A Hospital Based Study on Knowledge and Preventive Practices regarding Dengue Fever among General Patients in Pokhara

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ABSTRACT

Introduction: Dengue fever has become an important public health concern worldwide. In Nepal, recurrent annual outbreaks are reported, and limited awareness about its prevention and management may contribute to increased morbidity and mortality. The spread of dengue is influenced by both human behaviour and environmental conditions. This study aimed to assess the knowledge and preventive practice related to dengue fever among general patients.

Methods: A descriptive cross- sectional study was carried out among 185 patients attending the medical outpatient department of Pokhara Academy of Health Science during the data collection period. Data were gathered using an interviewer-administered structured questionnaire to assess respondents' socio-demographic characteristics, their knowledge of dengue fever and preventive practice. Chi-square tests were used to examine associations between selected socio-demographic factors and knowledge level, while Pearson's correlation assessed the correlation between knowledge and preventive practices.

Results: Of the 185 respondents, 97.8% had heard of dengue fever. The primary sources of information were TV and mobile phones (48.6%). However, only 10.3% demonstrated satisfactory knowledge while 74.1% reported practicing appropriate preventive measures towards dengue fever. Knowledge levels showed a significant association with the respondents' place of residence, whereas gender, age and educational status were not significantly associated. A significant positive correlation ($P<0.01$) was observed between knowledge and preventive practices.

Conclusions: Knowledge of dengue fever among the study population was relatively low, while preventive practices were generally good. These findings underscore the need for strengthened educational initiatives and community-based interventionsons to enhance awareness and promote preventive measures against dengue fever.

Keywords: Knowledge, preventive practices, dengue fever, patients

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INTRODUCTION

Dengue fever (DF) is a mosquito-borne viral infection transmitted by bites of Aedes aegypti and Aedes albopictus mosquito.[1] Dengue fever is caused by infection with any of the four-dengue virus (DENV) serotypes: DENV1, DENV2, DENV3, and DENV4. Clinically, DF is characterized by sudden onset of high fever, severe headache, intense pain in joints and muscles, retro-orbital pain, nausea and vomiting and a generalized erythematous

rash. However, infection with a dengue virus serotype can also produce a more complex and severe form of clinical manifestations like haemorrhage and shock.[2] DF is only treated by supportive therapies including bed reset, fluids and symptomatic relief.[3] Because there is no vaccine to protect against this disease, great emphasis is placed on control and preventive measures.[4] Effective treatment of dengue fever has largely depended on appropriate and early medical care by experienced clinicians to avoid complications and reduce the fatality rate from 20% to 1%.[5]

According to the WHO, among arboviral infection diseases, dengue is considered to be one of the most common types in the world; with approximately 40% of the world population living in at-risk areas. Up to 50-100 million infections are now estimated to occur annually in over 100 endemic countries in the WHO Regions of Africa, the Americas, the Eastern Mediterranean, South-East Asia and Western Pacific with Asia representing around 70% of the global disease burden.[2]

Dengue has emerged as a rapidly growing public health concern in Nepal. The number of dengue cases peaked in 2022, prompting the government to declare an outbreak. Community-level preventive campaigns were implemented during that period; however, controlling mosquito breeding remained challenging due to limited community knowledge and participation. In 2023, Nepal reported 51,243 dengue cases and 20 deaths affecting 77 districts with Koshi province reporting highest number, followed by Bagmati, Gandaki, and Sudurpaschim Provinces. [6]

The epidemiology and ecology of DF are strongly associated with human habits. Aedes aegypti breeds almost entirely in domestic man-made water receptacles found in and around households, construction sites and factories.[7] Vector control is one of the most important preventive measures in combating dengue. The WHO and Centres for Disease Control and Prevention (CDCP) recommend emphasis on community educational campaigns that emphasize residents' responsibility in reducing vector breeding sites.[5] Several studies suggest that better knowledge of dengue and dengue vector prevention practices among people was one of the predictors of better practices of dengue prevention.[8,9]

In the Nepal, despite of the extensive campaign of the government against dengue, there are evidences of increasing rates of dengue morbidity in the recent years. Further, recent outbreaks of the dengue in the Gandaki province necessitate development of this study. Therefore, the aim of the present study is to assess the knowledge and preventive practices among general patients regarding dengue fever.

