Knowledge, attitudes and practices of dengue prevention in users of health institutions in the department of Atlantico.

DOI: 10.66615/j70k0t28

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Abstract

Objective: To determine the knowledge, attitudes, and practices (KAP) regarding dengue prevention among users of health institutions in the department of Atlántico, Colombia. The research was conducted between September and December 2024 in three health institutions located in endemic areas of the department. **Method:** A quantitative, descriptive, cross-sectional study was conducted with a sample of 353 participants selected for convenience. Data collection was carried out using a structured questionnaire consisting of 18 questions distributed across three dimensions: knowledge (6 items), attitudes (8 items), and

Keywords:
Dengue; Disease prevention; Knowledge; Attitudes; Health practices; Health education.

practices (4 items), in addition to a sociodemographic form. The instrument was previously validated and applied with informed consent. The data were processed in Excel and analyzed using descriptive statistics. **Results:** The results showed that the majority of participants were women (69.53%), with technical or secondary education, belonging to socioeconomic stratum 1. In terms of knowledge, 44.19% identified dengue as a mosquito bite, although confusion persisted about symptoms and forms of transmission. Attitudes reflected low community participation and poor perception of leadership in preventive campaigns. The most frequent practices were tank washing and the elimination of standing water, although other measures such as the use of repellent or mosquito nets were less common. **Conclusion**: It is concluded that, although basic knowledge about dengue exists, gaps in attitudes and preventive practices persist, highlighting the need to strengthen educational and community strategies in public health.

INTRODUCTION

The World Health Organization (WHO) describes dengue as a viral disease transmitted to humans through the bite of infected mosquitoes, typically in tropical and subtropical climates worldwide; the primary vector is the Aedes aegypti mosquito. It is one of the most frequent mosquito-borne viral diseases in the world and is a persistent problem that challenges global public health (World Health Organization [WHO], 2021, 2023).

The virus has four serotypes: DENV-1, DENV-2, DENV-3, and DENV-4. In the Americas, all four serotypes of the dengue virus are currently in circulation. Most infections caused by these viruses result in only a mild febrile illness or no symptoms at all; however, some individuals present a severe condition involving shock, intense hemorrhaging, or severe organ impairment (Pan American Health Organization [PAHO], 2023).

According to the WHO, a global resurgence was observed in 2023, characterized by a significant increase in the number and scale of cases and the simultaneity of multiple outbreaks extending to regions previously unaffected by dengue. The PAHO indicated that this situation is not foreign to the region of the Americas, as the increase in cases has been reported as alarming, with more than 5 million cases and 5,000 deaths (World Health Organization, 2023).

In Colombia, the National Institute of Health (Instituto Nacional de Salud) notes that during the 2023–2025 epidemic period, a significant increase in the reporting of dengue cases was observed nationwide compared to the last ten years; however, the lowest lethality rate for dengue was observed in comparison to previous epidemics. Dengue is the event with the highest reporting rate to the public health surveillance system (SIVIGLA), contributing 34.1% of the total notifications made during the period presented. During 2025 (as of epidemiological week 12), the national incidence of dengue is 142.6 cases per 100,000 inhabitants, with 61.8% (29,412 cases) classified as dengue without warning signs (World Health Organization, 2023; Instituto Nacional de Salud [INS], 2025).

According to epidemiological surveillance data from the Government of Atlántico as of

week 12 (March 22), 1,514 cases of dengue were confirmed throughout the department, and Soledad alone had 996 cases, representing 65% of all cases in Atlántico. Of the confirmed cases in Soledad, 0.7% corresponded to severe dengue and 49.3% presented warning signs (Instituto Nacional de Salud, 2025; Gobernación del Atlántico, 2025).

In the District of Barranquilla, as of the end of epidemiological week 52 of 2024, the Ministry of Health reported 5,299 cases of dengue. The Barranquilla Secretary of Health found 458,672 water storage containers in the inspected dwellings, identifying that one or more breeding sites for the Aedes aegypti mosquito existed in 7,542 homes (Alcaldía de Barranquilla, 2025).

