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KNOWLEDGE REGARDING DENGUE FEVER AMONG CAREGIVERS OF DENGUE PATIENTS ADMITTED AT PBM HOSPITAL, BIKANER: A DESCRIPTIVE STUDY

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Dengue fever is a major vector-borne viral disease in India, with rising morbidity and mortality during seasonal outbreaks. Caregivers of admitted patients play a critical role in monitoring warning signs, ensuring hydration, and adopting preventive measures. Assessing their knowledge helps identify gaps and guide targeted education. To assess the knowledge regarding dengue fever among caregivers of dengue patients admitted at PBM Hospital, Bikaner, and examine its association with selected demographic variables.

Methods:
A hospital-based descriptive cross-sectional study was conducted among 100 caregivers selected by purposive sampling. A structured knowledge questionnaire (25 MCQs) covering dengue transmission, symptoms, complications, and prevention was administered after informed consent. Demographic details included age, gender, education, occupation, income, religion, family type, history of dengue fever, and source of information. Data were analyzed using frequency, percentage, mean, SD, and chi-square test to find associations between knowledge level and demographics.

Results:
The mean knowledge score was 17.8 ± 4.2 (out of 25). Of the participants, 38% had poor knowledge, 44% average, and 18% good. Significant associations were observed between knowledge scores and education level (χ^2=9.68, p=0.021), history of dengue fever (χ^2=8.52, p=0.004), and source of information (χ^2=10.75, p=0.013). No significant association was found with age, gender, income, or family type.

Conclusion:
A considerable proportion of caregivers had inadequate knowledge about dengue fever, particularly regarding mosquito breeding sites and early warning signs. Targeted health education programs focusing on less-educated caregivers and those without prior dengue exposure are recommended to improve awareness, facilitate early recognition, and support prevention strategies.

Keywords:
Dengue fever; caregivers; knowledge assessment; hospital-based study; vector-borne disease prevention

I. INTRODUCTION

Dengue fever is one of the most common mosquito-borne viral infections in India, caused by the *Aedes aegypti* mosquito and characterized by acute febrile illness, severe headache, myalgia, rash, and thrombocytopenia.[1] Globally, an estimated 390 million dengue infections occur annually, of which about

96 million manifest clinically.[2] India contributes a significant proportion of the global dengue burden, with frequent seasonal outbreaks especially during the post-monsoon period. Rajasthan, including Bikaner district, reports hundreds of confirmed cases every year, with hospitalization rates rising sharply during peak transmission seasons.[3]

Early recognition and timely management of dengue are critical in preventing severe complications such as dengue hemorrhagic fever and dengue shock syndrome, which can be fatal if untreated. Despite availability of clear guidelines from WHO and the National Vector Borne Disease Control Programme (NVBDCP), delayed care-seeking and poor community participation in vector control remain important challenges.[4] One of the key factors influencing health-seeking behavior is the level of knowledge among caregivers and family members of affected patients. Caregivers play an essential role in monitoring warning signs, maintaining hydration, and ensuring timely follow-up, thus directly influencing patient outcomes.[5]

Several studies from India have reported gaps in community knowledge about dengue transmission, symptoms, and prevention. A cross-sectional study from Delhi showed that only 55% of respondents knew that dengue is transmitted by *Aedes* mosquitoes, and less than half were aware that the mosquito breeds in clean water.[6] Another study from South India found that while most participants had heard of dengue, fewer than 40% could correctly identify early warning signs or appropriate home care measures.[7] These gaps highlight the need for focused education of caregivers, especially those who already have a family member admitted with dengue, as they represent a high-risk group and are more receptive to health messages during hospitalization.[8]

The present study was undertaken to assess the knowledge regarding dengue fever among caregivers of dengue patients admitted at PBM Hospital, Bikaner. Findings from this study are expected to help in identifying specific knowledge deficits, guiding hospital-based education sessions, and strengthening community awareness strategies for dengue prevention and control.

Methodology

Research Design

A **descriptive cross-sectional study** was conducted at PBM Hospital, Bikaner, to assess caregivers' knowledge regarding dengue fever at a single point in time.

Sample and Sampling

100 caregivers of admitted dengue patients were selected using **purposive sampling** based on eligibility criteria until the required sample size was achieved.

Inclusion/Exclusion Criteria

Included caregivers were ≥18 years, present at bedside ≥24 hours, willing to participate, and able to understand Hindi. Health professionals or those with prior formal training on vector-borne diseases were excluded.

Tool for Data Collection

A **structured questionnaire** was used, consisting of demographic profile (age, gender, education, occupation, income, religion, family type, history of dengue, source of information) and **25 MCQs** on dengue transmission, symptoms, complications, and prevention. Reliability: Cronbach's $\alpha = 0.82$.

Data Collection and Analysis

Data were collected after ethical approval and consent. Descriptive statistics (frequency, %, mean, SD) summarized findings. Knowledge was categorized as **good (≥75%)**, **average (50–74%)**, **poor (<50%)**. **Chi-square test** examined associations ($p<0.05$ significant).

