

ACADEMIC BUNDLE OF CREATIONS

**ABDU
CENIS**

PCC AMSC-2026: INDONESIA BY AMSA-UNHAS-2025/2026



HEALTH SPEECH

When Climate Changes, Diseases Follow: Addressing Tropical Outbreaks Through Collaborative Healthcare

Surya Leonard Lieswan

DISTRICT 6 WINNER

When Climate Changes, Diseases Follow: Addressing Tropical Outbreaks Through Collaborative Healthcare

Surya Leonard Lieswan

AMSA-Universitas Hasanuddin

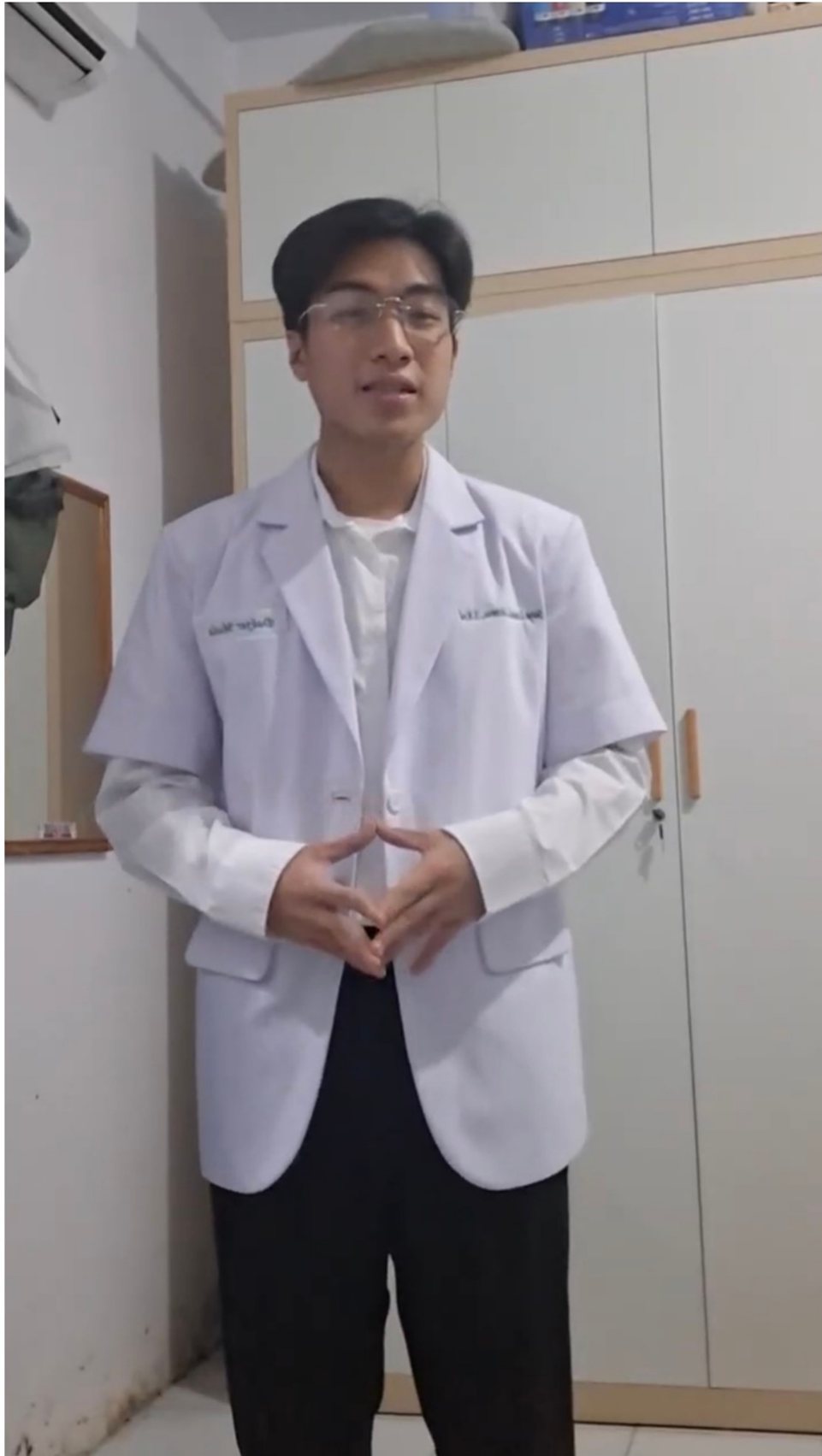
Climate change is fundamentally altering the epidemiological landscape of vector-borne diseases (VBDs). In Southeast Asia, rising mean temperatures and shifting precipitation patterns have expanded the bioclimatic niche for *Aedes aegypti*. A critical driver of this expansion is the thermal sensitivity of the Extrinsic Incubation Period (EIP). Research indicates that a 4°C increase in ambient temperature can nearly bisect the time required for viral replication within the vector, significantly increasing vectorial capacity and facilitating year-round transmission.

