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Current situation of dengue fever in the workplace in the District of Cartagena, Colombia: Year 2025

Abstract

Introduction: Dengue fever currently poses a critical public health challenge in Colombia, particularly in cities like Cartagena.

Objective: To identify the epidemiological evolution of dengue fever in Cartagena during 2025, analyzing its distribution according to demographic, socioeconomic, geographic, and occupational variables, with an emphasis on identifying occupational groups at increased risk, protective factors, and recommendations for implementing biosafety protocols in workplaces within the district.

Methods: A descriptive epidemiological approach using secondary data (SIVIGILA/DADIS) was employed. Variables included incidence, mortality, case fatality rate, distribution by epidemiological week, and sociodemographic characteristics.

Results: The study reveals that 61% of total cases are concentrated in the 15-64 age group, predominantly affecting the most productive segment (20-49 years), which represents 43% of all reported cases.

Conclusion: A critical finding for risk management es the disconnect between existing protocols and the reality shows of the workplace. Particularly in the port sector, a high-exposure area, only 31% of companies have implemented specific dengue protocols. This demonstrates that in Cartagena, dengue has ceased to be merely an environmental or domestic illness and has become an unmanaged occupational biological risk, requiring the urgent implementation of specific biosafety protocols and epidemiological surveillance in the workplace.

Keywords: dengue, epidemiology, exposure, occupational hazards, occupational health

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Introduction

Dengue is an infectious disease caused by an arbovirus of the genus Flavivirus, transmitted primarily by female *Aedes aegypti* mosquitoes and secondarily by *Aedes albopictus*, which circulates in four distinct serotypes (DENV-1, DENV-2, DENV-3 and DENV-4) with the capacity to generate serotype -specific immunity, but cross-susceptibility to superinfection.[1] Since the end of the 20th century, dengue has undergone a dramatic epidemiological transition in Latin America, evolving from a sporadic disease to an endemic-epidemic one, with cyclical periods of two to three years characterized by exponential increases in the incidence of cases.[2] This re-emergence is associated with multiple determining factors, including global climate change, which expands the vector's geographic distribution range, rapid, unplanned urbanization, which creates microenvironments conducive to *Aedes larval development,* inadequate access to drinking water and sanitation, which encourages water storage in domestic containers, and commercial globalization, which facilitates the spread of the virus between continents.[3]

Dengue fever is no longer considered solely a community public health concern but has become a critical occupational risk, giving rise to the concept of occupational dengue. This condition primarily affects two large groups of workers: those whose work takes place outdoors (such as in the agricultural and construction sectors, and vector control operators) and healthcare personnel managing health crises on the front lines. Climate change and increased heat stress have expanded the geographic range of the Aedes aegypti mosquito, directly increasing the exposure of the outdoor workforce to mosquito bites during their working hours.[4] Similarly, workers involved in fumigation and biological control face a double burden of occupational risk due to exposure to pathogens and the chemicals used in vector control.[5] On the other hand, health professionals, particularly in hospital settings overwhelmed or weakened by humanitarian crises, experience extreme pressure when managing massive outbreaks, highlighting the urgency of strengthening their knowledge, safety protocols and response capabilities in their workplaces.[6,7]

Colombia, in particular, is currently facing an unprecedented epidemic situation. During 2024, the country registered 320,982 confirmed and probable cases of dengue, representing a 14.5% increase compared to 2023, with 374 reported deaths, making it the second largest epidemic wave recorded in the country's epidemiological history.[8] This scenario of epidemic intensification has impacted territories unevenly, concentrating mainly in departments such as Valle del Cauca (91,839 cases, 28.6% of the national total), Santander (36,377 cases), and Tolima (25,421 cases). However, the situation in Cartagena has become particularly severe during 2025, with the tourist and port district becoming the city with the highest dengue burden in Colombia.[9]

Cartagena, located in the department of Bolívar on the Colombian Caribbean coast, presents climatic, geographic, and demographic conditions that predispose it to recurrent dengue epidemics. With an approximate population of 780,000 inhabitants, a population density of 2,156 inhabitants per square kilometer, a warm tropical climate with average temperatures of 28 °C, relative humidity above 80%, and average annual rainfall of 800–900 mm distributed in two rainy seasons, Cartagena constitutes an optimal ecosystem for the proliferation of the *Aedes aegypti mosquito.*[10] Additionally,

socioeconomic factors such as the prevalence of informal housing in peripheral settlements, deficiencies in drinking water coverage and inadequate storage systems, limited access to quality health services, and an economically vulnerable population create structural conditions that facilitate dengue transmission, particularly in low socioeconomic strata populations.[11]

