

A Study to Evaluate the Impact of Health Education on Awareness and Preventive Practices Regarding Dengue and Malaria among School Children

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Abstract

Introduction: In endemic areas, dengue and malaria continue to be the two principal vector-borne illnesses that impact children. One popular tactic to raise awareness and enhance children's preventive behaviors is school-based health education.

Material and Methods: A quasi-experimental one-group pre-test/post-test design was conducted among 60 students (classes 6–8) at Primary Vidyalaya Dadraul. A structured questionnaire assessed knowledge and practices regarding dengue and malaria. A 45-minute interactive health-education session was delivered, and post-test evaluation was conducted after 4 weeks.

Results: Mean knowledge score increased from 7.8 ± 2.3 (out of 15) pre-intervention to 12.2 ± 1.8 post-intervention (mean increase = 4.4, $p < 0.001$). Use of mosquito nets increased from 38.3% to 70.0% ($p < 0.001$), covering water containers improved from 33.3% to 66.7% ($p < 0.001$), and weekly removal of stagnant water improved from 26.7% to 61.7% ($p < 0.001$).

Conclusions: School-based health education greatly increased schoolchildren's knowledge of dengue and malaria and their use of preventive measures. For long-lasting effects, it is advised that schools implement frequent interactive sessions.

Keywords: Dengue; Malaria; Health education; School children; Preventive practices

Introduction

In India, vector-borne illnesses continue to pose a concern to public health, especially dengue and malaria, which frequently create outbreaks and spread over time in several states.¹ Due to biological susceptibility and environmental exposure in endemic areas, children are disproportionately affected by these diseases.²

Children in school are an important target population for preventative measures. They can adopt protective habits, respond well to instructional messages, and serve as health ambassadors in their communities and families.³ Previous research suggests that health education programs in schools enhance students'

understanding of vector-borne disease prevention and transmission, but putting awareness into action frequently calls for family support and reinforcement.⁴

The main causes of vector breeding in rural and peri-urban regions are inadequate sanitation, unprotected water storage, and low awareness.⁵ Using interactive and captivating methods like group discussions, posters, and demonstrations, primary schools offer a structured setting for introducing health education that is suited to the requirements of children.⁶

The present study was conducted at **Primary Vidyalaya Dadraul**, an area where both dengue and malaria have been reported in recent years. The study

aimed to evaluate the effect of a structured health-education program on the knowledge and preventive practices of school children.

Objectives

- 1. To assess baseline awareness regarding dengue and malaria among school children at Primary Vidyalaya Dadraul.
- 2. To evaluate baseline preventive practices regarding dengue and malaria.
- 3. To implement a structured health-education program.
- 4. To assess post-intervention changes in awareness and preventive practices.
- 5. To associate demographic variables (age, gender, parental education) with awareness and practice changes.

Hypotheses

- **H1:** There will be a significant improvement in mean knowledge scores regarding dengue and malaria after health education.
- **H2:** There will be a significant improvement in self-reported preventive practices after health education.

Materials and Methods

Study design: Quasi-experimental, one-group pre-test/post-test.

Setting: Primary Vidyalaya Dadraul, [district name], Uttar Pradesh.

Duration: 2 months (June–July 2025).

Sample size: 60 students (classes 6–8).

Sampling technique: Convenience sampling of all eligible students present.

Inclusion criteria: Students aged 11–14 years enrolled in grades 6–8, present during the study period, with parental consent and child assent.

Results

Table 1. Demographic profile of participants (n = 60)

Variable	n (%)
Age (years), mean ± SD	12.1 ± 0.9
Gender	
— Male	28 (46.7)
— Female	32 (53.3)
Mother’s education	
— Illiterate	15 (25.0)
— Primary	20 (33.3)
— Secondary	18 (30.0)
— Graduate & above	7 (11.7)

Exclusion criteria: Students absent on either pre-test or post-test day.

Tool: Structured Knowledge and Practice Questionnaire (KAPQ).

- **Knowledge section:** 15 MCQs (transmission, breeding sites, symptoms, prevention).
- **Practice section:** 8 yes/no items on preventive measures (bed net use, covering water, source reduction, repellents).
- **Validation:** Content validity by public health experts; pilot-tested on 10 students (Cronbach's alpha = 0.79).

Intervention: 45-minute interactive session covering:

- Causes, vectors, and modes of transmission.
- Symptoms and warning signs.
- Preventive practices (nets, covering water, source reduction).
- Demonstrations and poster illustrations.
- Take-home leaflet with checklist for family.

Data collection procedure:

- Pre-test (Day 0) using KAPQ.
- Health-education session immediately after pre-test.
- Post-test after 4 weeks using same KAPQ.

Analysis:

- Data analyzed in SPSS vXX.
- Descriptive statistics for demographics.
- Paired t-test for knowledge scores.
- McNemar's test for paired categorical practices.
- Significance: $p < 0.05$.