However, the climate crisis functions as a "risk multiplier" that interfaces with pre-existing systemic vulnerabilities. The burden of dengue and malaria disproportionately impacts populations characterized by substandard sanitation and fragmented healthcare infrastructure. This intersection suggests that VBD outbreaks are not merely biological events; they are driven by social determinants of health. Consequently, climate change exploits the gap between clinical innovation and equitable resource distribution.

Addressing these challenges necessitates a multi-sectoral, collaborative framework. First, regional health security must transition toward predictive surveillance by integrating meteorological modeling with epidemiological data. Second, Southeast Asia must adopt a One Health approach, recognizing that human health is inextricably linked to ecological stability and cross-border data sharing. Finally, community-led environmental management remains the most sustainable frontline defense.

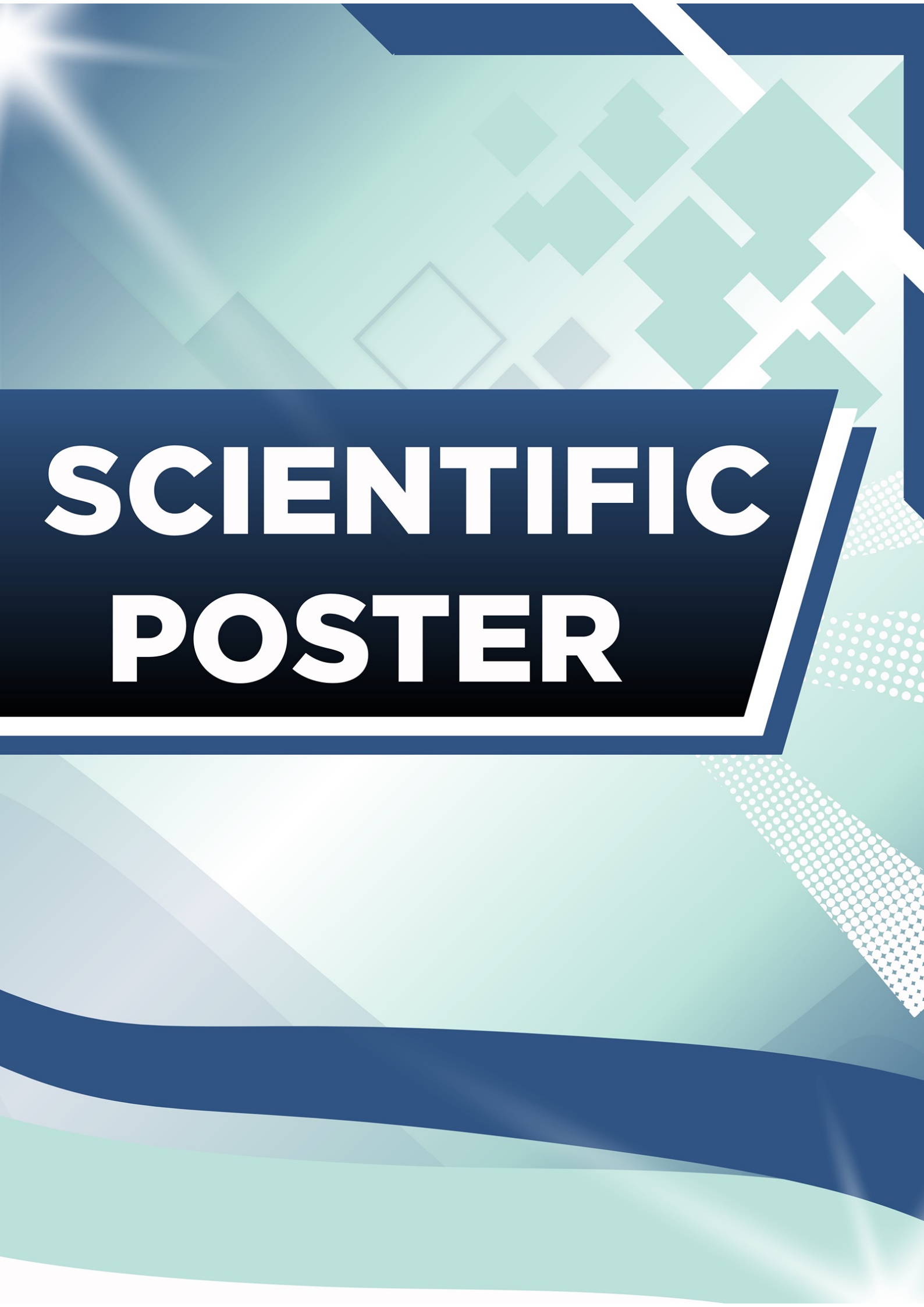
As future medical professionals, our mandate extends beyond clinical diagnosis to systemic advocacy. We must champion a resilient healthcare architecture that addresses the socio-environmental roots of disease. While pathogens may proliferate with the changing climate, our collective strategic response must evolve at a superior velocity.