The spread of dengue involves factors such as changes in the distribution of vectors (mainly Aedes aegypti and Aedes albopictus), especially in countries where the disease was not previously present; the consequences of phenomena related to El Niño in 2023 and climate change; the fragility of health systems during the COVID-19 pandemic; the political and financial instability of countries facing complex humanitarian crises; and high population movements. These factors also hinder the response to the epidemic and increase the risk of spread to other countries (World Health Organization, 2024).

Preventing and controlling dengue is of utmost importance. The WHO recommends various measures, primarily focusing on protection against vectors—namely mosquito bites—and reducing their population. Vector control includes eliminating breeding sites, reducing vector populations, and avoiding human exposure to them whenever possible. Regarding individual protection measures, since mosquitoes are most active at dawn and dusk, it is recommended to adopt personal protection measures especially at those times of day. It is important to highlight that the efforts of health authorities are not sufficient to control it; it is also necessary for the affected communities to take ownership of control and prevention measures (WHO, 2024).

The recommendations of the National Institute of Health are to maintain monitoring of unusual behaviors at the departmental and municipal levels and to generate alerts for dengue with warning signs, severe dengue, probable deaths from dengue, and cases in children under 15 and adults over 65 years of age. A study conducted in Malambo, Atlántico, concluded that the studied population exhibits good knowledge of dengue; however, attitudes and certain practices for its prevention and control must be improved (Sánchez-Bolívar et al., 2024).

Research conducted in the department of Córdoba, Colombia, demonstrated a higher probability of knowledge regarding the causes and symptoms of dengue among individuals with technical, high school, or professional levels of education, in contrast to those who are illiterate or did not complete primary school. Likewise, they indicate that by implementing public policies that promote adult health literacy, community and family participation in prevention and control programs is likely to increase. As a result, it is possible to reduce the risk indices of falling ill with dengue (Valencia et al., 2024).

Considering the issues presented, nursing intervention as part of the healthcare team is fundamental in the primary level of care, where it is responsible for health promotion and disease prevention, including dengue. Thus, a KAP (Knowledge, Attitudes, and Practices) preventive diagnostic for dengue is necessary to determine how prepared users attending health institutions in an endemic area of the Atlántico department are. The objective of the study was to determine the knowledge, attitudes, and prevention practices regarding dengue among users of health institutions in the department of Atlántico.

MATERIALS AND METHODS

A quantitative, descriptive, and cross-sectional study was developed. The study population consisted of users attending consultations at three healthcare institutions. The population and sample size were comprised of 353 participants. Data collection was conducted through the application of a structured questionnaire titled "Knowledge, Attitudes, and Practices regarding Dengue," consisting of 18 questions distributed as follows: 6 questions on knowledge of dengue, 8 questions on community attitudes, and 4 questions on prevention practices. Additionally, a demographic characterization form with 4 questions was included. The instrument was based on the validated and authorized questionnaire: "Efficacy of the communication and community participation strategy for adherence and empowerment with dengue control measures," authored by Cáceres-Manrique, a researcher from the GUINDESS group at the Industrial University of Santander.

Prior to the administration of the instrument, permission was requested from the directors of the various healthcare institutions. Participants were approached during their consultations, and the study's objectives were explained to them to obtain their voluntary participation, for which they were required to read and sign an informed consent form. The data were organized in an Excel file to calculate descriptive measures for the variables. Regarding data analysis, frequency distributions and averages were calculated to characterize the sample and describe the main findings, as well as to evaluate associations between variables.

The project was approved by the Bioethics Committee and the Scientific Committee of the research funding institution, administrative act No. 518. The research was conducted with the informed consent of all participants. Furthermore, the parameters established in Resolution 008430 of 1993 were met, under which this research is considered risk-free, as no manipulation of variables was performed (Ministry of Health of Colombia, 1993).