The occupational dimension of dengue has been systematically underestimated in conventional epidemiological analyses. A recent study demonstrates that multiple occupational categories face increased risks of exposure to the transmitting vector, including agricultural workers, gardeners and green space maintenance personnel, cleaning and waste collection workers, street vendors and merchants, health service workers, port and cargo workers, transport and logistics workers, and various informal workers.[12] In Cartagena specifically, the presence of active ports, free trade zones, seasonal tourist services, peripheral agricultural activities, and extensive informal commerce generates a complex occupational structure with differential vector exposure.[13] During the first half of 2025, Cartagena experienced an alarming epidemic surge, reaching unprecedented numbers of dengue cases. By epidemiological week 4 of 2025, 1,744 cumulative cases had been reported, with 1,312 cases (75.2%) classified as dengue without warning signs, 416 cases (23.9%) as dengue with warning signs, and 16 cases (0.9%) as severe dengue.[14] Just three weeks later, by epidemiological week 6, cumulative cases had risen to 2,825, representing percentage increases of over 600% compared to the same periods in 2024.[15] This exponential growth trajectory has led to saturation of healthcare services, limitations in the availability of diagnostic and therapeutic supplies, and documented consequences for the informal economy and labor productivity.[16]

The comprehensive characterization of the epidemiological situation of dengue in Cartagena during the year 2025, with particular emphasis on its distribution according to occupational, socioeconomic, and geographic variables, identifying working populations at increased risk, analyzing social determinants of vector exposure in work contexts, and formulating evidence-based recommendations for the implementation of occupational biosafety interventions. This comprehensive approach is necessary to contribute to the development of public occupational health policies that recognize and address the occupational component of the dengue epidemic in Cartagena, a sector that has paradoxically been little explored despite its growing relevance to the health of the working population.[17]

General epidemiological situation of dengue in Cartagena 2025: magnitude, trajectory and classification of cases

The year 2025 marked an epidemiological milestone in the history of Cartagena. As of epidemiological week 25 (equivalent to approximately the end of June 2025), the Public Health Surveillance System reported 8,947 cumulative cases of dengue in the District, distributed as follows: 8,396 cases of dengue without warning signs (79.6% of the total), 1,993 cases with warning signs (18.9%), and 158 cases of severe dengue (1.5%). This clinical distribution pattern is consistent with previous epidemiological studies demonstrating that almost 80% of dengue patients present with the uncomplicated form of the disease.[18]

However, the severity indicators are particularly concerning. As of this same date, 47 confirmed dengue-related deaths had been recorded in Cartagena, representing a case fatality rate of 0.53% among confirmed cases. This percentage is approximately double the case fatality rate reported in other Colombian cities during 2024, suggesting either lower efficiency in early diagnosis, delayed access to quality health services, or the presence of population risk factors that predispose individuals to complications. The number of hospitalizations recorded was 1,822 patients, representing a hospitalization rate of 20.4% of the total cases, an indicator that reflects the severity of the outbreak.[19]

In epidemiological week 25 of 2024, Cartagena reported approximately 340 cumulative cases, by the same week in 2025, this figure had risen to 8,840 cases, representing a 2,600% increase, or 26 times more in just one year. Additionally, the cumulative incidence rate has reached approximately 1,247 cases per 100,000 inhabitants, significantly exceeding international epidemic thresholds, which are generally set between 300 and 500 cases per 100,000 inhabitants.[20]

This pattern of exponential escalation has led to Cartagena being classified as a Type II outbreak according to the National Surveillance System nomenclature, defined as a pattern of cases above the upper limit of the endemic channel for at least six consecutive epidemiological weeks with an increasing trend. This classification implies the activation of maximum alert protocols at all levels of health administration, allocation of extraordinary resources, and restriction of movement between municipalities in cases of documented hospital saturation.[21]

Temporal distribution: analysis by epidemiological week and transmission trends

Weekly analysis of dengue in Cartagena during 2025 reveals a sustained transmission pattern with a persistently increasing trend. During the first four epidemiological weeks of the year (January), a total of 1,744 cases were reported. This period, coinciding with the dry season in Cartagena, suggests that the viral inoculum accumulated in the population during 2024 generated conditions for sustained viral amplification even during periods of lower rainfall. Between epidemiological weeks 5 and 8 (February), a pronounced increase was observed, with approximately 1,100 additional cases reported weekly.[22] It is noteworthy that the prolongation of transmission beyond the expected peak transmission period (historical September-November) suggests alterations in rainfall and temperature patterns due to climate change, which have allowed for an extension of the vector transmission season.[23] Associated meteorological data show average temperatures 1.5–2.0°C above historical levels throughout the period, which significantly accelerates the extrinsic life cycle of the virus within the mosquito (shortening it from 12–14 days to 7–10 days) and increases vector competence.[24]

This article seeks to comprehensively characterize the epidemiological situation of dengue in Cartagena during the year 2025.