METHODS

A descriptive cross-sectional research design was used to assess the knowledge and preventive practices regarding dengue fever among general patients. The study was conducted in the medical outpatient department of PoAHS, and study population comprise patients of age ≥ 20 years attending the outpatient service. PoAHS is the largest hospital in the western region, serving patients from 16 districts. Individuals from diverse communities seek medical care at this institution.

A convenience sampling technique was used. The sample size was calculated using a single population proportion formula ($n=Z/2^2p$ (1-p)/d^2). Assumptions included a prevalence of knowledge about dengue fever of 12%,[9] a confidence level (Z/2=1.96), 5% margin of error (d=0.05). Based on these parameters, the estimated sample size was 163. After adjusting for a 10% non-response rate, the final required sample size was 179. However, a total of 185 respondents were interviewed.

Data were collected using a structured interview schedule developed from an extensive literature review. The instrument comprised three sections: The first section consisted of socio-demographic characteristics, second section consisted of knowledge assessment questions towards dengue fever and the third section assessed the practice of respondents towards dengue fever prevention. Internal consistency reliability was assessed using Cronbach's alpha, which yielded coefficients of 0.850.

Respondents' knowledge score was assessed using a predefined scoring (i.e. correct answer =1, incorrect answer= 0). The total knowledge score for each respondent was obtained by summing their responses. Practice was also scored using a numeric scale (i.e. Yes=1, No=0) and individual item scores were summed to create a total practice score for each respondent. The respondents' levels of knowledge and practices were categorized as "satisfactory" or "unsatisfactory" using a 70% cut-off point.[10]

Data were coded and entered into a computerized database and analysed using SPSS, version 23. Descriptive statistics (frequencies and percentages) were used to summarize socio-demographic data. Pearson's correlation coefficient was employed to examine the relationship between knowledge and dengue preventive practices, while chi-square tests were used to assess associations between of knowledge and selected demographic variables. A p-value ≤ 0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Institutional Review Committee (IRC) of PoAHS. Informed written consent was obtained from all participants prior to data collection.

RESULTS

Out of 185 respondents, more than half (54.1%) were female, with the mean age of 42.36 years, majority were married (67.6%) and residing in urban areas (52.4%). Majority of respondents (40%) had completed primary educationn and 35.7% were farmer. (Table 1)

Table 1: Socio-demographic Characteristics of the Respondents (n=185)

Variables	Number	Percent
Gender		
Male	85	45.9
Female	100	54.1
Mean age 42.36 years		
Marital status		
Single	46	24.9
Married	125	67.6
Widow/Widower	14	7.6
Residence		
Rural	64	34.6
Semi-urban	24	13.0
Urban	97	52.4
Educational status		
Illiterate	16	8.6
Primary education	74	40.o
Secondary	56	30.3
education	39	21.1
Higher education		
Occupation		
Business	14	7.6
Service	6	3.2
Housemaker	61	33.0
Farmer	66	35.7
Student	21	11.4
Others	17	9.2

Only 11.4% of respondents had previously attended programs related to dengue fever. Almost all respondents (97.8%) had heard about DF. With regard to sources of information, nearly half of the respondents

(48.6%) reported television or mobile media as their primary source. (Table 2)

Table 2: Respondents' Sources of Information about Dengue Fever (n=185)

Variables	Number	Percent
Dengue fever related program attended		
Yes	21	11.4
No	164	88.6
Heard about DF		
Yes	181	97.8
No	4	2.2
Source of information		
TV/Mobile phones	90	48.6
Radio	47	25.4
Health worker	45	24.3
Health centre	20	10.8
Neighbours	55	29.7
Newspaper	14	7.6
School	24	13.0

Respondents' Level of Knowledge and Preventive Practices regarding Dengue fever

The respondents' levels of knowledge and practices were categorized as "satisfactory" or "unsatisfactory" using a 70% cut-off point. Among the 185 respondents, only 10.3% demonstrated a satisfactory level of knowledge regarding dengue fever, while the majority (89.7%) had unsatisfactory knowledge scores. In contrary, 74.1% respondents exhibited satisfactory preventive practices, whereas 25.9 % reported unsatisfactory practices.

