Mini Review
Volume 8:6, 2023

International Journal of Public Health & Safety

ISSN: 2736-6189 Open Access

Battling Mosquito-borne Diseases: A Review of Anopheles and Aedes Surveillance for Lymphatic Filariasis and Public Health

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Abstract

This comprehensive review delves into the intricate landscape of mosquito-borne diseases, focusing on the surveillance strategies targeting two major vectors, Anopheles and Aedes, in the context of lymphatic filariasis and public health. Mosquito-borne diseases pose significant global health challenges and understanding the surveillance methods for these vectors is pivotal for effective prevention and control. Through a synthesis of existing literature, this review aims to provide insights into the advancements and challenges in Anopheles and Aedes surveillance, shedding light on their role in the transmission of lymphatic filariasis and implications for public health.

Keywords: Mosquito-borne diseases • Anopheles • Aedes • Surveillance • Lymphatic filariasis • Public health • Vector control

Introduction

Mosquito-borne diseases, fueled by vectors such as Anopheles and Aedes mosquitoes, continue to exert a substantial toll on global public health. Among these diseases, lymphatic filariasis stands out as a major concern, affecting millions worldwide. Effective surveillance of mosquito vectors is crucial for understanding transmission dynamics and implementing targeted interventions. This review focuses on Anopheles and Aedes surveillance strategies, exploring their significance in the context of lymphatic filariasis and the broader spectrum of public health. The intricate relationship between mosquitoes and disease transmission necessitates a nuanced understanding of vector surveillance. Anopheles mosquitoes are notorious for transmitting malaria, while Aedes mosquitoes are implicated in diseases such as dengue, Zika and chikungunya. The convergence of these vectors in the context of lymphatic filariasis adds layers of complexity to the surveillance efforts required for effective disease management [1].

Literature Review

Existing literature underscores the importance of robust surveillance systems in mitigating the impact of mosquito-borne diseases. Anopheles surveillance has historically been centered on malaria control, employing methods such as bed net distribution, insecticide spraying and larval source management [2]. However, the emergence of lymphatic filariasis in regions where Anopheles is prevalent necessitates a broader approach, integrating filarial parasite monitoring into existing malaria surveillance programs. In the case of Aedes mosquitoes, the challenge lies in addressing the multifaceted nature of diseases they transmit. Dengue, Zika and chikungunya require tailored surveillance strategies, often involving community engagement, vector control measures and real-time monitoring of mosquito populations. The literature reveals a growing recognition of the need for integrated approaches that transcend traditional disease-specific silos. As we navigate the complexities of Anopheles and Aedes surveillance for lymphatic filariasis, it becomes evident that successful strategies must be adaptable, community-oriented and informed by advances in technology. This review synthesizes key findings from diverse studies, aiming to contribute to the evolving discourse on mosquito-borne disease surveillance and its implications for public health [3,4].

Discussion

The synthesis of literature on Anopheles and Aedes surveillance for lymphatic filariasis underscores the multifaceted challenges inherent in battling mosquito-borne diseases. The discussion delves into the nuanced strategies employed in monitoring these vectors and the implications for public health. Anopheles, primarily associated with malaria transmission, presents a unique challenge as lymphatic filariasis emerges in regions where malaria is endemic. The convergence of these diseases necessitates a reevaluation of traditional surveillance approaches, urging a more integrated and holistic framework [5]. Community engagement emerges as a recurring theme in the discussion, particularly in the context of Aedes surveillance. Diseases such as dengue, Zika and chikungunya thrive in urban environments, necessitating a tailored approach that involves the active participation of communities. The literature suggests that successful Aedes surveillance extends beyond vector control to incorporate educational initiatives, community partnerships and the utilization of citizen science. Harnessing local knowledge and fostering a sense of ownership within communities can enhance the effectiveness of surveillance programs and contribute to the overall success of public health interventions. Technological advancements play a pivotal role in the evolving landscape of mosquito-borne disease surveillance. Remote sensing, GIS mapping and molecular techniques have revolutionized our ability to monitor vector populations and disease transmission dynamics. However, the discussion highlights the need for a balance between cutting-edge technology and context-specific, resource-appropriate strategies. Integrating these technological tools into existing surveillance frameworks can amplify their impact and facilitate more targeted interventions [6].

