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RESEARCH ARTICLE

EFFECTIVENESS OF A STRUCTURED HEALTH EDUCATION PROGRAMME ON KNOWLEDGE AND PREVENTIVE PRACTICES REGARDING DENGUE FEVER AMONG ADULTS IN SELECTED RURAL COMMUNITY AREA AT VELLORE TAMILNADU: A QUASI-EXPERIMENTAL STUDY

K. Saranya

1. Principal, BPR School of Nursing, Vellore, Tamilnadu, India.

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Key words:

Dengue; community health nursing;
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Abstract

Background: Dengue is an important mosquito-borne viral disease in tropical and subtropical regions. Community participation, elimination of mosquito breeding sites, personal protection and early recognition of warning signs are important components of dengue prevention and control. Community health nurses can play a key role in health education and mobilization.

Aim: To assess the effectiveness of a structured health education programme on knowledge and preventive practices regarding dengue fever among adults in a rural community.

Methods: A one-group pre-test post-test quasi-experimental design was used for this simulated manuscript. A sample of 100 adults aged 20–59 years was considered from a selected rural community in Vellore district, Tamil Nadu. Baseline knowledge and preventive practices were assessed using a structured questionnaire and practice checklist. A health education programme addressed dengue transmission, breeding-site control, personal protection, environmental sanitation, warning signs and early health-seeking. A post-test was 7 days later.

Results: The mean knowledge score increased from 15.24 (SD 4.16) at pre-test to 24.82 (SD 3.14) at post-test. The mean difference was 9.58 points. A paired t-test gave $t=21.06$, $df=99$, $p<0.001$. The simulated mean preventive-practice score increased from 12.10 (SD 3.08) to 18.46 (SD 2.41), with $t=16.94$, $df=99$, $p<0.001$.

Conclusion: The findings demonstrate how a community health education intervention may be evaluated. Actual effectiveness must be determined only using real data from an ethically approved study.

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Introduction:-

Dengue is a viral infection transmitted primarily by infected Aedes mosquitoes. It can cause a broad spectrum of illness, from mild febrile disease to severe dengue with plasma leakage, bleeding, shock or organ involvement. Because Aedes mosquitoes commonly breed in water-holding containers around human habitation, environmental

Corresponding Author:- K. Saranya

Address:- Principal, BPR School of Nursing, Vellore, Tamilnadu, India.

management and community participation are important prevention measures. Dengue prevention includes reducing mosquito breeding sites, using appropriate personal protective measures, maintaining environmental sanitation, and recognizing symptoms and warning signs so that people seek timely medical care. Community-level interventions are particularly relevant because mosquito-control behaviours depend on household and neighbourhood practices. Community health nurses are strategically placed to provide health education, identify misconceptions, demonstrate environmental control measures, mobilize families, coordinate with local health services and reinforce early care-seeking. A structured educational programme can provide standardized messages and can be evaluated through changes in knowledge and reported preventive practices.

Need for the Study:-

Rural communities may face recurring mosquito-breeding opportunities due to stored water, discarded containers, blocked drainage and other environmental conditions. Knowledge alone does not guarantee behaviour change, but improved knowledge and practical skills are important foundations for household participation in vector control. Evaluating a nurse-led educational programme can provide local evidence for community health practice.

Problem Statement:-

A Study to Assess Effectiveness of a Structured Health Education Programme on Knowledge and Preventive Practices Regarding Dengue Fever Among Adults in selected Rural Community area at vellore tamilnadu: A Quasi-Experimental Study. A study to assess the effectiveness of a structured health education programme on knowledge and preventive practices regarding dengue fever among adults in a selected rural community of Vellore district, Tamilnadu.

Aim:-

To assess the effectiveness of a structured health education programme on knowledge and preventive practices regarding dengue fever among adults in a rural community.

Objectives:-

- To assess baseline knowledge regarding dengue prevention among adults.
- To assess baseline preventive practices regarding dengue prevention.
- To administer a structured health education programme.
- To assess post-test knowledge and preventive practices.
- To compare pre-test and post-test scores.
- To determine associations between baseline knowledge and selected demographic variables, where appropriate.

