

“A STUDY TO EVALUATE THE EFFECTIVENESS OF PROPHYLACTIC INFORMATION ON DENGUE FEVER IN CHILDREN AMONG STUDENTS OF SELECTED DIPLOMA IN EDUCATION (D.Ed.) INSTITUTES AT HASSAN”.

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ABSTRACT

Dengue fever is a significant mosquito-borne viral disease affecting children and adults, particularly in tropical and subtropical regions. The present study aimed to assess the pre-test knowledge of D.Ed. students regarding dengue fever in children, evaluate the effectiveness of prophylactic information, and determine the association between post-test knowledge and selected socio-demographic variables. An evaluative research approach with a quasi-experimental one-group pre-test and post-test design was adopted. The study was conducted among 60 D.Ed. students at Rajeev Diploma in Education Institute, Hassan, selected through simple random sampling using the lottery method. Data were collected using a structured questionnaire consisting of socio-demographic variables and 30 multiple-choice questions covering disease, treatment and preventive aspects of dengue fever. Prophylactic information was administered after the pre-test, and the post-test was conducted on the seventh day. The mean knowledge scores increased from 6.90 to 12.83 for disease aspects, from 1.22 to 2.32 for treatment aspects and from 5.90 to 9.77 for preventive aspects. The paired t-test values were 19.32, 7.74 and 11.94, respectively, and all differences were statistically significant at $p \leq 0.001$. In the post-test, 50(83.3%) students had adequate knowledge and 10(16.7%) had moderate knowledge. Educational status, place of residence and source of information were significantly associated with the post-test knowledge level. The study concluded that prophylactic information was highly effective in improving the knowledge of D.Ed. students regarding dengue fever in children. Similar structured educational programmes should be implemented in teacher-training institutions to strengthen dengue prevention and health-promotion activities.

Keywords: Dengue fever, prophylactic information, D.Ed. students, knowledge, prevention, health education.

INTRODUCTION

Children are particularly vulnerable to communicable diseases and require special healthcare measures to ensure their survival, growth and development. Many childhood illnesses can be prevented or controlled through early identification, appropriate treatment, health education and simple preventive interventions.

Dengue is one of the most important mosquito-borne viral diseases and remains a major public health concern in tropical and subtropical regions. The global incidence and burden of dengue have increased considerably during recent decades, particularly in South-East Asia and other densely populated regions (Stanaway et al., 2016). India is considered a dengue-endemic country, where rapid urbanization, population movement, inadequate sanitation and favourable climatic conditions contribute to the continuous transmission of the disease (Mohan & Pathak, 2019).

Dengue is caused by four closely related dengue virus serotypes—DENV-1, DENV-2, DENV-3 and DENV-4—and is transmitted mainly through the bites of infected *Aedes aegypti* and *Aedes albopictus* mosquitoes. Dengue infection may be asymptomatic or may present with fever, headache, retro-orbital pain, muscle and joint pain, nausea, vomiting and

skin rash. In severe cases, it may progress to plasma leakage, severe bleeding, organ impairment and shock, particularly among children (Khan et al., 2023).

Environmental factors such as stagnant water, improper water-storage practices, poor waste disposal, overcrowding and warm and humid climatic conditions promote the breeding of Aedes mosquitoes. Early recognition and appropriate clinical management can reduce dengue-related complications and mortality. As no specific antiviral treatment is available, prevention primarily depends on vector control, environmental sanitation, elimination of mosquito-breeding sites, use of mosquito repellents and active community participation (Erlanger et al., 2008).

NEED FOR STUDY

Dengue is a major mosquito-borne viral disease and an important public health concern, particularly in tropical and subtropical countries. India is a dengue-endemic country, and the burden of the disease has increased because of rapid urbanization, population movement, inadequate waste disposal, improper water-storage practices and favourable conditions for Aedes mosquito breeding (Mohan & Pathak, 2019). Dengue affects individuals of all age groups; however, children are particularly vulnerable to severe complications and frequently require hospitalization. The disease also creates a considerable social and economic burden for affected families and healthcare systems (Stanaway et al., 2016).

As there is no specific antiviral treatment for dengue, early recognition, timely management and preventive measures remain essential. Environmental management, removal of stagnant water, proper covering of water-storage containers, use of mosquito repellents and community participation are important measures for reducing mosquito breeding and dengue transmission (Erlanger et al., 2008).

