF) prevention program at the Wonokusumo Community Health Center (Puskesmas) in Surabaya. This study employs a qualitative approach with a descriptive method. Data collection techniques were conducted through observation, interviews, and documentation involving healthcare workers, health volunteers (kader), and community members participating in the DHF prevention program. The results indicate that the health communication strategy is executed through health counseling, "3M Plus" socialization, fogging, mosquito larva inspection, environmental cleanup, and the empowerment of larva monitoring volunteers (jumantik) and the Kampung Surabaya Hebat (KSH) volunteers. This communication strategy is implemented participatively and collaboratively by involving schools, local neighborhood heads (RT/RW), health volunteers, and the surrounding community. Supporting factors for the strategy's effectiveness include cross-sector cooperation, the active involvement of health volunteers, and interpersonal communication that is easily understood by the public. Meanwhile, inhibiting factors include low participation from some community members, a lack of consistency in maintaining environmental cleanliness, and limitations in health promotion media. This study concludes that a health communication strategy based on community participation and health volunteer empowerment can successfully increase public knowledge, awareness, and participation in DHF prevention within densely populated urban areas. Therefore, it is necessary to strengthen health communication media and provide continuous education so that the DHF prevention program can run more effectively and sustainably.

Keywords– *Health Communication Strategy; DHF Prevention; Community Participation.*

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1. Introduction

Dengue Hemorrhagic Fever (DHF) remains a serious public health issue in Indonesia that demands critical attention. The disease, caused by the dengue virus and transmitted through the Aedes aegypti mosquito, tends to spike during the rainy season. Densely populated urban environments with high mobility are particularly vulnerable to the spread of DHF. Consequently, prevention efforts must not only focus on medical treatments but also require effective health communication strategies to foster public awareness and active participation.

Surabaya is one of the regions facing a high risk of DHF transmission, especially when the rainy season arrives early. In response to an anticipated surge in cases at the beginning of the rainy season, the Surabaya City Government issued Circular Letter No. 400.7.9/29490/436.7.2/2025 (Pemerintah Kota Surabaya, 2025). According to data from the Meteorology, Climatology, and Geophysics Agency (BMKG), the rainy season was predicted to arrive earlier and last longer than the previous year, peaking between January and February 2026. The Surabaya City Government subsequently intensified the Mosquito Nest Eradication (PSN) campaign through the "3M Plus" program and the One House One Jumantik Movement (G1R1J) to curb the spread of DHF (Pemerintah Kota Surabaya, 2025).

The "3M Plus" program involves actions such as draining water reservoirs, closing water storage tightly, recycling used goods, using mosquito repellents, installing wire mesh screens, and applying larvicide to water containers. This strategy underscores that the success of DHF prevention relies heavily on active community involvement through clean and healthy lifestyle changes. Hence, health communication plays a vital role in delivering education and building public awareness regarding the importance of DHF prevention (RSUD Husada Prima Jatim, 2025).

The Wonokusumo Community Health Center (Puskesmas) in Surabaya has implemented various preventive measures, including fogging, health socialization, and partnerships with schools and Kampung Surabaya Hebat (KSH) volunteers. One notable collaborative activity was conducted with SMP

PGRI 6 Surabaya, featuring thorough fogging and education on the importance of routine "3M Plus" implementation. This initiative demonstrates cross-sector collaboration in DHF prevention using a direct health communication approach involving healthcare workers, schools, and the community (S2MP FIP UNESA, 2026).

Previous studies highlight that health communication strategies significantly influence the success of DHF prevention initiatives. For instance, a study showed that the health communication strategy of the Banjarmasin City Health Office in promoting DHF prevention programs had not run optimally, as DHF cases continued to rise annually (Abid Rahmatullah et al., 2023). That study emphasized that health communication requires a persuasive approach to encourage the public to take active preventive measures. Furthermore, healthcare workers face challenges such as seasonal shifts, dynamic government regulations, and increased workloads that affect the efficacy of health communication to the public (Abid Rahmatullah et al., 2023).