Hypotheses:-

- H1:** There will be a statistically significant difference between pre-test and post-test knowledge scores after the structured health education programme.
- H2:** There will be a statistically significant difference between pre-test and post-test preventive-practice scores after the structured health education programme.
- H0:** There will be no statistically significant difference between corresponding pre-test and post-test scores.

Review of Literature:-

The final publication manuscript should contain a current database-verified review. Suggested sections include: dengue epidemiology; Aedes breeding ecology; household vector-control practices; community participation; health education and behavioural interventions; and the role of community health nurses.

- ❖ Pre-test data across multiple quasi-experimental and pre-experimental studies show that rural adults frequently possess inadequate or poor baseline knowledge (often 80% to 90% scoring in inadequate tiers prior to intervention).
- ❖ **Gibbon et al. (2007):** 1.2% total dengue admission in a tertiary care centre in Thailand over a period of 11 years were found to be repeat infection. They also reported that this prevalence was 0.5% over the previous 15 years. This observation suggests that incidence of repeat dengue infection is increasing throughout the world.
- ❖ **Chuansumrit et al. (2008):** They also showed that positive rates for NS1 antigen were 100% on day 2, 92% on day 3, 76.9% on day 4, 56.6% on day of fever; and declined to 43% on day 6 with defervescence and 29.8% on day 7 while positive rate of Ig M antibodies were in reverse proportion to those of NS1 antigen.
- ❖ **Chakravati et al. (2011):** They were of the view that combined use of NS-1 antigen based assay with antibody detection helps in detection of positive cases more efficiently

- ❖ **R.sujatha, et.al (2015):-**Total 650 cases were examined for dengue fever, 243 were positive for either NS1 antigen or IgM antibody or IgG antibody; prevalence was 37.38%. Among the 243 positive cases, 79 were in the age group 21-30 yrs. (55.09%), 60 were in the age group 11-20 yrs. (27.54%), 56 were in the age group <10 Yr (10.81). Among all positive cases male female ratio were 1.6:1.
- ❖ **Ashwini Manoor Anand, et.al 2016:-** Common age group affected was 0-12 years of age (35/94 – 37.2%), followed by young adult in the age group 13 to 24 years (26/94 - 27.7%). Comparatively Females (57.5%) were affected more than the males with a male to female ratio of 1:1.35. Most of the patients were from urban areas (71/94, 75.5%). Of these, 51 cases were from the town. Most of the cases occurred during the month of November (46.8%) followed by October month (34%). Most of the patients in group had fever as the presenting feature (93/94, 98.9%). Other clinical symptoms were vomiting (64%), headache (37%), body rash (21%) and abdominal pain (12%). Bleeding and fluid accumulation which are the signs of warning and more severe dengue were seen in (18/94) and (19/94) of cases.

Conceptual Framework:-

The Health Belief Model may be used to guide the intervention. Perceived susceptibility and severity can motivate preventive action; perceived benefits and barriers influence household practices; cues to action can be provided by nurse education; and self-efficacy can be strengthened through practical demonstrations.

Perceived susceptibility → awareness of dengue risk.

Perceived severity → recognition of possible complications and warning signs.

Perceived benefits → value of mosquito-control practices.

Perceived barriers → identifying practical household obstacles.

Cues to action → health education, demonstrations and reminders.

Self-efficacy → confidence to remove breeding sites and use protective measures.

Outcome → change in knowledge and preventive-practice scores.

Methodology:-

Research Approach:-

Quantitative research approach.

Research Design:-

One-group pre-test post-test quasi-experimental design.

Group	Pre-test	Intervention	Post-test
Single group	S1	structured health education	S2

Study Setting:-

Selected rural community in Vellore district, Tamil Nadu, India. The actual manuscript must specify the exact community and describe relevant health services and population characteristics.

Study Population:-

Adults aged 20–59 years residing in the selected community.

Sample Size:-

N=100 is used for this simulated example. In an actual study, sample size must be calculated before recruitment using an appropriate effect size, alpha, power and allowance for attrition.

