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# KNOWLEDGE, PRACTICE OF DENGUE PREVENTION AMONG FIRST-YEAR STUDENTS OF BACH MAI MEDICAL COLLEGE IN 2024

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## ABSTRACT

**Background:** Dengue fever epidemics occur in complex annual cycles, and the number of cases tends to increase. Improving students' knowledge of disease prevention practices is very important, especially for first-year students.

**Objectives:** 1) Describe practical knowledge of dengue prevention among first-year students at Bach Mai Medical College in 2024; 2) Identify some factors related to knowledge and practice of dengue fever prevention of the research subjects.

**Materials and methods:** Cross-sectional descriptive study, conducted on 315 first-year students using the convenience sampling method from December 2023 to July 2024 at Bach Mai Medical College.

**Results:** Through a survey of 315 first-year students, 18.73% of students had satisfactory knowledge of dengue fever prevention, and 45.08% of students had satisfactory practice in dengue fever prevention. The study found an inverse relationship between knowledge and practice, as well as between ethnicity and knowledge ($p<0.05$), and between knowledge and practice ($p<0.05$). Conclusion: The percentage of students with satisfactory expertise and practice is low. Health education and communication activities need to be promoted to enhance students' self-awareness and responsibility in preventing dengue fever.

***Keywords:*** Dengue fever, Bach Mai Medical College, knowledge, practice.

## 1. INTRODUCTION

Dengue fever (DF) is an acute infectious disease caused by the dengue virus, transmitted primarily by Aedes aegypti mosquitoes [1],[2]. It spreads rapidly and can cause large-scale outbreaks with significant mortality. Annually, it is estimated that there are approximately 390 million dengue virus infections worldwide, of which about 500,000 progress to severe forms, resulting in over 21,000 deaths [3].

For dengue prevention programs to be effective, the participation of not only the health sector, authorities, and mass organizations but also the general public is crucial. Among them, students—particularly those in the medical field—are an essential human resource.

As one of the pioneering institutions in epidemic prevention, Bach Mai Medical College plays a significant role in training healthcare workers. However, the current level of knowledge and preventive practices among first-year students regarding dengue remains unclear. Therefore, we conducted this study titled "Knowledge and Practices in Dengue Fever Prevention among First-Year Students at Bach Mai Medical College, 2024.

## 2. METHODS

**2.1. Study Design:** Cross-sectional descriptive study.

**2.2. Place and time:** Conducted from December 2023 to July 2024 at Bach Mai Medical College.

**2.3. Study Population**

- Inclusion criteria: Students currently enrolled at Bach Mai Medical College who consented to participate.

- Exclusion criteria: Students who had withdrawn, deferred their studies, or were absent due to illness and were unable to participate at the time of data collection.

**2.4. Sample Size and Sampling**

Sample size was calculated using the formula for estimating a proportion:

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$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{\Delta^2}$$

In there: $Z_{1-\alpha/2}$ = 95% (α = 0.05) corresponds to 1.96, p = 0.288, Δ = 5% (0.05).

The minimum required sample size was 315.

**2.5. Sampling methods:** Convenience sampling was applied.

**2.6. Variables:** Variables on general information about the study subjects include age, gender, ethnicity, hometown, and variables on knowledge and practice of dengue prevention

**2.7. Data Collection Tools and Procedures**

The questionnaire was pilot-tested twice with 20 students who met the inclusion criteria (excluded from the main study) to ensure validity and applicability. After refinement, Cronbach's alpha was 0.77. Items with low consistency were removed.

The tool was developed based on Decision No. 2760/QĐ-BYT dated July 4, 2023, "Guidelines for Diagnosis and Treatment of Dengue Fever" [4], and relevant Vietnamese studies. Expert consultation (infectious diseases, nursing, public health) was conducted to ensure content validity. The questionnaire comprised:

- Part 1: General information.

- Part 2: Knowledge and practices regarding dengue prevention.

Scoring criteria: Adequate knowledge/practice: ≥75% of total possible score; Inadequate: <75%.