Schools provide an appropriate setting for delivering dengue-related health education because teachers can influence the knowledge and preventive behaviour of children. Schoolchildren can also communicate the information received at school to their family members and participate in identifying and eliminating mosquito-breeding sites at home and in the community. Educational interventions conducted among schoolchildren have demonstrated improvement in their knowledge and awareness regarding dengue prevention and mosquito control (Vesga-Gómez & Cáceres-Manrique, 2010). Therefore, it is necessary to assess and improve the knowledge of schoolteachers regarding dengue fever. Hence, the investigator felt the need to develop and provide prophylactic information on dengue fever to schoolteachers so that they can educate, motivate and involve children in preventive, sanitary and environmental control measures.

STATEMENT OF THE PROBLEM:

“A study to evaluate the effectiveness of prophylactic information on dengue fever in children among students of selected diploma in education (D.Ed.) institutes at Hassan”.

OBJECTIVES:

1. To assess the knowledge of D.Ed. students regarding dengue fever in children before and after intervention.
2. To evaluate the effectiveness of prophylactic information on dengue fever among D.Ed. Students after intervention.
3. To find out the association between the post-test knowledge score of D.Ed. students with their selected socio-demographic variables.

HYPOTHESES:

H₁ - There will be a significant difference between pre-test and post-test level of knowledge score on dengue fever in children among D.Ed. students.

H₂ - There will be a significant association between the post-test knowledge and their selected socio demographic variables.

OPERATIONAL DEFINITIONS:

- **Evaluate:** It refers to the estimation of outcome of prophylactic information on knowledge regarding dengue fever among D.Ed. students with appropriate statistical methods.

- **Effectiveness:** It refers to determine the extent to which the prophylactic information will achieve the desired outcome as measured by gaining post-test knowledge scores of D.Ed. students regarding dengue fever with the help of structured questionnaire.
- **Prophylactic information:** it refers to prior information(systematically developed lesson) given to students regarding dengue fever(meaning, symptoms, treatment , complications, and its prevention) by using flip chart, videos, flash card, pamphlet and block board.
- **Dengue fever in Children:** It refers to a communicable disease in children which is caused by one of four types of group B arbovirus is carried by Aedes mosquitoes.
- **D.Ed. students:** the students who are studying in Diploma in Education institutes preferred for the primary school education.

ASSUMPTIONS:

Study assumes that:

- The D.Ed. students may have some knowledge on dengue fever in children.
- Prophylactic information on dengue fever may improve the knowledge and helps in prevention of dengue.
- Prophylactic information is an effective method of imparting knowledge to the D.Ed. students.
- Dengue fever is the life threatening condition and cause morbidity and mortality in children.

CONCEPTUAL FRAMEWORK:

The conceptual framework for this study is derived from 'General System Theory. The theory was developed by Ludwig Von Bertalanffy during 1968. General system theory serves as a model for viewing people as interacting with the environment.

RESEARCH METHODOLOGY

Research Approach

The present study adopted an evaluative research approach to determine the effectiveness of prophylactic information on the knowledge of D.Ed. students regarding dengue fever in children.

Research Design

A quasi-experimental one-group pre-test and post-test design was used. The participants' knowledge was assessed before the intervention, prophylactic information was administered, and a post-test was conducted after seven days using the same questionnaire.

Variables

The independent variable was prophylactic information regarding dengue fever in children. The dependent variable was the knowledge level of D.Ed. students regarding dengue fever and its prevention. The selected demographic variables included educational qualification, parents' occupation, family income, place of residence, religion, type of family, type of house and previous sources of information regarding dengue fever.

Setting of the Study

The study was conducted at Rajeev Diploma in Education Institute, Hassan.

Target Population

The target population consisted of students studying in D.Ed. institutes at Hassan.

Sample and Sample Size

The sample consisted of 60 D.Ed. students who fulfilled the eligibility criteria.

Sampling Technique

The participants were selected through simple random sampling using the lottery method.

Criteria for Sample Selection

Students who were willing to participate, present during data collection and able to read and write English were included. Students who were absent, unwilling to participate or had previously attended an educational programme on dengue fever were excluded.

Development and Description of the Tool

A structured knowledge questionnaire was developed based on a review of literature, expert guidance and consultation with a statistician. Part I consisted of ten socio-demographic items. Part II contained 30 multiple-choice questions, including 15 questions on the disease aspect, three on treatment and 12 on preventive measures. Each correct answer was awarded one mark, while an incorrect answer received zero. The maximum possible score was 30.

Reliability of the Tool

The reliability of the questionnaire was established through the split-half method using Karl Pearson's correlation coefficient and the Spearman–Brown prophecy formula. The reliability coefficient was 0.85, indicating that the tool was highly reliable.

Validity of the Tool

Content validity was established by ten child health nursing experts and two paediatricians. Necessary modifications were made according to their suggestions.