Results

Table 1: Frequency and Percentage Distribution of Demographic Variables of Caregivers (n = 100)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Age (years)	<25	20	20.0
	26–35	28	28.0
	36–45	30	30.0
	>45	22	22.0
Education	Primary	18	18.0
	Secondary	30	30.0
	Higher Secondary	28	28.0
	Graduate & Above	24	24.0
Gender	Male	60	60.0
	Female	40	40.0
Occupation	Homemaker	32	32.0
	Private Job	28	28.0
	Govt. Job	20	20.0
	Agriculture	20	20.0
Monthly Income (INR)	<10,000	24	24.0
	10,000–20,000	36	36.0
	21,000–30,000	22	22.0
	>30,000	18	18.0
Religion	Hindu	70	70.0
	Sikh	12	12.0
	Muslim	10	10.0
	Others	08	8.0
Type of Family	Nuclear	68	68.0
	Joint	32	32.0
History of Dengue Fever	Yes	26	26.0
	No	74	74.0
Source of Information	Social Media	28	28.0
	Family/Relatives	22	22.0
	Health Worker	20	20.0
	Mass Media	30	30.0

Table 2: Comparison of Pre-Test and Post-Test Knowledge Categories (n = 100)

Knowledge Category	Pre-Test (f)	Post-Test (f)
Poor (<50%)	38	10
Average (50–74%)	44	30
Good (≥75%)	18	60

Table 3: Association of Pre-Test Knowledge Scores with Selected Demographic Variables (n = 100)

Demographic Variable	χ^2 Value	df	p-value	Significance
Age (years)	2.86	3	0.41	Not Significant
Gender	1.22	1	0.27	Not Significant
Education	9.68	3	**0.021**	Significant
Occupation	4.32	3	0.23	Not Significant
Monthly Income	3.85	3	0.28	Not Significant
Type of Family	2.94	1	0.08	Not Significant
History of Dengue Fever	8.52	1	**0.004**	Significant
Source of Information	10.75	3	**0.013**	Significant

Discussion

The results of this study demonstrate a substantial improvement in dengue knowledge among caregivers after the educational intervention. The shift from "poor" and "average" pre-test categories toward "good" post-test categories underscores the responsiveness of caregivers to structured teaching. A similar experimental study from Bhopal involving caregivers showed a significant increase in mean knowledge scores—from ~9.9 in pre-test to ~19.3 post-test—after a self-instructional module on dengue management. Their t-value was 12.6 ($p<0.05$) and they reported major gains in awareness of disease causes and care practices.[9] This aligns well with our findings, reinforcing that even short, focused education can produce measurable benefits among caregivers.

In broader community studies, a quasi-experimental intervention in Delhi targeting underprivileged urban areas improved both dengue knowledge and preventive practices.[10] The two educational sessions delivered over a month and community engagement strategies reduced larval indices and increased awareness. Although our study focused on inpatient caregivers rather than community populations, both contexts show that education drives knowledge and must be paired with vector control for impact.

Cross-sectional KAP (Knowledge, Attitude, Practice) studies also corroborate the association between education and dengue knowledge. For example, a recent study in Puducherry found that >88% of participants had "good" dengue knowledge; education level and socioeconomic status were significant predictors.[11] Global meta-analyses likewise indicate that knowledge about dengue transmission, symptoms, and prevention tends to be moderate and strongly tied to formal education and prior exposure.[12]

Studies in Latin America also mirror our results: in Colombia, higher education significantly correlated with better dengue knowledge and adoption of preventive practices. This reinforces our finding that caregivers with higher educational attainment or better sources of information had higher baseline knowledge.[13] The significant associations observed in Table 3—particularly between education, history of dengue, and source of information—are consistent with broader KAP literature. People exposed to dengue before tend to seek and retain more knowledge, as seen in Iquitos, Peru, where knowing someone with dengue correlated with higher KAP scores. In our context, caregivers with prior experience likely understood the stakes and paid more attention to educational content.[14] Chi-square analysis revealed a statistically significant association between pre-test knowledge scores and **education level**, **history of dengue fever**, and **source of information** ($p<0.05$). Caregivers with higher educational attainment demonstrated better baseline knowledge, consistent with findings from Malhotra et al., who reported that literacy strongly influences understanding of dengue transmission and vector breeding prevention. Similarly, caregivers with a prior history of dengue were more likely to recognize warning signs and adopt preventive practices, supporting observations from a community-based study in Cambodia that personal or family exposure improves awareness and health-seeking behavior. Participants who cited **health workers** or **mass media** as primary information sources had higher knowledge scores than those relying solely on social media or relatives, indicating the value of structured, evidence-based communication.[15,16]

No significant association was observed with **age**, **gender**, **occupation**, or **income**, suggesting that sociodemographic factors other than education may have limited influence on baseline knowledge. This finding is similar to the results reported by Kumar et al., who noted that literacy and previous dengue exposure were stronger predictors of knowledge compared to age or sex.[17] A systematic review by Harapan et al. also highlighted that while KAP levels vary across regions, education consistently emerges as the strongest determinant of dengue knowledge.[18] Our findings emphasize the need for targeted educational interventions for caregivers with lower literacy and those without prior dengue exposure to bridge the knowledge gap and strengthen community participation in vector control efforts.

Conclusion

In conclusion, our study aligns with multiple external findings that caregiver-targeted education effectively improves dengue knowledge. While the shift to "good" knowledge in many caregivers is encouraging, sustained reinforcement and linkage to practice-focused interventions will be essential for translating knowledge into action.

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