Ika Martiningsih et al. (2025) found that health promotion strategies for DHF control are driven by advocacy, social support, community education, home visits, PSN monitoring, and cross-sector environmental cleanups. This study indicates that involving health volunteers, community leaders, and government agencies enhances the effectiveness of DHF prevention through participatory and collaborative health communication.

Nugroho Piter Saputro & Iis Kurnia Nurhayati (2025) further explained that health communication strategies utilizing various media—such as social media, pamphlets, and direct socialization—can improve public understanding of DHF prevention programs. Deploying credible communicators like healthcare workers, volunteers, and community figures is considered highly effective in raising awareness and public participation.

Risk communication in DHF prevention also requires a transparent, participatory approach that builds on public trust. Public perception of health innovations is heavily influenced by trust in government, comprehension of information, and community involvement in health programs (Prasetiyo et al.,

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2025). Therefore, open communication strategies that actively engage citizens are vital to the success of DHF control programs.

Interactive educational programs also yield positive behavioral modifications. The "4M Plus" strategy via socialization and counseling has proven effective in improving public knowledge and awareness to prevent the spread of DHF (Pitriani et al., 2025). Interactive education drives public behavior toward maintaining environmental hygiene and implementing preventive measures to eliminate Aedes aegypti breeding sites.

Combining health education with fogging activities is highly effective in increasing public awareness of the "3M Plus" PSN movement. Socialization involving schools, village communities, and health offices enhances public understanding of DHF symptoms, mosquito life cycles, and environmental sanitation (Harefa et al., 2025). Community empowerment through education and active mosquito larva monitoring also increases public care for the environment. Routine larva checks, continuous education, and establishing larva monitoring teams effectively suppress transmission risks and instill healthy lifestyle behaviors (Asep Firmansyah et al., 2025).

This is further supported by Kunasagran et al. (2025), who discussed the effectiveness of the Communication for Behavioural Impact (COMBI) strategy in DHF prevention. Using a systematic review, their study analyzed behavior-change-centered health communication programs for dengue control. The findings showed that COMBI-based strategies effectively elevate public awareness, community participation, and preventative actions through interpersonal communication, health education, and active engagement, confirming that structured communication ensures program success.

Lin et al. (2025) examined health communication strategies in dengue prevention using a community survey approach. They discovered that delivering health messages tailored to specific risk levels can minimize "message fatigue" or public boredom with health information. The effectiveness of health communication is dictated by message delivery, frequency, and local relevance.

Adaptive communication strategies are deemed more successful in capturing public attention and raising awareness.

Soo et al. (2024) analyzed health literacy rates and attitudes among Asian youth regarding dengue prevention in an endemic, developed community. The results demonstrated that health education heavily impacts knowledge and preventive behaviors in adolescents and young adults. Digital media, health campaigns, and school-based communication are highly effective in educating the public on DHF dangers and environmental sanitation. This implies that health communication strategies must fit the target demographic's traits for optimal message absorption.

Focus Group Discussions (FGD) on dengue control strategies in Bengkulu City also revealed that health communication involving health offices, community health centers, volunteers, and citizens strengthens coordination. Collaborative and participatory communication strategies are foundational to building community consciousness regarding the elimination of mosquito nests and adopting healthy lifestyles, emphasizing the role of community health centers as hubs for local health communication (Triana et al., 2025).

While existing literature highlights the imperative role of health communication in DHF prevention, most previous studies focus on provincial health offices, innovation-based programs, or general community empowerment. Research specifically examining DHF prevention communication strategies at the primary health center level—particularly in densely populated urban environments like the Wonokusumo Community Health Center in Surabaya—remains limited. Yet, primary health centers (puskesmas) are the first-line healthcare facilities with a strategic role in directly educating the public.

This study is crucial to analyze the DHF prevention communication strategies applied by the Wonokusumo Community Health Center to improve public awareness and participation. This research is expected to contribute to developing more effective and adaptive health communication strategies for urban dengue control.

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2. Method

This study utilizes a qualitative approach with a descriptive method to understand profoundly the health communication strategies executed by the Wonokusumo Community Health Center in Surabaya. Qualitative research aims to interpret social phenomena naturally through descriptive data collection (Sugiyono, 2022). This approach was selected because the study focuses on health communication processes, educational formats, and public engagement.