Out of 185 respondents, only 6.5% correctly identified that dengue fever is caused by dengue virus. Most respondents were aware of the general signs and symptoms of dengue fever, with 96.8% and 84.9% reporting high fever and headache, respectively. Similarly, the majority (96.2%) correctly identified mosquito bites as the most common mode of transmission. Nealy half (44.3 %) correctly reported that DF is most prevalent during the rainy season. Almost all respondents (97.8%) agreed that DF is preventable. (Table 3)

Table 3: Respondent's Knowledge regarding Causes, Signs and Symptoms and Mode of Transmission of Dengue Fever (n=185)

Variable	Number	Percent
Causes of DF		
Mosquito	173	93.5
Dengue virus	12	6.5
Signs and symptoms of DF		
High fever	179	96.8
Headache	157	84.9
Joint pain	134	72.4
Muscle pain	109	58.9
Body ache	139	75.1
Nausea and vomiting	115	62.2
Skin rash	70	37.8
Fatigue	129	69.7
Diarrhea	81	43.8
Pain behind the eyes	76	41.1
Bleeding	61	33.0
Pain abdomen	76	41.1
Mode of transmission		
Human to human	9	4.9
Blood transfusion	22	11.9
Mosquito bite	178	96.2
Consumption of dirty food and water	25	13.5
Air transmission	4	2.2.
Through garbage	26	14.1
Prevalence of DF		
Summer	85	45.9
Autumn	9	4.9
Rainy season	82	44.3
Don't know	9	4.9
Dengue is preventable	181	97.8

A large proportion of respondents (85.4%) knew that not all mosquitoes transmit dengue virus, though only% 31.4% were aware that Aedes mosquitoes are the primary vector. About one-third (33.0%) knew that *Aedes aegypti* bites

during the day time, but only 21.1% respondents identified clean stagnant water as the breeding site of dengue mosquitoes. Furthermore, 36.8 % indicated that they could identify dengue-causing mosquitoes, and 40.5% recognized their characteristic black-and-white stripes on its body and legs. (Table 4)

Table 4: Respondents' Knowledge on Vector of Dengue Fever (n=185)

Variable	Number	Percent
All mosquito transmits DF		
Yes	27	14.6
No	158	85.4
Vector of DF		
Aedes aegypti mosquito	58	31.4
Anopheles mosquito	7	3.8
Culex mosquito	12	6.5
Don't know	108	58.4
Bite time of dengue causing mosquito		
Night time	67	36.2
Day time	61	33.0
Both night and day time	34	18.4
Don't know	23	12.4
Breeding place for mosquitoes		
Garbage	10	5.4
Dirty stagnant water	129	69.7
Clean stagnant water	39	21.1
Don't know	7	3.8
Identify dengue transmitting mosquito		
Yes	68	36.8
No	117	63.2
Features of the dengue transmitting mosquitoes		
Bites primarily during the night time	19	10.3
Black and white strips on its body and legs	75	40.5
Same as other mosquitoes	17	9.2
Don't know	74	40

Regarding management, the majority of respondents (71.4%) believed that a patient with DF requires hospitalization. Nearly half (47.7%) identified low platelet count as a common complication of DF among other complications. (Table 5)

Table 5: Respondents' Knowledge on Management and Complications of Dengue Fever (n=185)

Variable	Number	Percent
Require hospitalization		
Yes	132	71.4
Sometimes	37	20.0
No, he can be treated at home	8	4.3
Don't know	8	4.3
Complications of DF		
Dengue haemorrhagic fever	27	14.6
Shock	12	6.5
Low platelet count	87	47.0
Dehydration	37	20.0
Death	44	23.8
Don't know	45	24.3

The association between selected socio-demographic characteristics and knowledge level was examined using chi-square tests. The analysis revealed that respondents' place of residence was significantly associated with their level of knowledge regarding dengue fever (p= 0.012). (Table 6)

Table 6: Association between Selected Demographic Variables and Knowledge Level (n=185)

Variable	Knowledge Level		Chi square value
	Satisfactory No. (%)	Unsatisfactory No. 9%)	
Gender			
Male	5 (26.3)	80 (48.2)	0.070
Female	14 (73.7)	86 (51.8)	
Age			
≤42 years	7 (36.8)	93 (56.0)	0.112
>42 years	12 (63.2)	73 (44.0)	
Education			
Illiterate	3 (15.8)	13 (7.8)	0.216*
literate	16 (84.2)	153 (92.2)	
Residence			
Rural	4 (21.1)	84 (50.6)	0.012**
Urban	15 (78.9)	82 (49.4)	

** Fisher's Exact Test*

*** Statistically significant at ≤ 0.05.*

The findings revealed that the most commonly adopted preventive measures against dengue fever among respondents included cleaning out garbage (97.8%). In contrast, less commonly employed measures included the use of insecticide sprays (30.8%) and professional pest control services (27.8%) for mosquito reduction. (Table 7)