Methods

A descriptive, retrospective, cross-sectional epidemiological study was designed to characterize the dynamics of dengue virus transmission and its impact on the working population of the Cartagena District during the period up to epidemiological week 25 of 2025. The study population comprised all dengue cases (10,548 records) reported to the Public Health Surveillance System (Sivigila) and validated by the District Administrative Department of Health (DADIS). Secondary sources included sociodemographic and climatic data from official epidemiological bulletins and local quality of life reports.

The data were processed using descriptive statistics. Incidence rates per 100,000 inhabitants were calculated using population projections for the district. Geographic analysis was performed

by stratifying cases by neighborhoods and localities to identify transmission *hotspots associated with precarious housing conditions.*

Ethical and regulatory considerations

The study was based on a review of aggregated and anonymized public health surveillance data, ensuring confidentiality in accordance with national regulations. The level of compliance with current biosafety protocols (Resolutions 1054/2020, 1155/2020 and 777/2021) was also compared with the reality observed in the district's workplaces.[14,15,24]

Results

Analysis of the distribution by demographic variables: age and sex

The age distribution of dengue cases in Cartagena during 2025, as shown in Table 1, reveals a unique epidemiological pattern. Of the 10,548 confirmed and probable cases (100%) accumulated through week 25, the most significant finding is that the 15-64 age group represents the vast majority of cases, with 5,463 (51.8%). Another notable age group is the 20-49 age subgroup, which accounts for 3,851 cases (36.5%). This confirms that the studied phenomenon predominantly impacts people in their prime working years, suggesting a high probability of absenteeism and reduced productivity. The elderly population, specifically those over 64 years of age, accounts for 1,073 cases (10.2%). Although this percentage is lower than that of the working-age group, it remains significant considering the biological vulnerability of this segment.

Table 1 Distribution by age group

Age group	Number of cases	Percentage of total (%)
Children under 15 years old	161	1.5
15-64 years*	5,463	51.8
20-49 years	3851	36.5
People over 64 years old	1073	10.2
Total	10,548	100

Note: *The figures in this row do not include cases with an age range between 20 and 49 years.

Source: Own elaboration.

Within this broad range, the specific distribution shows that the 20-49 age group (the most productive and working-age population) represents 36.5% of all cases. The under-15 age group represents 1.5% of cases (161 cases). These proportions differ from the classic dengue pattern observed in previous outbreaks in 2023-2024, where the age distribution was more symmetrical. The current concentration in the young adult population likely reflects patterns of differential occupational exposure, with greater time spent in public spaces, greater participation in outdoor work activities, and lower adherence to personal protective measures.

Regarding the distribution by sex, Table 2 illustrates data in a proportion by gender: 5,516 cases (52.29%) in women and 5,032 cases (47.7%) in men.

Table 2 Distribution by gender

Category	Women	Men	Total cases	Explanatory notes
General distribution	5,516 52.29%	5032 47.71%	10,548	Balanced ratio.
Age group 20-49 years	1771 46%	2080 54%	3851	Higher proportion of men, probably due to occupational exposure (peripheral agriculture, construction, port services).
Age group 5-14 years	Balanced	Balanced	-	More homogeneous community exposure.

Source: Own elaboration.

There are a higher proportion of men in the age group with the highest economic activity. The explanatory note is key: this difference is likely attributable to occupational exposure in specific sectors (such as rural agriculture or outdoor work). This suggests that the work environment may act as a differential risk factor for men in this age range. The most notable finding occurs in the 20-49 age group, where the trend reverses, with men accounting for 54% of cases (2,080 records) and women for 46% (1,771 events). This phenomenon is attributed to greater vulnerability possibly linked to occupational exposure, specifically in sectors such as rural agriculture. In contrast, the 5-14 age group shows a balanced distribution, suggesting that childhood exposure is primarily community-based and homogeneous, without the risk disparities introduced by economic activity in adulthood.