Keywords: *climate change; tropical outbreaks; vector-borne diseases; collaborative healthcare; global health*



Link video:

https://drive.google.com/file/d/16bTNioHqk23asez_ZOqYQnu1boRy-l8Y/view?usp=drivesdk



SCIENTIFIC POSTER



Global Collaborative Frameworks and Digital Surveillance for Outbreak Detection and Control: Systematic Review and Meta-Analysis

**Muhammad Hisyam Dzaki Alimuddin
Surya Leonard Lieswan
Jessica Ho
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Peter Kin Thios**

Global Collaborative Frameworks and Digital Surveillance for Outbreak Detection and Control: Systematic Review and Meta-Analysis

Muhammad Hisyam Dzaki Alimuddin, Surya Leonard Lieswan, Jessica Ho, Felicia Virginia Thios, Peter Kin Thios

Faculty of Medicine, Hasanuddin University

Introduction: Infectious diseases remain a major global health threat, particularly in low- and middle-income countries, where traditional surveillance systems are often limited by delays and underreporting, hindering timely outbreak response. In line with the World Health Organization's International Health Regulations (IHR) 2005 and 7-1-7 approach, which emphasize integrated surveillance for early detection and prevention of cross-border spread, this study aims to evaluate how the implementation of IHR 2005 and digital surveillance systems influences the speed of detection and completeness of reporting for infectious diseases.

Methods: A systematic search of PubMed, ScienceDirect, and DOAJ was conducted for studies published between 2006 and 2026 on infectious disease outbreaks and surveillance systems using predefined keywords. Methodological quality was assessed using the Newcastle–Ottawa Scale. Data were synthesized narratively and quantitatively, with meta-analysis conducted using RStudio and RevMan 5.4.

Results: Thirty-one studies were included. Global collaboration significantly reduced time to detection (MD 5.20 days; 95% CI: 3.54–6.86; $I^2 = 90\%$), with consistent effects in multisectoral systems (MD 4.09; 95% CI: 2.01–6.17), but not in COVID-19-specific analyses. Digital surveillance systems improved time to notification (MD 2.05; 95% CI: 0.88–3.23; $I^2 = 53\%$) and achieved the highest reporting completeness (97.12%), compared to the private sector (39.64%). However, notification lags persisted in public communication (MD 27.08 days) and overall notification (MD 10.23 days). Reporting delays were noted intranationally (MD 7.50 days; 95% CI: 0.02–14.99) but peaked at the international level (MD 48.00 days). The pooled case fatality rate was 16.18% (95% CI: 2.46–37.35; $I^2 = 99.8\%$).

Conclusion: Integration of IHR 2005 with digital surveillance systems improves timeliness and reporting completeness, outperforming traditional approaches. However, persistent delays in notification and reporting highlight the need for stronger global collaboration and standardized surveillance systems to optimize outbreak response.