Table 7: Preventive Practices against Dengue Fever (n=185)

Preventive Practice	Number	Percent
Using mosquito sprays and repellents	163	88.1
Use mosquito coils	148	80.0
Use of bed nets	162	87.6
Use window and door screen	164	88.6
Wearing full sleeve clothes	167	90.3
Prevent stagnant water in house or around the house (discarded tyres, plastic containers, ditches etc.)	180	97.3
By tightly covering any water container	180	97.3
Regular cleaning of coolers	126	68.1
Use smoke	109	58.9
Use fan	123	66.5
Cleaning of garbage	181	97.8
Cut down extra bushes	170	91.9
Turning containers upside down	163	88.1
Use insecticide sprays	57	30.8
Uses professional pest control	51	27.6

Correlation between Knowledge and Practice

The Pearson correlation coefficient was conducted to assess the correlation between knowledge and practice score which revealed a weak positive correlation (r=+0.267, P<0.01). This finding suggests that knowledge alone is not a strong predictor of practice behaviors within this sample.

DISCUSSION

This study evaluated the knowledge and preventive practices regarding dengue fever among general patients. Nearly all respondents (97.8%) had heard of dengue fever, comparable to reports from India (99.4%) [11] and Sri Lank (98%).[12] Television and mobile phones (48.6%) were the most common sources of information, reflecting findings from the similar studies[11,12]. The present study highlights a considerable gap in knowledge regarding dengue fever among respondents, with only 10.3% respondents demonstrating satisfactory knowledge which is consistent with reports from Nepal[9], India[11], and Jamaica[13]. The majority of respondents

(93.5%) believed mosquitoes themselves were the causative agent, whereas only a small proportion (6.5%) correctly identified the dengue virus. Awareness of critical warning signs, such as bleeding (33.0%), retro-orbital pain (41.1%), and pain abdomen (41.1%) was low. Furthermore, while nearly half of the respondents (47. %) identified low platelet count as a complication, fewer were aware of serious outcomes such as dengue hemorrhagic fever (14.6%) and shock (6.5%), similar to findings in earlier study in Nepal[9]. These gaps knowledge of warning signs and complications may delay timely health-seeking behavior, especially in severe cases.

Encouragingly, knowledge of mode of transmission of DENV was relatively high, as almost all respondents (96.2%) identified mosquito's bites as the mode of transmission and a majority (85.4%) correctly stated that not all mosquitoes transmit DF. However, detailed understanding of the vector was limited; only about one-third (31.4%) correctly identified Aedes aegypti as the principal vector, and fewer than half (40.5%) could recognize its distinctive black and white striped body and legs. Although most respondents recognized mosquitoes as the vector of dengue, detailed knowledge regarding breeding sites and biting behavior of the vector was limited. Only one-third (33.0%) respondents were aware that Aedes mosquitoes usually bite during the daytime. Similarly, awareness of breeding sites was poor, with only 21.1% of respondents correctly identifying clean stagnant water as the preferred habitat for Aedes mosquito.

In this study, only a small proportion of respondents (4.9%) believed that dengue could be transmitted through person-to-person contact, reflecting appropriate understanding and supportive attitudes toward individuals affected by the disease. However, 11.9% respondents recognized the possibility of transmission through blood transfusion. In this study, majority of respondents (71.4%) believed dengue patients always require hospitalization. This perception may discourage timely medical consultation, particularly among individuals facing financial constraints. In reality, many cases of dengue can be effectively managed at home with appropriate medical guidance, adequate rest, and adherence to prescribed treatment.

Despite relatively low levels of knowledge, respondents demonstrated good preventive practices. Nearly all respondents (97.8%) recognized dengue as preventable. Unlike previous studies[11] that reported high knowledge but poor practices, our findings align with studies[9,11] which also highlighted strong preventive behaviors despite limited knowledge. The most common preventive measures reported were garbage disposal, preventing stagnant water and covering water containers. However, fewer respondents reported using insecticide sprays or professional pest control to repel mosquitoes. Similar findings have been reported in urban communities in Yemen[10]. This suggests that health education campaigns should prioritize cost-effective environmental measures alongside personal protection.