Knowledge scores

Table 2. Mean knowledge scores pre- and post-intervention (n = 60)

Measure	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Mean Diff.	p-value
Knowledge (0–15)	7.8 ± 2.3	12.2 ± 1.8	+4.4	<0.001

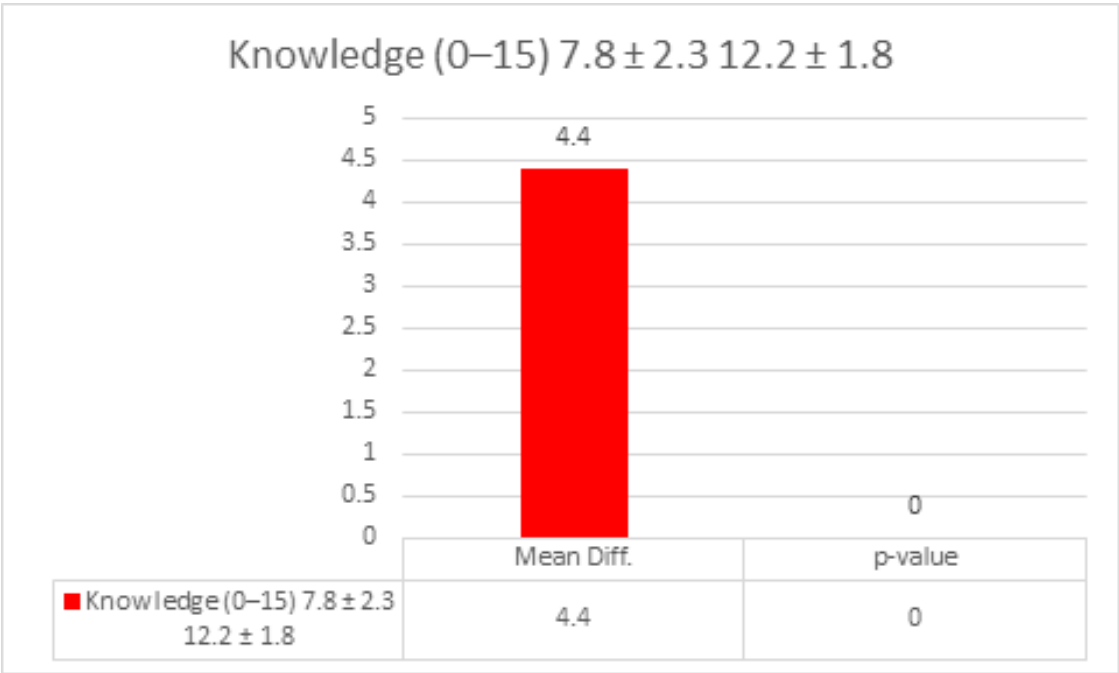


Figure 01: Mean knowledge scores pre- and post-intervention

Preventive practices

Table 3. Reported preventive practices before and after intervention (n = 60)

Practice	Pre-test n (%)	Post-test n (%)	Change	p-value
Uses mosquito net/mesh	23 (38.3)	42 (70.0)	+18	<0.001
Covers water containers	20 (33.3)	40 (66.7)	+20	<0.001
Weekly removal of stagnant water	16 (26.7)	37 (61.7)	+21	<0.001
Informs authority about breeding	6 (10.0)	15 (25.0)	+9	0.02

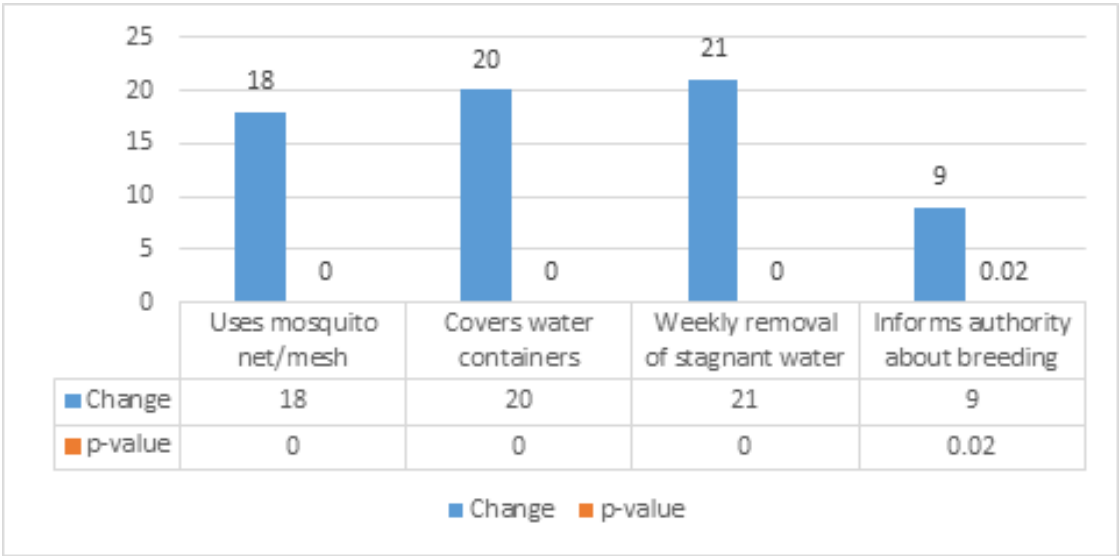


Figure 02: Preventive Practices Before and After Intervention

Discussion

This study demonstrated that a single structured health-education session significantly improved both knowledge and self-reported preventive practices against dengue and malaria among school children at Primary Vidyalaya Dadraul.

The improvement in mean knowledge score (increase of 4.4 points) is consistent with prior school-based interventions in India and Southeast Asia that reported significant short-term knowledge gains following interactive sessions.^{7,8} Preventive practices also improved, especially in use of bed nets and covering water containers, which are critical for breaking mosquito breeding cycles.

However, sustained practice adoption may require reinforcement. As shown in other studies, repeated sessions and integration into the school curriculum, along with parental engagement, are necessary for long-term behavioral change.⁹

Reliance on self-reported habits, lack of a control group, and limited sample size are among the limitations. In spite of this, the study offers helpful proof of the efficacy of brief, inexpensive instructional sessions in elementary schools.

Conclusions

The study demonstrated that health education is a successful strategy for raising schoolchildren's knowledge of dengue and malaria and encouraging them to take preventative measures. For the long-term management of vector-borne diseases, regular school-based activities are advised, along with community and family involvement.

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Conflicts of interests: There is no conflict of interest

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