Development of Prophylactic Information

The prophylactic information covered the definition, causes, transmission, clinical manifestations, diagnosis, treatment, complications, mosquito-breeding sites and preventive measures related to dengue fever.

Pilot Study

A pilot study was conducted among six D.Ed. students at N.D.R.K. D.Ed. Institute, Hassan, from 1 December to 7 December 2011. The mean knowledge score improved from 43.3% in the pre-test to 83.2% in the post-test, indicating that the study was feasible.

Data Collection Procedure

The main data collection was carried out from 22 December to 30 December 2011 after obtaining formal permission and written informed consent. The pre-test was followed by the administration of prophylactic information, and the post-test was conducted on the seventh day.

Plan for Data Analysis

The collected data were analysed using descriptive statistics such as frequency, percentage, mean and standard deviation, and inferential statistics including the paired t-test and chi-square test.

Section I: Socio-Demographic Baseline Data

Table 1: Distribution of D.Ed. Students According to Socio-Demographic Variables in Frequency and Percentage

N = 60

Socio-Demographic Variable	Category	Frequency	Percentage
Educational status	Pre-University	17	28.3%
	Graduate	19	31.7%
	Postgraduate	5	8.3%
	Job-Oriented Course (JOC)	19	31.7%
Father's occupation	Coolie	11	18.3%
	Government employee	7	11.7%
	Agriculture	42	70.0%
Mother's occupation	Coolie	9	15.0%
	Housewife	51	85.0%
Monthly family income	Below Rs. 1,000	15	25.0%
	Rs. 1,000–3,000	30	50.0%
	Rs. 3,001–5,000	8	13.3%
	Above Rs. 5,000	7	11.7%
Place of residence	Rural	27	45.0%
	Urban	33	55.0%
Religion	Hindu	60	100.0%
Type of family	Nuclear family	41	68.3%
	Joint family	19	31.7%
Type of house	Kutcha house	45	75.0%
	Pucca house	15	25.0%
Previous information regarding dengue fever	Yes	60	100.0%
Source of information	Electronic media	17	28.3%
	Newspaper/Magazine	33	55.0%
	Health personnel	10	16.7%

Table 1 shows that 19(31.7%) students were graduates and an equal number had completed a Job-Oriented Course, while only 5(8.3%) were postgraduates. Most of the students' fathers, 42(70%), were engaged in agriculture, and the majority of mothers, 51(85%), were housewives.

Half of the students, 30(50%), had a monthly family income between Rs. 1,000 and Rs. 3,000. More than half, 33(55%), were residing in urban areas, and all 60(100%) belonged to the Hindu religion. Most students, 41(68.3%), belonged to nuclear families, and 45(75%) lived in kutcha houses.

All the students, 60(100%), had previous information regarding dengue fever. The most common source of information was newspapers or magazines, reported by 33(55%) students, followed by electronic media among 17(28.3%) and health personnel among 10(16.7%).

Table 2: Comparison of Pre-Test and Post-Test Knowledge Scores of D.Ed. Students

N = 60

Knowledge Area	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	Paired t-test	df	p-value	Significance
Disease aspects	6.90	1.55	12.83	1.50	19.32	59	0.001***	Very highly significant
Treatment aspects	1.22	0.78	2.32	0.87	7.74	59	0.001***	Very highly significant
Prevention aspects	5.90	1.94	9.77	1.73	11.94	59	0.001***	Very highly significant

Note: * Significant at $p \leq 0.05$; ** highly significant at $p \leq 0.01$; *** very highly significant at $p \leq 0.001$.

Table 3: Association Between Post-Test Knowledge Level and Selected Socio-Demographic Variables

N = 60

Socio-Demographic Variable	Category	Moderate n (%)	Adequate n (%)	Total	Chi-Square Value	df	p-value	Significance
Educational status	Pre-University	6 (35.2%)	11 (64.8%)	17	7.86	3	0.049*	Significant
	Graduate	1 (5.2%)	18 (94.8%)	19				
	Postgraduate	0 (0.0%)	5 (100.0%)	5				
	Job-Oriented Course (JOC)	3 (15.7%)	16 (84.3%)	19				
Place of residence	Rural	8 (29.6%)	19 (70.4%)	27	5.93	1	0.015*	Significant
	Urban	2 (6.1%)	31 (93.9%)	33				
Source of information	Electronic media	4 (23.5%)	13 (76.5%)	17	7.16	2	0.028*	Significant
	Newspaper/Magazine	2 (6.1%)	31 (93.9%)	33				
	Health personnel	4 (40.0%)	6 (60.0%)	10				

Note: * Significant at $p \leq 0.05$.