Keywords: *Digital Health Systems, Global Health Collaboration, Infectious Disease Surveillance, International Health Regulations, Outbreak Detection*

Global Collaborative Frameworks and Digital Surveillance for Outbreak Detection and Control: Systematic Review and Meta-Analysis

Muhammad Hisyam Dzaki Alimuddin, Surya Leonard Lieswan, Jessica Ho, Felicia Virginia Thios, Peter Kin Thios



Introduction

Infectious diseases remain a major and evolving global health threat driven by:

Pathogen evolution

Global mobility & international travel

Environmental changes

Persistent high burden, especially in low- and middle-income countries^{1,2}



Diseases spread within hours, but **detection & reporting take days to weeks**
Delays response and amplifies transmission³

The International Health Regulations (IHR) 2005 and the 7-1-7 approach

Bridging the gap through early detection, timely reporting, and rapid response^{4,5}

Fragmented evidence and variable findings limit clear conclusions $\Rightarrow$ a meta-analysis is needed to synthesize evidence and provide stronger insights

Objective

To evaluate how the implementation of IHR 2005 and integrated digital surveillance systems influences the speed of detection and completeness of reporting for infectious diseases.

Methods

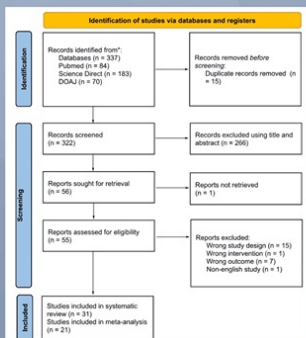


Fig 1. PRISMA 2020 flow diagram for literature search strategy

Article screening followed the **PRISMA 2020 flow**

Rayyan.ai facilitated selection, with each record screened independently by the researchers

Review Manager 5.4 & RStudio were used to meta analyze

Bias assessment using **Newcastle-Ottawa Scale**

Search Method



("International Health Regulations" OR "IHR 2005") AND (outbreak OR epidemic OR pandemic) AND (timeliness OR notification OR "lead time")
Filter applied:
• Article Type: Research Articles
• Access Type: Open Access



"International Health Regulations" AND "Infectious Disease"



("International Health Regulations" OR "Global Health Security") AND ("Infectious Disease Outbreaks" OR "Disease Outbreaks" OR "Outbreak" OR "Epidemic" OR "Pandemic") AND ("Time Factors"[Mesh] OR "Timeliness" OR "Notification" OR "Reporting delay" OR "Lead time" OR "Detection gap")

Inclusion Criteria

- 1.Global or SEA infectious disease outbreaks
- 2.IHR (2005) or national surveillance frameworks
- 3.Reports of detection, notification, or reporting time
- 4.Cohort, observational, or quasi-experimental studies that are published between 2006-2026

Exclusion Criteria

- 1.Narrative reviews, editorials, and abstracts
- 2.Studies lacking numerical or timeliness data
- 3.In-vitro or in-vivo studies
- 4.Non-English language publications

Results and Discussions

Authors, year, Country/Region	Study Type	Setting	Process	Sample Size	Framework/Tool	Signal Type	Reporting Mechanism	Response Time (Days)	Completeness (%)	Timeliness (Days)	Other Findings
Alimuddin et al., 2023	Systematic Review	Global	Meta-analysis	31 studies	IHR 2005, Digital Tools	Outbreak	Multi-sectoral	7-14	75.2	7.5	Fragmented evidence
...	...	...	...	...	...	...	...	...	...	...	...

Table 1. Systematic Mapping of Collaborative Frameworks and Digital Tools for Disease Surveillance

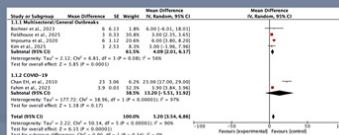


Fig 2. Meta-Analysis of Outbreak Detection Speed: Evaluating Multisectoral Efficiency

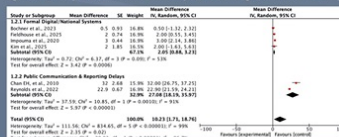


Fig 3. Global Notification Timeliness: Formal Digital Systems vs. Public Communication

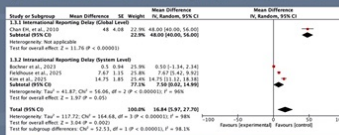


Fig 4. Analysis of Reporting Delays at International and National Levels

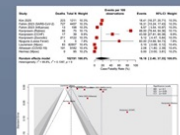
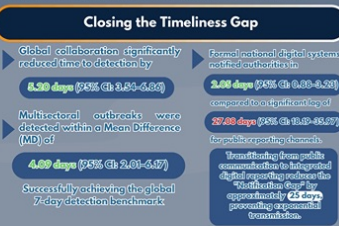