RESULTS

The age distribution shows a significant concentration in the 23 to 27-year-old group, followed by the 28 to 32 and 33 to 37-year-old ranges. This indicates that the majority of participants are in a young-adult stage. The age extremes, such as those over 53 and the youngest between 18 and 22, had lower participation rates. Regarding sex, a female predominance is observed. In terms of educational level, the majority have technical training, followed by those with secondary education. Professional training is less frequent, which may reflect limitations in access to higher education or the characteristics of the respondents' labor environment. In terms of socioeconomic status, stratum 1 predominates, suggesting that a large portion of the participants come from low-income contexts (See Table 1).

Table 1.

Sociodemographic characterization of users at health institutions in the department of Atlántico.

Variable / Criteria	Frequency	%
Age		
18 - 22	46	13.03
23 - 27	87	24.65
28 - 32	57	16.15
33 – 37	54	15.3
38 - 42	35	9.92
43 - 47	21	5.95

48 - 52	38	10.76
53 and over	14	4.2
Sex		
Female	231	69.53
Male	122	30.47
Educational Level		
Primary	35	9.92
Secondary	98	27.76
Technical	156	44.19
Technologist	46	13.03
Professional	18	5.1
Socioeconomic Stratum		
1	156	44.19
2	143	27.76
3	46	13.03
4	8	9.92

Source: Efficacy of the communication and community participation strategy for adherence and empowerment with dengue control measures.

Regarding knowledge of dengue, the majority of respondents identify it as a consequence of a mosquito bite, although it is also recognized as an epidemic, a serious disease, and, to a lesser extent, a virus. The most frequently mentioned symptoms included headache, body aches, and bone pain, while others such as vomiting, red spots on the skin, diarrhea, and bleeding are less known. Transmission is primarily associated with the bite of a mosquito, though misconceptions such as sneezing or physical contact persist. Regarding the vector's breeding sites, stagnant dirty water is most frequently identified, followed by stagnant clean water and garbage.

There is significant confusion regarding the name of the mosquito, as many erroneously identify it as "dengue," while others correctly recognize Aedes aegypti. Finally, the majority describe it as an insect with white spots on its legs; however, it is also perceived as being large or even red in color, evidencing gaps in the visual knowledge of the vector (See Table 2).

Table 2.

Knowledge of dengue prevention among users of health institutions in the department of Atlántico.

Variable / Criteria	Frequency	%
In your opinion, what is Dengue?		
Mosquito bite	156	44.19
Epidemic	73	20.68
A serious disease	66	18.70
A virus	46	13.03
What symptoms do people present when they have dengue?		
Headache	89	25.21
Body pain	76	21.53
Bone pain	49	13.88
Vomiting	27	7.65

Red spots on the skin	34	9.63
Diarrhea	23	6.52
Gum bleeding	10	2.83
Sweating	12	3.40
Rash	12	3.40
Nosebleed	6	1.70
How is Dengue transmitted?		
Mosquito bite	231	65.44
Through sneezing	69	19.55
Physical contact	32	9.07
Does not know	21	5.95
Where does the mosquito that causes Dengue breed?		
Stagnant dirty water	183	51.84
Stagnant clean water	121	34.28
In garbage	34	9.63
Does not know	15	4.25
What is the name of the mosquito that transmits Dengue?		
Dengue	156	37.50
Aedes aegypti	98	25.00
Does not know	49	17.97
Male mosquito	42	16.41
Zika	8	3.12
What does the mosquito look like?		
With white spots on its legs	154	42.19
Large	98	30.47
Does not know	56	16.41
Red	45	10.94

Source: Efficacy of the communication and community participation strategy for adherence and empowerment with dengue control measures.

The data reflect a predominantly passive attitude toward dengue prevention within the evaluated community. Most individuals do not lodge complaints with authorities nor actively participate in preventive activities. Furthermore, there is no significant trend toward coordinating with neighbors for the collection of unusable items (disposables) or educating others on prevention measures. Although some participants believe they have the possibility of performing control actions, this perception does not translate into leading campaigns or securing aid for preventive programs. Additionally, a considerable proportion feels that their suggestions are not heard, which could negatively influence their motivation to become involved. Taken together, these results suggest the need to strengthen community participation and trust in institutions to improve the response to dengue (See Table 3).