Sampling Technique:-

Illustrative sampling method: convenience sampling. The final manuscript must report the exact approved recruitment and sampling procedure.

Inclusion Criteria:-

Adults aged 20–59 years. Resident in the selected community for at least six months. Able to understand the study language. Willing to participate and provide informed consent.

Exclusion Criteria:-

Adults acutely ill at the time of data collection. Unable to complete the questionnaire because of a communication or cognitive limitation. Participated in a similar structured dengue education programme during the prespecified exclusion period.

Variables:-

Independent variable: Structured health education programme. Dependent variables: Knowledge and preventive practices regarding dengue. Selected demographic variables: age, sex, education, occupation, household water-storage practices and previous dengue experience.

Research Instruments:-

Part A: Demographic and household information.

Part B: 30-item knowledge questionnaire covering transmission, mosquito breeding, symptoms, warning signs, environmental control, personal protection and early care-seeking.

Part C: 20-item preventive-practice checklist covering water-container management, waste disposal, mosquito protection, environmental cleaning and care-seeking behaviours.

Knowledge scoring: 1 for correct and 0 for incorrect/do-not-know; maximum 30. Practice items may be scored 1 for recommended practice and 0 otherwise; maximum 20. Cut-offs should be finalized after validation.

Validity and Reliability:-

Content validity should be established by qualified experts in community health nursing, public health, epidemiology and relevant clinical fields. Reliability should be assessed using an appropriate method and the actual coefficient reported.

Intervention:-

A 45-minute structured nurse-led programme may include:-

Dengue transmission and the role of Aedes mosquitoes.

Common symptoms and warning signs requiring urgent medical evaluation.

Identification and elimination of household breeding sites.

Safe water-storage practices and covering containers.

Proper disposal of discarded tyres, cups, bottles and other water-holding items.

Personal protection against mosquito bites.

Household and community sanitation.

Importance of timely medical consultation and avoiding inappropriate self-medication.

Data Collection Procedure:-

Obtain institutional permission and ethics approval before recruitment.

Obtain written informed consent.

Administer pre-test questionnaire and practice assessment.

Deliver structured health education.

Conduct post-test at the prespecified follow-up interval.

Maintain confidentiality using study identification numbers.

Provide appropriate referral advice for participants who report concerning symptoms.

Ethical Considerations:-

Actual research requires prior approval from the appropriate Institutional Ethics Committee. Insert the exact committee name, approval number and date only after approval has been obtained. Participation must be voluntary and confidential.

Data Analysis Plan:-

Frequency and percentage for categorical variables.

Mean and standard deviation for continuous scores.

Check distribution of paired differences.

Use paired t-test if assumptions are reasonably met; otherwise use Wilcoxon signed-rank test.

Use appropriate association tests for demographic variables.

Two-sided significance level $p < 0.05$.

Where possible, report 95% confidence intervals and effect sizes.

Results:-**Socio-demographic Characteristics (N=100)**

Variable	Category	n	%
Age	20–29 years	25	25
	30–39 years	35	35
	40–49 years	25	25
	50–59 years	15	15
Sex	Male	47	47
	Female	53	53
Education	Primary/secondary	39	39
	Higher secondary	34	34
	Graduate and above	27	27
Occupation	Homemaker	32	32
	Employed	40	40
	Self-employed/other	28	28
Previous dengue experience in household	Yes	38	38
	No	62	62
Covered household water containers	Yes	44	44
	No	56	56

Knowledge Scores

Assessment	N	Mean	SD	Mean difference	Illustrative p-value
Pre-test	100	15.24	4.16	9.58	<0.001
Post-test	100	24.82	3.14	—	<0.001

Illustrative paired t-test: $t=21.06$, $df=99$, $p<0.001$. This is synthetic statistical output.

Preventive-Practice Scores

Assessment	N	Mean	SD	Mean difference	Illustrative p-value
Pre-test	100	12.10	3.08	6.36	<0.001
Post-test	100	18.46	2.41	—	<0.001

Illustrative paired t-test: $t=16.94$, $df=99$, $p<0.001$. This is synthetic statistical output.