Fig 5. Meta-Analysis of Case Fatality Rates and Publication Bias Assessment

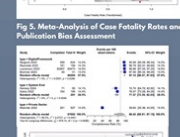


Fig 6. Meta-Analysis of Surveillance Quality and Assessment of Publication Bias



Fig 7. Individual Study Quality Assessment (Newcastle-Ottawa Scale)

Fig 8. Overall Risk of Bias Summary Across Included Studies

Fig 9. Digital Reliability vs. Private Sector Blind Spots

Fig 10. Private Sector Completeness was only

Fig 11. Identifying a critical surveillance failure in non-government health reporting under IHR (2005) protocols

Fig 12. Integrated Digital Framework systems achieved a superior pooled completeness rate of

Fig 13. with a perfect consistency score (I=0%)

Fig 14. Private sector completeness was only

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Fig 16. Integrated Digital Framework systems achieved a superior pooled completeness rate of

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Fig 20. Integrated Digital Framework systems achieved a superior pooled completeness rate of

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Fig 23. Identifying a critical surveillance failure in non-government health reporting under IHR (2005) protocols

Fig 24. Integrated Digital Framework systems achieved a superior pooled completeness rate of

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Fig 26. Private sector completeness was only

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Fig 31. Identifying a critical surveillance failure in non-government health reporting under IHR (2005) protocols

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Fig 46. Private sector completeness was only

Fig 47. Identifying a critical surveillance failure in non-government health reporting under IHR (2005) protocols

There is no conflict of interest and acknowledgements within this study.

REFERENCES AND APPENDIX



Combining Community Engagement and Vector Control for Malaria Prevention in Tropical Regions: A Systematic Review

**Andi Ahmad Fauzi
Andi Salwa Aishwarya M.B.
Girvan Natario Sarira
Anastasya Amalia Putri Sinaga**

Combining Community Engagement and Vector Control for Malaria Prevention in Tropical Regions: A Systematic Review

Andi Ahmad Fauzi^[1], Andi Salwa Aishwarya MB^[2], Girvan Natario Sarira^[3], Anastasya Amalia Putri Sinaga^[4]

^[1]Faculty of Medicine University, Hasanuddin University

Introduction: The elimination of malaria in tropical regions is currently hindered by insecticide resistance and residual transmission. It is necessary to combine technological innovation in vector control with advocacy and health education strategies that actively involve the community to achieve optimal results.

Objective: This study aims to evaluate the effectiveness of combining vector control innovations, such as house screening and next-generation long-lasting insecticidal nets, with community engagement strategies based on Behavior Change Communication (BCC) and health volunteer advocacy in reducing malaria incidence.

Method: This systematic review examines the effectiveness of combining advanced vector control methods such as House Screening/HS, LLIN dual-active ingredient, and repellent use with health education strategies based on Behavior Change Communication (BCC), as well as the role of village health volunteers (VHV).

Result: The results of the review indicate that the integration of HS (mosquito net installation) and ITN significantly reduced the prevalence of malaria from 4.3% to 0.7%, which is a sixfold decrease. Studies have shown that the use of dual-active ingredient LLINs (chlorfenapyr-pyrethroid) is more effective against resistant vectors compared to standard LLINs. From an educational perspective, intensive BCC interventions carried out through home visits and group discussions successfully reduced the incidence of malaria by 22%. In addition, the distribution of repellent through VHV in Myanmar serves as an effective advocacy model to reach remote areas and target outdoor transmission that is not covered by bed nets. This finding highlights that the effectiveness of physical and chemical interventions depends heavily on community compliance, which is driven by good health literacy.

Conclusion: Effective malaria control requires integrating advanced vector control tools with strong community engagement. BCC and local volunteer involvement are essential components in improving compliance and reducing disease burden in tropical settings.