Table 3.

Dengue prevention attitudes among users of health institutions in the department of Atlántico.

Variable / Criteria	**Frequency**	**%**
Do you request help from authorities to prevent the disease?		
NO	255	72.24

YES	98	42.97
Do you participate in activities to prevent Dengue?		
NO	238	67.42
YES	115	38.28
Do you coordinate with your neighbors to collect unusable items (disposables)?		
NO	248	70.25
YES	105	29.75
Do you educate others on measures to prevent Dengue?		
NO	240	67.99
YES	113	37.50
Do you have the possibility of performing control actions against dengue disease?		
NO	245	69.41
YES	108	41.41
Do you consider that your suggestions are heard?		
NO	245	69.41
YES	108	30.59
Do you lead campaigns to prevent Dengue?		
NO	263	74.50
YES	90	25.50
Do you obtain aid for prevention programs?		
NO	242	68.56
YES	111	31.44

Source: Efficacy of the communication and community participation strategy for adherence and empowerment with dengue control measures.

Information regarding practices against dengue reveals that the community participates in certain preventive measures, although specific weaknesses persist. The most common practice is washing water tanks, followed by avoiding stagnant water, indicating a basic awareness of mosquito breeding sites. However, other actions—such as fumigation, general household cleaning, covering tanks, and using repellent or bed nets—are much less frequent, suggesting that prevention focuses primarily on the physical environment rather than personal protection.

When a family member falls ill, the majority seek medical attention, which is a positive finding. Nevertheless, a considerable proportion resorts to self-medication or only consults Healthcare Provider Institutions (IPS), which could reflect barriers to access or distrust in the healthcare system. Very few choose to care for the sick at home without medical attention, indicating that the severity of the disease is recognized.

Regarding the frequency of tank washing, most do so once a week, followed by twice a week and daily, demonstrating a regular effort to maintain clean water storage. However, some perform this task only once a month or never, representing a significant risk for mosquito proliferation.

As for the materials used to wash the tanks, the majority employ detergent and a brush, which is appropriate for eliminating larvae. Others use water and a brush or only detergent, while a minority uses only water or no effective method at all, which could reduce the efficacy of the cleaning process.

Collectively, the data show that while there is awareness of the importance of certain practices, gaps remain in the implementation of more comprehensive and sustained measures. This suggests the need to reinforce educational campaigns that promote not only knowledge but also the adoption of more effective and consistent practices (See

Table 4).

Table 4.

Dengue prevention practices among users of health institutions in the department of Atlántico.

Variable / Criteria	Frequency	%
What practices do you perform to prevent the disease?		
Washing the tank	145	41.08
Avoiding stagnant water	113	33.59
Fumigation	24	9.38
House cleaning	27	7.81
Covering the tank	19	5.47
Use of repellent	12	3.12
Use of bed nets	13	1.56
Practices when a family member falls ill?		
Consult a doctor	212	60.06
Self-medication	78	22.10
Consult Healthcare Provider Institutions (IPS)	56	15.86
Care at home	7	1.98
How often do you wash the tank?		
Once a week	132	37.39
Twice a week	87	24.65
Every day	65	18.41
Once a month	37	10.48
Twice a month	23	6.52
Never	9	2.55
What do you use to wash the tank?		
Detergent and brush	237	67.14
Water and brush	49	13.88
Detergent	35	9.92
Water only	17	4.82
None	15	4.25

Source: Efficacy of the communication and community participation strategy for adherence and empowerment with dengue control measures.

DISCUSSION

In the sociodemographic characterization of the population, the age distribution revealed that the majority of participants were between 23 and 32 years old, which coincides with the study by Benavides Melo et al. (2021), who found that dengue primarily affects people of productive age, especially those over 40 years old. This suggests that while dengue can affect all ages, there is a particular vulnerability in young and older adults, possibly due to occupational exposure or environmental conditions.

