

A Comparative Analysis of Integrative Vector-Borne Disease Control Strategies: Evaluating Epidemiological Efficacy and Socioeconomic Impact

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Abstract. This study assesses integrative strategies for vector-borne disease management, focusing on the epidemiological efficacy and socioeconomic implications. Utilizing a multi-centric cohort design, the research encompasses varied ecological zones to compare traditional versus contemporary control methodologies. The findings reveal significant variations in health outcomes and economic burdens associated with differing strategic frameworks, highlighting the need for policy reformation.

Keywords: Vector-borne diseases, Integrated control strategies, Epidemiological efficacy, Socioeconomic impact, Public health interventions, Health security, Climate change, Global burden, Policy reformation

Introduction

Vector-borne diseases represent a substantial public health challenge, exacerbated by increasing globalization and climate change, which facilitate the spread of vectors across regions. As of 2024, these diseases contribute significantly to the global disease burden, affecting millions and straining healthcare systems. With diseases like malaria, dengue, and Zika at the forefront, public health agencies prioritize developing effective control strategies. Traditional methods, which rely heavily on insecticides and environmental management, present limitations, including resistance development and ecological impacts. Recent advancements offer integrated approaches that combine genomic, ecological, and socio-behavioral interventions aimed at sustainable outcomes. This paper provides a thorough comparative analysis of traditional versus integrative strategies across multiple

ecological contexts. By employing an interdisciplinary methodology, it evaluates health impacts and economic consequences, offering insights into optimizing public health interventions. The study's findings are critical for informing policymakers and strategizing future control measures, thereby enhancing health security in vulnerable populations. The subsequent sections elaborate on the methodologies employed, followed by a detailed evaluation of results and implications.

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