Keywords: *Malaria, Vector Control, Community Engagement, BCC, Health Advocacy.*



Combining Community Engagement and Vector Control of Malaria Prevention in Tropical Regions

A Systematic Review

Andi Ahmad Fauzi¹, Andi Salwa Aishwarya MB², Girvan Natario Sarira³, Anastasya Amalia Putri Sinaga⁴

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Introduction

Malaria is a life-threatening infectious disease caused by *Plasmodium* parasites and transmitted through the bite of infected *Anopheles* mosquitoes.



Despite significant progress, malaria elimination in tropical regions remains a major challenge due to insecticide resistance and persistent residual transmission.

These challenges highlight the need for integrated strategies that combine effective vector control with active community engagement.

the effectiveness of combining vector control innovations (such as house screening and new-generation LLINs) with community engagement strategies based on Behavior Change Communication (BCC) and advocacy by health volunteers in reducing the incidence of malaria.

Objects



Method



SYSTEMATIC REVIEW

INCLUSION CRITERIA

- Population: Communities in highland/lowland areas (Dak-Sulawesi, Moluccas, Southeast Asia)
- Intervention: Integrated strategies combining vector control (LLINs, IRS, etc.) with community engagement (BCC, Village Health Volunteers (VHV))
- Outcomes: Reduction in malaria incidence/prevalence and/or mosquito density
- Study Design: Experimental and quasi-experimental studies (RCT, stepped wedge trials, secondary trial analysis)
- Time Frame: Publications from 2014-2024 (up to date)

DATABASE

ScienceDirect
PubMed
ProQuest

RISK OF BIAS

RoB 2.0

EXCLUSION CRITERIA

- Single interventions without community/educational components
- Studies focusing only on clinical treatment (drugs/vaccines)
- Incomplete or inconsistent data
- Weak study designs (case reports, non-systematic reviews, small samples)
- Studies conducted in non-endemic or non-tropical regions

KEYWORD

Malaria, Vector Control, Community Engagement, BCC, Health Advocacy.



Result & Discussion

A. Vector Control Innovation (Technical Side):



• **Physical Modification of the House:** The implementation of House Screening (HS) on doors and windows has been proven to significantly reduce the density of vectors in the room and reduce the prevalence of malaria up to 6 times (from 4.3% to 0.7%) compared to only using net standards.

• **Overcoming Resistance:** The use of LLIN with a double active ingredient (chlorphenapyrethroid) shows far superior results in killing mosquitoes that are already resistant to common insecticides.

• **Outdoor Transmission Target:** The distribution of repellents (mosquito repellents) is a crucial solution to protect people who are outdoors at night, where LLIN cannot reach them.

B. The Role of Advocacy and Education (Human Side):



• **BCC Efficacy:** Health education through the intensive Behaviour Change Communication (BCC) method (group discussion and home visits) was able to reduce the incidence of malaria by 22%. This proves that behaviour change is as important as medical intervention.

• **Local Empowerment (Village Health Volunteers/VHV):** The involvement of village volunteers in distributing preventive tools (such as repellents) and providing direct education increases the range of programs in remote areas that are difficult to access by formal health workers.

• **Synergy:** The failure of some interventions (such as outdoor spraying/ORS which is less effective in certain studies) shows that the intervention must be location specific and supported by community understanding so that the tools provided are actually used consistently.

Conclusion



The strategy for malaria elimination in tropical regions can no longer rely on a single approach, but requires an integrated combination of vector control technologies—both physical and chemical—supported by strong public health advocacy.

n-chemical interventions, such as home screening,

have been shown to provide effective and sustainable long-term protection. Meanwhile, education through Behaviour Change Communication (BCC) and the involvement of local volunteers, such as Village Health Volunteers (VHV), play a crucial role in bridging the gap between the availability of preventive tools and their actual implementation in communities.

Therefore, investment in tropical health advocacy and education must be prioritized alongside medical and technological advancements, ensuring that prevention strategies are not only available, but also accepted and consistently practiced by the population.