Conclusion

In conclusion, the review of Anopheles and Aedes surveillance for lymphatic filariasis underscores the critical importance of adapting strategies

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Received: 01 November, 2023, Manuscript No. IJPHS-23-121705; **Editor Assigned:** 03 November, 2023, PreQC No. P-121705; **Reviewed:** 15 November, 2023, QC No. Q-121705; **Revised:** 20 November, 2023, Manuscript No. R-121705; **Published:** 27 November, 2023, DOI: 10.37421/2736-6189.2023.8.359

to the dynamic nature of mosquito-borne diseases. The convergence of Anopheles and Aedes in regions grappling with multiple vector-borne diseases necessitates an integrated and community-focused approach. As we navigate the complexities of surveillance, it is imperative to recognize the interconnectedness of public health challenges posed by these vectors. The findings from this review contribute to the ongoing dialogue on effective mosquito-borne disease surveillance and its implications for public health. Moving forward, it is essential to prioritize research and interventions that bridge disciplinary boundaries, foster community participation and leverage technological innovations. By doing so, we can strive towards a future where the impact of Anopheles and Aedes on lymphatic filariasis and other mosquito-borne diseases is minimized, ultimately advancing global efforts in disease prevention and public health.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Mishra, Kirti, Dipak K. Raj, Rupenangshu K. Hazra and Aditya P. Dash, et al. "The development and evaluation of a single step multiplex PCR method for simultaneous detection of *Brugia malayi* and *Wuchereria bancrofti*." *Mol Cell Probes* 21 (2007): 355-362.
2. Thanchomnang, Tongjit, Pewpan M. Intapan, Chairat Tantrawatpan and Viraphong Lulitanond, et al. "Rapid detection and identification of *Wuchereria bancrofti*, *Brugia malayi*, *B. pahangi* and *Dirofilaria immitis* in mosquito vectors and blood samples by high resolution melting real-time PCR." *Korean J Parasitol* 51 (2013): 645.
3. Owusu, Irene Offei, Dziedzom K. de Souza, Francis Anto and Michael D. Wilson, et al. "Evaluation of human and mosquito based diagnostic tools for defining endpoints for elimination of Anopheles transmitted lymphatic filariasis in Ghana." *Trans R Soc Trop Med Hyg* 109 (2015): 628-635.
4. Poole, Catherine B., Zhiru Li, Andy Alhassan and Dylan Guelig, et al. "Colorimetric tests for diagnosis of filarial infection and vector surveillance using Non-Instrumented Nucleic Acid Loop-Mediated Isothermal Amplification (NINA-LAMP)." *Plos One* 12 (2017): e0169011.
5. Fischer, Peter, Sara M. Erickson, Kerstin Fischer and Jeremy F. Fuchs, et al. "Persistence of *Brugia malayi* DNA in vector and non-vector mosquitoes: Implications for xenomonitoring and transmission monitoring of lymphatic filariasis." *Am J Trop Med Hyg* 76 (2007): 502.
6. Chu, Brian K., Michael Deming, Nana-Kwadwo Biritwum and Windtaré R. Bougma, et al. "Transmission Assessment Surveys (TAS) to define endpoints for lymphatic filariasis mass drug administration: A multicenter evaluation." *PLoS Negl Trop Dis* 7 (2013): e2584.

How to cite this article: Sowamber, Mariana. "Battling Mosquito-borne Diseases: A Review of Anopheles and Aedes Surveillance for Lymphatic Filariasis and Public Health." *Int J Pub Health Safe* 8 (2023): 359.