**2.8. Data Analysis**

Data were analyzed using SPSS 20.0. Descriptive statistics (frequency, percentage, mean, SD) and inferential statistics (OR, 95% CI, p-value) were applied. Significance was set at p<0.05.

**2.9. Ethical Considerations**

The Scientific Committee of Bach Mai Medical College approved the study protocol. Participants were informed of the objectives and procedures before participation. Confidentiality was strictly maintained, and data were used solely for research purposes.

## 3. RESULTS

The study surveyed 315 first-year students at Bach Mai Medical College regarding their knowledge and practices regarding dengue fever prevention. The results are summarized as follows:

**Table 1. General characteristics of the study subjects**

| Content | | Quantity (n=315) | Percentage |
|---|---|---|---|
| Sex | Male | 84 | 26.7% |
| | Female | 231 | 73.3% |
| Nation | Terrible | 296 | 94% |
| | Other | 19 | 6% |
| Hometown | 1. Hanoi city | 129 | 41% |
| | 2. Suburbs of Hanoi and other provinces | 186 | 59% |
| Personal history of dengue fever | 1. Ever had | 56 | 17.8% |
| | 2. Never had | 259 | 82.2% |
| Where to get information | 1. Books, newspapers | 111 | 35.2% |
| | 2. Internet | 258 | 81.9% |
| | 3. Teachers, friends | 177 | 56.2% |
| History of dengue fever in roommates | 1. Used to | 84 | 26.7% |
| | 2. Never | 231 | 73.3% |

Comments: Table 1 shows that female students accounted for 73.3%, Kinh ethnic students accounted for 94%, 41% of students lived in Hanoi's inner city, 17.8% of students had never had dengue fever. Students received the most information about dengue fever via the Internet, with 81.9%.

**Table 2. Knowledge of dengue prevention**

| Content | Correct | Wrong |
|---|---|---|
| Mosquito species that transmits the disease: Aedes agypti | 92.06% | 7.94% |
| Mosquito breeding grounds: Ponds, lakes, stagnant water... | 95.24% | 4.76% |
| Pathogen: Caused by a virus | 28.9% | 71.1% |
| Disease stages: 3 stages | 59.7% | 40.3% |
| Dangerous stage: days 3-7 of illness | 52.1% | 47.9% |
| Skin manifestations of the disease | 59.7% | 40.3% |
| Number of cases of dengue fever: 4 cases of dengue fever | 16.2% | 83.8% |
| Vaccines | 47.9% | 52.1% |
| Knowledge of how to handle a high fever continuously in the first days | 88.25% | 11.75% |

Comments: Table 2 shows that the research subjects answered correctly in many of the following areas: mosquito species that transmit diseases, mosquito breeding sites, and knowledge of fever treatment. Most of the students answered incorrectly in many of the following contents: Pathogens, only 28.9% of students answered correctly, disease stages (59.7%), skin manifestations of the disease (59.7%), number of dengue fever cases (16.2%), and vaccines to prevent the disease (47.9%).

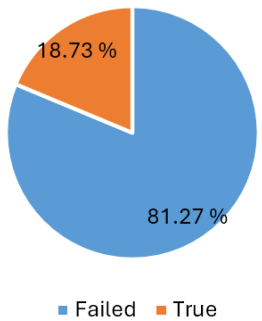


**Chart 1. Knowledge on dengue prevention**

Comment: In 315 first-year students of Bach Mai Medical College participating in the study, only 18.73% of students had adequate knowledge about dengue fever prevention..

**Table 3. Practice measures to prevent mosquito bites in the prevention of dengue fever**

| Content | Quantity | Rate (%) |
|---|---|---|
| Use mosquito coils | 186 | 59.05 |
| Mosquito racket | 247 | 78.41 |
| Use an electric mosquito repellent | 192 | 60.95 |
| Apply mosquito repellent | 260 | 82.54 |
| Use essential oils to repel mosquitoes | 222 | 70.48 |
| Sleeping under a mosquito net | 283 | 89.84 |

Students who practiced sleeping under mosquito nets had the highest rate at 89.84%.