Table 1. Study Characteristics in Systematic Review

Author	Study	Country	Plasmodium Species	Vector Species	Intervention	Comparison	Primary Outcome
Chauveau et al., 2022	Randomized Controlled Trial	Kinshasa et al. (2022), Northwestern Ethiopia	P. falciparum	Anopheles spp.	House screening combined with insecticide-treated nets (ITNs)	ITN alone / standard protection	Reduction in malaria transmission
Kinshasa et al., 2025	Chauveau et al. (2022) South-East Myanmar		Plasmodium spp.	Anopheles spp.	Repellent distributed through village health volunteers	Pre-intervention period (control phase)	Malaria incidence
Belay et al., 2025	Belay et al. (2025)	Kapin (Barenti) State, Myanmar	Plasmodium spp.	Anopheles spp.	Outdoor residual spraying (ORS)	No ORS / standard vector control	Vector density and malaria transmission
Matores et al., 2023/2024	Matores et al. (2023)	Northeastern Tanzania	P. falciparum	Anopheles gambiae s.l.	Installation of 3D window shade screens	Houses without 3D-WDS	Entomological inoculation rate (EIR)
Win Han et al., 2018	Dual-active ingredient LLINs (Secondary Analysis RCT)	Buruli Tanzania	P. falciparum	An. gambiae & An. funestus	Dual-active ingredient long-lasting insecticide nets	Standard pyrethroid-only LLINs	Change in primary vector density

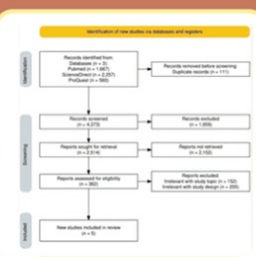


Figure 1. PRISMA Flowchart

	D1	D2	D3	D4	D5	Overall
Win Han et al., 2018	+	+	+	+	+	+
Victor Chauveau et al., 2022	+	+	+	+	+	+
Sereno S. Matore, PhD et al., 2023	+	+	+	+	+	+
Akili K. Belay et al., 2025	+	+	+	+	+	+
Nicolas Morinou, PhD et al., 2025	+	+	+	+	+	+

Legend: + High, - Low, ? No information

Figure 2. ROB

References





PUBLIC POSTER

UNITE for Every Child's Future

**Alisha Ghinaa Faizah
Andi Keilha Faradillah Nawir
Salsabila Andina Putri**

UNITE for Every Child's Future

Authors :

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Introduction: Malaria remains a major cause of mortality among children under five, contributing to approximately 75% of global malaria deaths. Despite being preventable and curable, its persistent burden is driven by interconnected factors, including ongoing transmission, gaps in health systems, rising drug resistance, environmental exposure, low community awareness, cross-border movement, and socioeconomic barriers. Through this public poster, we aim to raise awareness about these key drivers of malaria in children and highlight practical, integrated, and child-centered solutions to improve prevention, treatment, and control efforts.

Methods: This public poster was developed through a narrative review using literature from multiple scientific databases. Relevant studies, reports, and global health guidelines were analyzed to identify major determinants of malaria burden in children and to evaluate potential intervention strategies. The findings were then synthesized into two complementary frameworks, such as THREATS and UNITE, linking key challenges with targeted solutions.

Results: The findings show that the main drivers of malaria in children are closely interconnected. Ongoing transmission, limited access to care, rising drug resistance, environmental exposure, low awareness, population movement, and socioeconomic barriers do not act in isolation. Addressing them requires integrated strategies that expand access to prevention and treatment, strengthen surveillance for early detection of resistance and transmission, and promote community engagement and education. By pairing each challenge with a practical, child-centered solution, this approach helps translate complex issues into clear, actionable steps for the public.

Conclusion: Malaria in children remains a preventable yet persistent challenge driven by interconnected factors. Addressing it requires not only integrated strategies but also greater public awareness and engagement. By linking key challenges to practical, child-centered solutions, communities can better recognize risks, seek timely care, and support prevention efforts. Strengthening access, surveillance, and education will be essential to reduce preventable deaths and accelerate progress toward elimination.

Keywords: *Pediatric malaria; integrated interventions; child-centered solutions; prevention and control*

UNITE

For Every Child's Future



Scan Me!



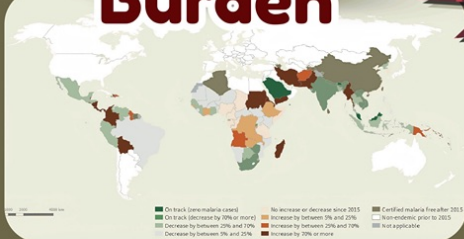
SHOCKING FACTS

282 MILLION
global malaria cases (2024)

610.000
deaths should be preventable

75% of deaths are **CHILDREN**

Global Malaria Burden



Many endemic countries have not yet reached the 70% reduction target.