Geographic distribution: analysis by neighborhoods and localities

Cartagena is administratively divided into three districts: Historical and North Caribbean (which includes the old town and tourist areas), San Fernando (which includes the commercial center and middle-class residential neighborhoods), and Tourist (which includes Bocagrande and port areas). At the neighborhood level, as shown in Table 3, an analysis of cumulative incidence up to week 25 of 2025 reveals a significant concentration in certain areas. Barrio Chino (Chinatown), located in the Historical district, reported 387 confirmed cases in an estimated population of approximately 12,000 inhabitants, generating a specific incidence rate of 3,225 cases per 100,000 inhabitants, approximately 2.6 times higher than the district average incidence. This neighborhood, characterized by informal housing, extremely high population density, limited access to potable water, and a predominance of residents from socioeconomic strata 1-2, represents the geographic epicenter of transmission.

Distribution by socioeconomic stratum and type of health insurance

The analysis of dengue cases in Cartagena, stratified by socioeconomic status (Table 4), reveals marked disparities in the disease burden. Of the total 10,548 cases as of week 25 of 2025, approximately 72% (7,595 cases) correspond to the population in stratum 1-2 (low), 20% (2,110 cases) to stratum 3-4 (middle), and only 8% (843 cases) to stratum 5-6 (high). This dramatic concentration in low strata reflects complex social determinants that include: a)

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deficiencies in water and sanitation infrastructure that necessitate household water storage, favoring larval breeding, b) excessive population density that amplifies opportunities for contact with vectors, c) economic limitations that restrict access to insecticides and personal protective equipment, and d) limitations in effective health education that incorporates local cultural perspectives.

Table 3 Distribution by stratum and health regime

Socioeconomic stratum	Classification	Number of Cases	Percentage (%)
Stratum 1 - 2	Low	7595	72
Stratum 3 - 4	Half	2110	20
Stratum 5 - 6	High	843	8
Total		10548	100
Health regimen	Population profile	Number of cases	Percentage (%)
Subsidized	Limited resources / Informality	6117	58
Contributory	Formal workers	3692	35
Linked / Special	Without insurance or specific plans	739	7
Total		10548	100

Source: Own elaboration.

Table 4 Distribution by case type and severity

Case classification	Number of cases	Percentage (%)	Typical requirement
Dengue without warning signs	1.312	75.20%	Outpatient management / Observation
Dengue with warning signs	416	23.90%	Hospitalization and monitoring
Severe dengue	16	0.90%	Hospitalization / ICU
Total Accumulated	**1,744**	**100%**	

Source: Own elaboration.

Regarding health insurance coverage, the data show that 58% of cases (6,117 cases) were enrolled in the subsidized health insurance system (low-income population), 35% (3,692 cases) in the contributory system (formal workers), and 7% (739 cases) corresponded to the uninsured population or those enrolled in special systems. This distribution is especially relevant for occupational analysis, as it suggests that the greatest burden of dengue falls on the population without stable formal employment or with informal jobs lacking contributory coverage, which also implies unequal access to diagnostic and treatment services.

Indicators of clinical severity: warning signs and severe dengue

Characterizing the clinical severity of dengue cases in Cartagena during 2025 is critical to understanding the occupational impact, as shown in Table 4. Of the 10,548 confirmed and probable cases accumulated through week 25, 2,152 cases (20.4%) were classified as presenting with warning signs such as severe abdominal pain, persistent vomiting, mucosal bleeding, lethargy or restlessness, hepatomegaly greater than 2 cm, progressive hematocrit increase, or progressive thrombocytopenia. These clinical signs indicate progression to complicated forms of the disease and require hospitalization with intensive monitoring.

The epidemiological behavior of dengue in Cartagena at the beginning of 2025 reveals a highly complex situation. Although 75.2% of patients present with uncomplicated forms of the disease, a significant proportion (23.9%) exhibit warning signs requiring close clinical monitoring. This distribution places a considerable burden on inpatient services, exacerbated by the 0.9% of severe cases requiring intensive care. The exponential increase of over 600% compared to the previous year underscores the urgent need for effective biosafety protocols in the face of the imminent saturation of the district's healthcare system.

Specific analysis of occupational variables and labor sectors at increased risk

The occupational distribution of dengue in Cartagena reveals that informal workers are the most represented group, accounting for 28% of cases with an average age of 44.8 years. According to Table 5, this phenomenon is attributed to their prolonged exposure in public spaces during peak mosquito activity, typically lacking personal protective equipment. Similarly, the transportation and logistics sector, along with healthcare personnel, accounts for 23% of reported cases. While transport workers may be exposed through stagnant water in infrastructure such as ports, healthcare personnel may face risk through direct contact with viremic patients in hospital settings.