Regarding sex, a predominance of females was evidenced (69.53%), a result that aligns with reports by Ortiz et al. (2018), who found that 75% of their study participants were

women; this suggests a greater impact or female participation in contexts related to dengue. Regarding educational level, it was observed that the majority of the population had technical training (44.19%) and secondary education (27.76%). These findings partially differ from those reported by Ortiz et al. (2018), who evidenced that 70% of participants had not received training and only had a primary education, while 30% had secondary or higher education. Similarly, Hernández-Escolar et al. (2014) identified that the highest percentage of subjects were high school graduates (38%), followed by those with technical training (23.7%). These results are relevant, as educational level significantly influences knowledge, risk perception, and the adoption of preventive practices against dengue.

The predominant socioeconomic stratum is 1 (44.19%), indicating a vulnerable population. According to PAHO and other authors, dengue has a higher incidence in low-resource areas due to housing conditions, limited access to health services, and the accumulation of stagnant water (Nieto Villaseñor et al., 2023).

Regarding the variable of knowledge about dengue, it was evidenced that the majority of respondents identify dengue as a mosquito bite, while a smaller proportion recognizes it as a serious disease or a virus. This coincides with the study by Hernández-Escolar et al. (2014), who found that 94% know it is transmitted through the bite of a mosquito. In fact, Benítez-Díaz et al. (2020) reported that only 7% of respondents knew that dengue is caused by a virus.

The most frequently mentioned symptoms were headache (25.21%), body pain (21.23%), and bone pain (13.88%), while more specific symptoms such as gum bleeding (2.83%), nosebleeds (1.7%), or rashes (3.4%) were less recognized. These results coincide with the study by Sarmiento-Senior et al. (2019), where the most frequently recognized dengue symptoms were fever (56% in La Mesa, 74% in Anapoima) and bone pain (48% in La Mesa, 64% in Anapoima), as well as bleeding of the nose and gums (63.6% in La Mesa, 30.4% in Anapoima).

According to Benítez-Diaz et al. (2020), fever was the most mentioned symptom (95%), while the other symptoms consulted were identified by less than 50% of the participants. Most know that dengue is transmitted by a mosquito bite, but some still believe it is transmitted by sneezing or physical contact, indicating confusion regarding the transmission route. Furthermore, they highlight that erroneous perceptions of transmission can affect community prevention strategies (Benítez-Diaz et al., 2020).

Although more than half of the surveyed population correctly identifies that the mosquito breeds in stagnant dirty water, a significant proportion mentions clean water, which is correct but less intuitive. These results coincide with research by Salamanca-Ramos et al. (2025), where 90% of those involved admit that water accumulated in containers—such as old tires, tanks, pools, and vases—can become favorable sites for the reproduction of carrier mosquitoes (Salamanca-Ramos et al., 2025). Considering that the Aedes aegypti mosquito breeds primarily in stagnant clean water, as documented in recent entomo-epidemiological studies, another study revealed that 56.34% of mosquitoes come from potable water, 43.66% from retained contaminated water, and 40.28% lacked information on their origin (Oliveros-Villanueva et al., 2023).

Only a quarter of respondents (25%) correctly identify Aedes aegypti as the transmitter of dengue; many confuse it with the "male mosquito" or even with "zika," evidencing a lack of clarity in vector education. These results contrast with the study by Mohamed et al. (2025), which indicated that 65.1% of respondents possessed moderate knowledge about dengue, while 19.6% showed high knowledge and 15.3% showed low knowledge; in that study, the majority of participants (87.8%) correctly identified Aedes mosquitoes as the primary vector, and 52.7% recognized stagnant clean water as their breeding habitat.

Furthermore, although some recognize white spots on the legs, others describe the mosquito as "large" or "red," which may hinder its identification during control campaigns. These results can be inferred alongside the study by Hernández-Cristancho and Salamanca-Ramos (2023), who investigated the appearance of the mosquito that transmits dengue; 61.1% of their sample (187 participants) responded "Does Not Know." This indicates that the majority of the population studied in that research lacks clarity regarding the physical appearance of the mosquito.