Table 3 shows that educational status had a statistically significant association with the post-test knowledge level of D.Ed. students ($\chi^2 = 7.86$, $df = 3$, $p = 0.049$). All 5(100%) postgraduate students and 18(94.8%) graduate students had adequate post-test knowledge.

Place of residence was also significantly associated with post-test knowledge ($\chi^2 = 5.93$, $df = 1$, $p = 0.015$). Among urban students, 31(93.9%) had adequate knowledge compared with 19(70.4%) rural students.

A significant association was also observed between the source of information and post-test knowledge ($\chi^2 = 7.16$, $df = 2$, $p = 0.028$). Adequate knowledge was highest among students who received information through newspapers or magazines, 31(93.9%), followed by electronic media, 13(76.5%), and health personnel, 6(60%).

Thus, educational status, place of residence and source of information were significantly associated with the post-test knowledge level of D.Ed. students.

Discussion

The present study was conducted to evaluate the effectiveness of prophylactic information on the knowledge of D.Ed. students regarding dengue fever in children. The findings revealed a marked improvement in the students' knowledge after the intervention. The mean post-test scores were higher than the pre-test scores in all three knowledge areas, namely disease aspects, treatment and prevention. The paired t-test values for disease aspects, treatment aspects and preventive aspects were statistically significant at $p \leq 0.001$, indicating that the prophylactic information was highly effective in improving knowledge regarding dengue fever.

The findings also showed that most of the students had adequate post-test knowledge. The improvement was especially evident in the areas of disease recognition, treatment and preventive measures. This may be attributed to the structured nature of the educational intervention, which included information on causes, transmission, clinical manifestations, treatment, mosquito-breeding sites and preventive measures. The results support the view that planned health education can significantly enhance awareness and understanding of dengue prevention among students.

A statistically significant association was found between post-test knowledge and selected socio-demographic variables such as educational status, place of residence and source of information. Postgraduate and graduate students demonstrated better knowledge than students with lower educational qualifications. Urban students had higher adequate knowledge levels than rural students, which may be related to better access to health information and media. Students who obtained information from newspapers and magazines also showed better knowledge than those who depended on other sources.

Overall, the study findings indicate that prophylactic information is an effective method of improving knowledge regarding dengue fever among D.Ed. students. Since these students may later work closely with schoolchildren, improving their knowledge can help promote dengue prevention practices among children, families and the wider community.

Conclusion

The present study demonstrated that the existing knowledge of D.Ed. students regarding dengue fever in children and its preventive measures was comparatively limited before the educational intervention. The lower pre-test mean scores in the areas of disease aspects, treatment and prevention indicated the need for structured health education among future teachers.

The administration of prophylactic information resulted in a substantial improvement in the participants' knowledge. The mean knowledge scores increased from 6.90 to 12.83 in disease aspects, from 1.22 to 2.32 in treatment aspects and from 5.90 to 9.77 in preventive aspects. The differences between the pre-test and post-test scores were statistically significant at $p \leq 0.001$. In the post-test, 50(83.3%) students achieved an adequate level of knowledge, while 10(16.7%) had moderate knowledge. Educational status, place of residence and source of information were significantly associated with the post-test knowledge level.

The findings confirm that prophylactic information is an effective, practical and accessible educational strategy for improving knowledge regarding dengue fever among D.Ed. students. As future teachers, these students can play an important role in educating schoolchildren, promoting environmental sanitation, identifying mosquito-breeding sites and encouraging preventive practices within families and communities. Therefore, similar structured educational programmes may be incorporated into teacher-education institutions to strengthen dengue prevention and health-promotion activities.

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Conflicts of Interest

The investigator declares that there were no financial, personal or professional conflicts of interest that could have influenced the design, implementation, data collection, statistical analysis or interpretation of the findings of the study.

Funding And Sponsorship

The study did not receive any specific grant, financial assistance or sponsorship from public, commercial or not-for-profit funding agencies. The expenses related to the development, preparation and administration of the prophylactic information and research tools were borne by the investigator.

Ethical Considerations and Informed Consent

Formal administrative permission was obtained from the Principal of Rajeev Diploma in Education Institute, Hassan, before commencing data collection. The purpose, nature and procedures of the study were clearly explained to all eligible participants. Written informed consent was obtained from each D.Ed. student before administering the socio-demographic proforma and structured knowledge questionnaire.

Participation in the study was voluntary, and the students were informed of their right to withdraw at any stage without penalty. Confidentiality, anonymity and privacy of the participants were maintained throughout the study. The collected information was used exclusively for research purposes, and adequate precautions were taken to protect the participants from physical, psychological or social harm.

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