Knowledge Categories

Knowledge level	Pre-test n	Pre-test %	Post-test n	Post-test %
Inadequate	34	34	3	3
Moderate	54	54	24	24
Adequate	12	12	73	73

Association with Baseline Knowledge

Variable	Test	Illustrative statistic	df	p-value
Education level	Chi-square	7.82	2	0.020
Previous dengue experience	Chi-square	4.91	1	0.027
Water-container coverage	Chi-square	6.44	1	0.011

These values are simulated and must be recalculated from actual data before any publication.

Discussion:-

In this research dataset, knowledge scores increased after the structured health education programme. Preventive-practice scores also increased. These findings give how a community nursing intervention can be evaluated using a

pre-test/post-test design. The observed synthetic improvement should not be interpreted as proof that the intervention prevents dengue infection. Knowledge and self-reported practices are intermediate outcomes. Actual studies should consider seasonal variation, environmental conditions, vector-control activities, access to municipal services and other factors that can influence dengue risk. The final discussion should compare the actual findings with recent community-based studies and explain similarities and differences in population, intervention content, duration, measurement tools and follow-up.

Implications for Community Health Nursing:-

Integrate dengue education with routine community visits.
Use demonstrations to identify and eliminate breeding sites.
Mobilize households and local groups for environmental sanitation.
Promote early recognition of warning signs and appropriate referral.
Coordinate education with local vector-control programmes.

Limitations:-

No concurrent control group.
Convenience sampling may reduce generalizability.
Short follow-up measures immediate change rather than sustained practice.
Self-reported practices may be affected by social desirability bias.
Seasonal and environmental factors may influence dengue risk independently of education.

Conclusion:-

This data show improvement in knowledge and preventive-practice scores following structured community health education. In an actual research article, the conclusion must be based exclusively on real participant data and should not claim reduced dengue incidence unless infection outcomes were actually measured.

Recommendations:-

Conduct studies with larger probability-based samples.
Use controlled or randomized designs where feasible.
Include longer follow-up to assess sustained household practices.
Measure environmental indicators such as breeding-site prevalence when feasible.
Evaluate community participation and linkage with local vector-control services.

Appendix I – Proposed 30-Item Knowledge Questionnaire:-

1. Dengue is caused by a virus.
2. Dengue is mainly transmitted by infected Aedes mosquitoes.
3. Aedes mosquitoes can breed in small collections of stagnant water.
4. Water stored in uncovered containers can provide breeding opportunities.
5. Discarded tyres can collect water and become mosquito breeding sites.
6. Flowerpots and containers should not be allowed to hold stagnant water.
7. Household water-storage containers should be properly covered.
8. Regular removal of stagnant water can reduce breeding sites.
9. Mosquitoes can breed around homes as well as in public areas.
10. Dengue can occur in both urban and rural communities.
11. Fever is a common symptom of dengue.
12. Severe abdominal pain can be a warning sign requiring medical evaluation.
13. Persistent vomiting can be a warning sign.
14. Bleeding can occur in severe dengue.
15. Drowsiness or restlessness with worsening illness requires medical attention.
16. People with warning signs should seek medical care promptly.
17. Avoiding mosquito bites helps reduce transmission.
18. Appropriate mosquito repellents can help prevent bites.
19. Long sleeves and protective clothing can reduce exposed skin.
20. Screens and mosquito nets can help reduce mosquito contact.
21. Community participation is important for dengue prevention.
22. Waste containers should be disposed of or stored so they cannot collect water.

23. Rainwater collection around homes should be managed safely.
 24. Regular inspection of the household surroundings can identify breeding sites.
 25. Health education can improve awareness of dengue prevention.
 26. Dengue prevention requires action by households and communities.
 27. A person with suspected dengue should seek professional medical advice.
 28. Self-medication without appropriate medical advice may be unsafe.
 29. Early recognition of warning signs can support timely care.
 30. Community health nurses can contribute to dengue prevention through education, surveillance support, referral and community mobilization.
- Scoring draft: 1 point for correct and 0 for incorrect/do-not-know. Maximum 30. The answer key and tool validity/reliability must be finalized before real data collection.

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