1 child DIES every 70 seconds

Do you really know Malaria?

Malaria is a life-threatening disease caused by Plasmodium parasites, transmitted through the bite of infected female Anopheles mosquitoes. It is preventable, curable, yet remains a leading killer of children under five.

THREATS

T Transmission Never Stops

H Health System Gaps

R Resistance Rising

E Environmental Factors

A Awareness Deficit

T Travel & Cross-Border Movement

S Socioeconomic Barriers

As Medical Students, We Must

ACT

Advocate for child-centered policies
Connect communities to care
Transform through education

To end malaria, we must **UNITE**

These **THREATS** cannot be solved alone

U

Universal Access

Equal access ensures every child can receive malaria prevention and treatment



N

Networked Surveillance

Cross-border surveillance enables early detection and rapid response.



I

Integrated Surveillance

Combining multiple strategies improves overall effectiveness



T

Tailored Child-Centered Care

Malaria care must be adapted to children's unique needs



E

Empower Community and Education

Community engagement drives sustained prevention and care



**Beware of Worms
When PAINS Strike,
Prevent Urogenital
Schistosomiasis
with Safe
WATER**

**Gabriella Natasha Winarso
Cheryl Noveina Palinggi
Gabriella Sombolaen Lebang**

Beware of Worms When PAINS Strike, Prevent Urogenital Schistosomiasis with Safe WATER

Gabriella Natasha Winarso¹, Cheryl Noveina Palinggi², Gabriella Sombolaen Lebang³

Hasanuddin University

Abstract

Introduction: Schistosomiasis is a neglected tropical disease (NTD) caused by flatworms of the *Schistosoma* group that infect the digestive system or the urinary and reproductive systems. Schistosomiasis that infects the urogenital system known as Urogenital Schistosomiasis is caused by the genus *Schistosoma haematobium*. The disease affects approximately 112 million people worldwide. Despite affecting millions of people, schistosomiasis remains as a neglected tropical disease with serious health consequences if it's left untreated especially in endemic areas. This study aims to provide information and increase public awareness regarding the symptoms, risk factors, and preventive strategies for urogenital schistosomiasis.

Method: The method used is literature study from sources including guidelines from the World Health Organization (WHO) as well as scientific journals and articles. This study focuses on the transmission and prevention of schistosomiasis.

Results: The literature shows that schistosomiasis is transmitted through contaminated water which contains schistosoma. Major risk factors include bad sanitation, contact with contaminated water, contact with snail habitats, and low socioeconomic status. Prevention strategies include improved sanitation, avoidance of contaminated water as well as wearing protective clothing if exposed to infected water.

Conclusion: Schistosomiasis is a preventable disease if followed by proper awareness and behavioural changes, such as avoiding contaminated water and improving sanitation. Public education regarding this is essential to reduce the transmission of schistosomiasis especially in endemic areas.

Keywords: *NTD, prevention, Schistosoma haematobium, Urogenital schistosomiasis,*

Beware of Worms When PAINS Strikes

Prevent UROGENITAL SCHISTOSOMIASIS With Safe WATER

Get to Know UROGENITAL SCHISTOSOMIASIS

Schistosomiasis is a neglected tropical disease (NTD) caused by flatworms of the Schistosoma group that infect the digestive system (Gastrointestinal) or the urinary and reproductive systems (Urogenital). Urogenital schistosomiasis is caused by Schistosoma Haematobium.

Did you Know ??

112 Million cases in the world
90% in Sub-Saharan Africa

How dangerous is it?

Schistosomiasis causes over **14.000** deaths per year.

Referensi

Scan QR!



Be Aware of PAINS



Pain when urinating

Severe menstrual pain



Abnormal urine (blood in urine)

Nodules or genital wounds



Fact!

Female genital schistosomiasis can be a risk factor for the spread of HIV.

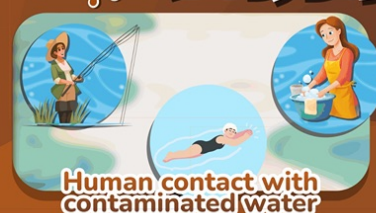


Intimate pain (pain during/after sex)

Fact!

There is no vaccine for schistosomiasis.

RISK FACTORS



Don't panic Prevent with WATER!

W



A



T



E



R