On the other hand, sectors such as agriculture, gardening, and domestic services account for 17% of cases, affecting populations with an average age between 35 and 36 years. In these areas, the density of vectors in natural environments and the handling of solid waste facilitate the proliferation of breeding grounds, making these tasks high-risk biological activities. It is alarming that, despite occupational safety regulations, critical sectors such as ports show a protocol implementation rate of only 31%. This underscores a disconnect between traditional epidemiological surveillance and risk management in current work environments. The distribution of occupational groups and average ages of those affected by dengue can be observed across different occupational groups.

Transportation and logistics workers (taxi drivers, drivers, loaders, port workers): constituted 11% of the cases (137 cases), with an average age of 41.2 years. Their exposure is multifactorial, including prolonged stays in vehicles without vector control, breaks in high-risk areas (parking lots, waiting areas), and in the case of port workers, exposure to water deposits in containers and port infrastructure.

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Table 5 Occupational distribution of Dengue cases

Occupation	Average age (in years)	Number of cases	Percentage (%)
Diverse informal workers	44.8	348	28
Other workers (Administration , Education, Security)	41.2	311*	25
Health services personnel	39.5	149	12
Transport and logistics	38.6	137	11
Agricultural and gardening workers	36.2	112	9
Domestic services and cleaning	35.4	99	8
Merchants (Formal and informal)	39.2	87	7
Total with occupancy record		1243	100

Source: Own elaboration.

Agricultural and landscaping workers (farmers, gardeners, green space maintenance workers): represented 9% of cases (112 cases), with an average age of 44.8 years. Their exposure is direct to the natural environment where vector density is typically higher, with limited access to effective protective measures.

Domestic and cleaning service workers (house cleaners, building cleaning staff, garbage collectors): constituted 8% of the cases (99 cases), with an average age of 36.2 years. Their exposure is to spaces potentially contaminated with vectors, particularly in stagnant water environments and containers where solid waste accumulates.

Formal and informal merchants (owners or employees of shops, markets, commercial stalls): represented 7% of the cases (87 cases), with an average age of 39.5 years.

Other workers (administrative employees, education staff, security workers, among others): constituted the remaining 25% of cases, reflecting the widespread penetration of dengue in multiple occupational sectors.

The distribution described above, while descriptive, clearly identifies that workers who spend more time in public spaces, are exposed to environments with stagnant water, or have direct contact with viremic patients may face amplified occupational risks. Additionally, most of these workers lack contributory health insurance coverage, occupational immunization programs, and specific epidemiological surveillance programs in their workplaces.

Regarding Table 6, the risk factor matrix reveals that dengue in Cartagena has transcended the domestic sphere to become a diversified occupational biological risk. The vulnerability of the analyzed groups is not uniform, but rather responds to specific work dynamics: while in the informal sector the risk is temporary (coinciding with peak mosquito activity) and due to a lack of protection, in the health sector it is relational, stemming from direct contact with infected patients in clinical settings.

Table 6 Risk and exposure factor matrix

Occupational group	Main risk factors	Exhibition context
Informal	Peak vector activity times	Public spaces, lack of PPE*.
Health	Viremic patients	Hospitals and laboratories.
Transport	Stagnant water in infrastructure	Vehicles, ports and parking lots.
Agricultural / Garden	High vector density	Natural environment and green areas.
Cleaning	Solid waste and stagnant water	Domestic and urban environments.

Source: Own elaboration.

During the study period, formal biosafety and vector control protocols existed at the district and national levels, based on Joint External Circular No. 13 of 2023 from the Ministry of Health (instructions for dengue contingency plans, including alerts and type I and II outbreaks).[26] External Circular No. 02 of 2023 (strengthening epidemiological surveillance and chemical control in endemic environments), and Decree 780 of 2016 (single public health surveillance system, with emphasis on communicable events such as dengue). These are complemented by occupational safety regulations such as Resolution 0312 of 2019 from the Ministry of Labor, occupational safety and health management system (SG-SST), to identify occupational biological risks, and Law 1562 of 2012 (modifies the SG-SST for the prevention of occupational risks, including infectious vectors). However, the analysis of the implementation of these dengue-specific protocols in occupational settings outside the health sector revealed significant shortcomings.[27,28]

On the other hand, the transportation, agriculture, and cleaning sectors share a critical environmental risk linked to infrastructure and the surrounding environment. In transportation and logistics, especially in port areas, the accumulation of water in containers and tires creates permanent industrial breeding grounds for mosquitoes. For workers in green spaces and cleaning, exposure may be structural due to the high density of vectors and solid waste management. This matrix underscores the urgent need for companies to integrate vector control into their Occupational Health and Safety Management Systems (OHSMS), adapting biosecurity measures to each specific exposure context.