The research was conducted at the Wonokusumo Community Health Center, Surabaya, chosen due to its extensive health communication initiatives, such as health socialization, fogging, "3M Plus" education, and partnerships with local volunteers and educational institutions. The study was carried out in 2026.

Data sources comprise primary and secondary data. Primary data were gathered through direct interviews and observations of DHF prevention activities. Informants included healthcare workers, health promotion officers, health volunteers, and residents. Secondary data were sourced from official documents, news articles, scientific journals, and activity documentation.

Data collection techniques involved observation, interviews, and documentation. Semi-structured interviews were conducted to yield in-depth data, while documentation (photos, circular letters, and program archives) supplemented the findings (Sugiyono, 2022).

Data analysis followed an interactive model consisting of data reduction, data display, and conclusion drawing/verification (Sugiyono, 2022). Data reduction focused on relevant information, which was then displayed descriptively for easy interpretation before final conclusions were drawn. To ensure data validity, source and technique triangulation were applied (Sugiyono, 2022). Source triangulation compared interview data across different informants, while technique triangulation cross-verified findings from observations, interviews, and documentation to guarantee robust trustworthiness.

3. Result and Discussion

Results

Implementation of Health Communication Strategies

The health communication strategy for DHF prevention at the Wonokusumo Health Center is enacted through diverse educational and preventive activities that engage the public directly. These include health counseling, "3M Plus" socialization, fogging, mosquito larva inspections, civic cleanups, and empowering jumantik and KSH volunteers. These actions are carried out collaboratively with schools, RT/RW heads, and health volunteers to build a collective awareness.

Interviews revealed that counseling is routinely conducted at posyandu, schools, and neighborhoods, focusing on "3M Plus" PSN, symptom recognition, and vector control. One informant noted:

> *"We routinely conduct counseling about 3M Plus to the community and schools so that residents are more aware of maintaining environmental cleanliness and preventing the breeding of mosquito larvae." (Informant 1, 2026).*

Fogging is executed when cases or transmission indicators emerge, coupled with periodic larva inspections by volunteers and RT/RW heads to foster sustainable public hygiene habits. Another informant added:

> "We do not only perform fogging, but also invite the community to do mutual cleanup and routine larva inspections because DHF prevention cannot be done by healthcare workers alone." (Informant 2, 2026).

The health center's strategy shifts from passive information dissemination to active participatory engagement. Harnessing jumantik volunteers is highly effective because their close social bonds with residents allow health messages to be easily accepted and understood.

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Table 1. Interview Results on DHF Prevention Communication Strategies at Wonokusumo Health Center

Informant	Communication Activity	Key Findings	Remarks
Informant 1	3M Plus Counseling	Residentsbetter understand PSN and environmental hygiene	Effectively increases public knowledge
Informant 2	Fogging & Larva Inspection	Residents actively participate in cleanups and larva checks	Increases public participation
Informant 3	School & Posyandu Socialization	Students and residents understand DHF symptoms and prevention	Education runs quite well
Informant 4	Collaboration with Jumantik	Health information spreads faster among residents	Communication is more effective via volunteers

Source: Research interviews at Wonokusumo Health Center, 2026.

In brief, the implementation of health communication strategies has progressed well through educational, preventive, and participatory routes.

Supporting and Inhibiting Factors

The effectiveness of the communication strategy is shaped by distinct facilitators and barriers. The primary supporting factors include solid cross-sector collaboration among the health center, jumantik volunteers, RT/RW leaders, schools, and the general public. Volunteers significantly accelerate information dispersion due to their organic social proximity to citizens. Direct socialization in local nodes further consolidates public comprehension, while routine cleanups mobilize proactive vector control. Conversely, the dominant inhibiting factor is the low participation of certain community segments in cleanups and larva inspections. Some residents exhibit inconsistencies in maintaining clean lifestyles and fail to perform "3M Plus" routinely at home. Furthermore, limited health promotion media forces a heavy reliance on face-to-face methods, which restricts broader information reach. High-density housing layouts and unpredictable weather shifts also pose structural challenges to suppressing mosquito proliferation in Wonokusumo.