Regarding the attitude variable, the results of this research show a predominantly passive attitude toward dengue prevention, where 72.24% of respondents do not seek help from authorities to prevent the disease, and 74.5% do not lead preventive campaigns. This lack of participation is also reflected in the fact that 67.42% do not participate in community prevention activities and 70.25% do not coordinate with neighbors for the collection of unusable items. These findings coincide with recent studies conducted in Colombia; in Barbosa (Santander), it was found that 73.1% of respondents presented negative attitudes toward dengue, even though 67.7% reported adequate practices. Considering factors such as reporting to authorities (20.4% do not), participating in initiatives to avoid dengue (18.3%), obtaining support for prevention programs (9.7%), leading campaigns to combat dengue (6.5%), and coordinating with neighbors for item removal (33.3%) (Mateus Escobar et al., 2023). This suggests a disconnection between knowledge and action, where individuals may know what to do but do not feel motivated or empowered to act.

Finally, it was found that dengue prevention practices in the surveyed population are limited and concentrated on basic actions such as washing the tank (41.08%) and avoiding stagnant water (33.59%), while other measures such as fumigation (9.38%), using repellent (3.12%), or using bed nets (1.56%) are infrequent (Mohamed et al., 2025). This trend reflects a narrow view of prevention, focused on the immediate environment rather than an integrated strategy. A study in Villavicencio found that, although 84% of families recognized the severity of dengue, only 14.9% fumigated and 39.9% washed the tank weekly. This coincides with current data, where 37.39% of respondents wash the tank once a week, which is adequate according to the recommendations of the Ministry of Health, but still insufficient to guarantee effective vector control (Ministry of Health and Social Protection, 2022).

Regarding family management when a member falls ill, the majority (60.06%) consult a doctor, which is positive. However, self-medication (22.1%) and exclusive home care (1.98%) remain common practices, which can delay diagnosis and increase the risk of complications. In the study by Valencia-Jiménez et al. (2023), it was evidenced that families recognize their role in prevention but delegate responsibility to health institutions, which limits their empowerment.

Regarding the frequency of tank washing, although 37.39% do it weekly, 10.48% perform it only once a month and 2.55% never do it. This is concerning, as the reproductive cycle of the Aedes aegypti mosquito can be completed in less than a week (Ministry of Health and Social Protection, 2022). Additionally, while 67.14% use detergent and a brush (which is appropriate), 4.25% use no effective method, representing a significant risk.

These data reflect an urgent need to strengthen community education and family empowerment strategies. As pointed out by Valencia-Jiménez et al. (2023), family empowerment is key for prevention practices to gain greater momentum, especially in contexts of high social vulnerability.

CONCLUSIONS

This study allows for the conclusion that the evaluated population presents significant vulnerability to dengue, determined by sociodemographic factors, limitations in knowledge, passive attitudes, and insufficient preventive practices. Beyond the description of these findings, the research provides a theoretical interpretation of the disconnection between knowledge and community action, evidencing that knowledge alone does not guarantee effective preventive behaviors.

The study identifies that conceptual gaps regarding the vector, less evident symptoms, and transmission mechanisms limit individual and collective response capacities; this confirms the need to understand dengue as a social and cultural phenomenon in addition to an epidemiological one. The observed attitudes reflect a low sense of ownership regarding the problem, which theoretically translates into a deficit in community empowerment and the absence of sufficient social capital to sustain prevention practices.

Furthermore, although preventive practices are present, they remain at a basic and fragmented level, revealing the insufficiency of strategies centered solely on the transmission of information. The contribution of this study lies in demonstrating that risk management requires an integrated approach that articulates health education, community participation, and institutional strengthening, with territorial and cultural relevance.

In other words, the research contributes to the field of knowledge by evidencing that dengue prevention does not depend solely on available information, but rather on the capacity of communities to transform that knowledge into collective action. Promoting family and community empowerment, alongside the development of local capacities, constitutes an indispensable theoretical and practical axis for advancing toward a sustained reduction in dengue incidence among vulnerable populations.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest. Acknowledgments are extended to the Metropolitan University for the funding of the project, and to the health institutions and their directors for allowing the development and support of this research.

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