Discussion

The results of this descriptive study on dengue in Cartagena reveal a significant epidemiological burden in the working-age population (15-64 years, 61% of cases), with a predominance in the 20-49 age

group (43%) and a higher male prevalence (54%) in this range, linked to sectors such as port, agriculture, and transportation.[1]

These findings contradict national regulations, such as Joint External Circular No. 13 of 2023, which establishes contingency plans for type II outbreaks, precisely the classification for Cartagena,[22] prioritizing vector surveillance and occupational response, but they also reveal deficiencies in implementation outside the health sector.[2] Similarly, Decree 780 of 2016 regulates the surveillance of communicable events, including dengue as an occupational biological risk, but only 31% of audited port companies documented specific protocols, such as the management of breeding sites in infrastructure with stagnant water.[3]

Geographical stratification (Chinatown: 3,225/100,000 inhabitants) and socioeconomic stratification (72% strata 1-2) corroborate literature that associates urban poverty and density with transmission, aligning with Resolution 2003 of 2014 for vector control, but contradicting its integration into the Occupational Health and Safety Management System (OHSMS) of Resolution 0312 of 2019 of the Ministry of Labor.[27] In occupational groups, informal workers (28%) and transport workers (11%) stand out due to exposure to peak vector hours and stagnant water, despite the mandatory use of PPE and training under Law 1562 of 2012, however, occupational underreporting (13.9%) reflects a disconnect between SIVIGILA and workplace surveillance.[1,10]

These data contradict previous conclusions, such as those of Bedoya in 2026, which emphasize general biosafety protocols but underestimate non-health risks.[1] Cisneros (2025) identifies similar social factors, but this study quantifies the productive impact (20.4% hospitalizations), demanding multisectoral interventions.[2] Meanwhile, Peralta in 2025 highlights labor disparities, reinforcing the need for specific protocols in ports and informal sectors.[3] INS-DADIS bulletins (2025) confirm the escalation (8,947 cases), but ignore occupational metrics, limiting policies.[14,16]

Compared to the 2024 epidemics (145% national increase), Cartagena amplifies occupational risks due to port tourism, diverging from PAHO alerts that prioritize clinical over occupational [(10).] The case fatality rate of 0.53% is double the average, suggesting failures in warning signs (WHO), aggravated by informality (58% subsidized).[17] This contradicts Ministry of Health guidelines in 2023, urging an OSH Management System adapted to vectors.[14] Results show that dengue transcends the environmental to become an unmanaged occupational risk, despite current regulations, demanding integration of SIVIGILA-SST and multisectoral audits to mitigate productive impacts.[19,28]

Conclusion

The research confirms that dengue in Cartagena during 2025 represents not only a public health crisis but also a potential emerging occupational biological risk that disproportionately affects the economically active working population. This research demonstrates that dengue has ceased to be a strictly domestic concern and has become may be considered a critical occupational risk in the District of Cartagena. The high incidence among the economically active population, especially men aged 20 to 49, suggests that labor mobility patterns and the presence of breeding sites in workplaces may be driving transmission. This implies that companies should move beyond the traditional view of occupational health and integrate vector control as an essential component of their Occupational Health and Safety Management Systems (OHSMS).

A marked epidemiological divergence between sex and age is evident: while the distribution is equitable in childhood, in adulthood the risk is higher for men. This phenomenon is attributed to the characteristics of the predominant economic activities in the region (such as peripheral agriculture, construction, and industrial maintenance), where exposure to Aedes aegypti mosquito bites may be greater due to the nature of outdoor work and the lack of personal protective equipment against biological hazards. The magnitude of the impact on the working population underscores the urgency of establishing shared surveillance protocols between the local government and the private sector. Official case reporting is insufficient, proactive intervention is required in the city's industrial zones and commercial hubs. Preventing the economic impact resulting from absenteeism and decreased productivity depends on the capacity of organizations to implement basic sanitation and health education strategies specifically aimed at protecting human capital from diseases of public health concern.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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