**Table 4. Practices of vector control and eradication in dengue fever prevention**

| Content | Quantity | Rate (%) |
|---|---|---|
| Rinse water containers | 236 | 74.92 |
| Cover water containers tightly | 309 | 98.1 |
| Put the fish in the water container | 183 | 58.1 |
| Miscellaneous tool control | 193 | 61.27 |
| Clean up waste tools | 259 | 82.22 |
| Vector control | 290 | 92.06 |

Table 4 shows that the percentage of students practicing releasing fish into water containers to control disease vectors was the lowest at 58.1%, while students practicing covering water containers tightly accounted for 98.1%.

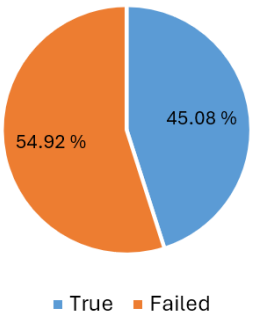


**Figure 2. Practices in preventing and controlling dengue fever**

Comment: Of the 315 students participating in the study, 45.08% had successful dengue prevention practices.

**Table 5. Factors related to knowledge of dengue fever prevention**

| Content | Knowledge | | OR (CI 95%) | P |
|---|---|---|---|---|
| | Obtain | Not achieved | | |
| Nation | | | | |
| Terrible | 49 | 247 | 0.179 (0.69- 0.462) | 0.00 |
| Other | 10 | 9 | | |

**Table 6. Factors related to dengue fever prevention practices**

| Content | Practice | | OR (CI 95%) | P |
|---|---|---|---|---|
| | Obtain | Not achieved | | |
| Knowledge | | | | |
| Obtain | 37 | 22 | 0.413 (0.231-0.741) | 0.003 |
| Not achieved | 105 | 151 | | |

The study found a negative correlation between knowledge and practice; the difference was statistically significant at $p<0.05$. In addition, the study found a negative correlation between ethnicity and knowledge ($p<0.05$).

## 4. DISCUSSION

The majority of respondents were female (73.3%), consistent with prior studies [5]. Most were of Kinh ethnicity (94%). The internet was the most common source of dengue-related information (81.9%), reflecting current trends in information access [6].

Knowledge gaps were evident, particularly regarding the causative agent (28.9% correct), number of dengue

phases (59.7% correct), and vaccine availability (47.9% correct). These results align with findings from previous research [2],[5],[7], highlighting the need for targeted educational interventions.

Practical application rates were higher than knowledge scores: 45.08% had adequate practice compared to only 18.73% with adequate knowledge. This suggests that behavioral adoption may be influenced by cultural habits and public health campaigns, even in the absence of a comprehensive theoretical understanding.

A significant inverse relationship between knowledge and practice was observed. This may indicate that theoretical knowledge alone does not guarantee proper implementation, underscoring the need for integrated education linking theory with practical engagement.

## 5. CONCLUSIONS

### 5.1 . Students ' knowledge about Dengue fever

The percentage of first-year students with knowledge of dengue fever prevention is low—18.73%. However, for questions about pathogens, vaccines, and disease stages, the number of students with correct knowledge was: 28.9%, 47.9%, and 59.7%, respectively.

### 5.2. Practices to prevent dengue fever

97.5% of students responded correctly when their friends or relatives were suspected of having dengue fever. The percentages of students who slept under mosquito nets, applied measures to cover water containers, and cleaned and washed water containers to kill mosquito larvae were 98.84%, 98.1%, and 74.92%, respectively.

Our research results show that 45.08% of students practice successfully.

### 5.3. Some factors related to knowledge, attitude, and practice of dengue fever prevention among students at Bach Mai Medical College

Our study found an inverse relationship between knowledge and practice. In addition, we found a statistically significant relationship between ethnicity and knowledge ($p<0.05$).

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