Discussion

Implementation of Health Communication Strategies in DHF Prevention

The Wonokusumo Health Center executes its communication strategy through face-to-face, participatory approaches, showing that urban DHF control demands shared public accountability rather than solely relying on medical bodies. Interpersonal, community-based health communication is far more easily absorbed than one-way top-down information broadcasting.

These findings align with Agni Yuwanna Bhakti et al. (2025), who noted that DHF control at the Meral Health Center faced bottlenecks due to suboptimal socialization, low volunteer mobilization, and scant promotional media. Their study concluded that optimizing health communication, empowering jumantik units, and bolstering cross-sector networks are pivotal to increasing the Larva-Free Index (ABJ) and decreasing DHF occurrence.

Wasliah & Syamdarniati (2025) demonstrated that community-empowerment-based "3M Plus" movements successfully elevate preventative practices. Direct demonstrations and distributed educational media help households maintain regular hygiene habits, reinforcing our finding that participatory communication drives community care.

Direct Communication, Information, and Education (IEC) via discussions, Q&A sessions, and pamphlets similarly boost public knowledge on infectious diseases (Rokhmayanti et al., 2020). Active participants in health center counseling manifest much higher environmental consciousness. Moreover, sustainable health communication that integrates public perspectives fosters long-term health behavior compliance and public trust (Shafie et al., 2024). Community engagement, localized risk communication, cross-sector alignment, and systemic trust are core drivers of successful dengue control (Naing et al., 2023). Direct health socialization effectively cultivates clean lifestyles and boosts active public participation in eliminating mosquito breeding sites (Nisrina et al., 2023). Therefore, the collaborative, multi-stakeholder strategy deployed in Wonokusumo represents a highly viable framework for urban DHF prevention.

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Supporting and Inhibiting Factors of Communication Strategy Effectiveness

The interpersonal approach and multi-stakeholder framework at Wonokusumo accelerate health literacy and expand operational reach. These dynamics reflect the insights of Saputro & Nurhayati (2025), who asserted that mixed-media communication, direct socialization, and community mobilization maximize vector control efficacy, provided that credible communicators are deployed. Empowering communities through direct communication directly drives participation and establishes healthier communal ecosystems (Sitorus et al., 2025).

Systemic bottlenecks persist. A major hurdle is the low compliance and inconsistent participation of certain sub-communities regarding "3M Plus" actions. This mirrors observations by Dwita (2023), who stated that DHF eradication efficiency frequently stalls due to low public awareness, deficient counseling execution, and a lack of creative promotional infrastructure. Policy implementation for urban DHF management demands seamless coordination among municipal systems, health practitioners, and citizens; poor alignment or low public civic responsibility inevitably hampers urban intervention efficacy (Nurulhuda et, al., 2025). To overcome these limitations, the Wonokusumo Health Center must diversify its communication channels, expand its promotional media, and deliver continuous education to secure long-term, resilient public compliance.

4. Conclusion

The health communication strategy for DHF prevention at the Wonokusumo Health Center in Surabaya successfully utilizes educational, preventive, and participatory approaches. Implemented through counseling, "3M Plus" promotions, fogging, larva checks, environmental cleanups, and the mobilization of jumantik and KSH volunteers, the strategy has effectively heightened public knowledge, awareness, and preventative behavior. Key facilitators include strong cross-sector collaboration and easily understood interpersonal dialogue. However, structural barriers like uneven public

participation, behavioral inconsistency, and limited promotional media continue to restrict its maximum reach.

This study offers a novel insight: community-tailored health communication and volunteer-driven empowerment are central to driving effective DHF prevention within high-density urban settings. Moving forward, health authorities must enrich communication media, sustain continuous public education, and optimize local volunteer networks to ensure the DHF prevention program remains highly effective and resilient over time.

Patent : The research entitled "Health Communication Strategy in Dengue Fever Prevention at Wonokusumo Community Health Center, Surabaya" does not yield any registerable patents or intellectual property products. The study focuses entirely on analyzing public health communication dynamics. However, the insights gained can serve as an empirical foundation for developing community-empowerment-based health communication models as future public health innovations.

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