A significant positive correlation was observed between respondents' knowledge and preventive practice, consistent with several other studies[11, 12], though contrasting with studies conducted in Phillipines[1] and Jamaica[13]. Among socio-demographic variables, only area of residence was significantly associated with knowledge, whereas sex, age, or education level showed no significant association, aligning with previous research in Nepal.[9]

Being a cross-sectional survey, the findings cannot capture the dynamic relationship between knowledge and practice, and the relatively small sample size may limit the generalizability. Despite these limitations, the findings reveal important gaps in knowledge and practice regarding dengue prevention and underscore the importance of targeted

educational interventions and larger-scale studies to strengthen community-level prevention strategies.

CONCLUSIONS

This study found that overall knowledge of dengue fever among the respondents was relatively low, whereas preventive practices were generally good. In the view of this result, government agencies and other non-government organizations should strengthen its programs on massive educational campaign to increase awareness regarding cost effective ways of preventing dengue such as environmental measures and control.

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REFERENCES

1. Labrague LJ. Dengue knowledge and preventive practices among rural residents in Samar province, Philipines. Am J Pub Healt Res. 2013;1(2): 47-52. DOI:10.12691/ajphr-1-2-2

2. WHO. Dengue guidelines, for diagnosis, treatment, prevention and control. Available from: https://www.who.int/publications/i/item/9789241547871. Accessed Oct 2, 2023.

3. Halstead SB. Dengue. Curr Opin Infect Dis. 2002; 15(5): 471-6. DOI: 10.1097/00001432-200210000-00003. PMID: 12686878.

4. Halstead SB, Deen J. The future of dengue vaccine. Lancet. 2002 Oct 19; 360(9341): 1243-5. DOI: 10.1016/S0140-6736(02)11276-1. PMID: 12401270.

5. WHO. Dengue and Severe dengue. March 2023. Available online: https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue. (Accessed on 27 September, 2023).

6. Government of Nepal. Nepal: Epidemiology and Disease Control Division- Situation update of Dengue 2023. (As of 3 August, 2023) [Internet] [cited2025 Nov 10]. Available from: https://reliefweb.int/report/nepal/nepal-epidemiology-and-disease-control-division-situation-update-dengue-2023-3-august-2023#:~:text=Nepal%20has%20a%20historical%20record,dengue%20along%20with%20other%20comorbidities.

7. Suaya JA, Shepard DS, Siqueira JB, Martelli CT, Lum LC, Tan LH, et.al. Cost of dengue cases in eight countries in the Americas and Asia: A prospective study. Am J Trop Med Hyg 2009;80(5): 846–55. PMID: 19407136. Van Benthem BH, Khantikul N, Kessels PJ, Somboon P, Oskam L. Knowledge and use of preventive measures related to dengue in northern Thailand. Trop Med Healt 2002; 7(11): 993-1000. DOI: 10.1046/j.1365-3156.2002.00950.x. PMID:12390606.

8. Hairi F, Ong CH, Suhaimi A, Tsung TW, bin Anis Ahmad MA, Sundaraj C, Soe MM. A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district. Asia Pac J Pub Healt. 2003; 15(!): 37-43. DOI: 10.1177/101053950301500107. PMID: 14620496.

9. Dhimal M, Aryal KK, Dhimal ML, Gautam I, Singh SP, Bhusal CL et al. Knowledge, attitude and practice regarding Dengue fever among the healthy population of highland and lowland communities in central Nepal. PLoS ONE. 2014;

9(7):e102028. DOI: 10.1371/journal.pone.0102028. PMID: 25007284.

10. Al Awfi MS, Al Sharabi BA, Al Alimi A, Abkar MA. Knowledge, attitudes and practices regarding dengue fever in a cohort of nursing students. J Adv Med Med Res. 2019; 29(3): 1-9. DOI: 10.9734/jammr/2019/v29i330073.

11. Tikoo D. Sharma G, Gupta M. Assessment of knowledge, attitude and practice of dengue in factory workers of Amritsar, Punjab. Int J Basic Clin Pharmacol. 2016; 5(1): 38-44. DOI:10.18203/2319-2003.ijbcp20160098

12. Gunasekara TDCP , Velathanthiri VGNS , Weerasekara MM , Fernando SSN , Peelawattage M , GurugeD , Fernando S. Knowledge, attitudes and practices regarding dengue fever in a sub-urban community in SriLanka.2012. Galle Medical Journal 17(1):10-17. DOI: 10.403/gmj.v17i1.4355.

13. Shuaib F, Todd D, Camphbell-Stennett D, Ehiri J, Jolly PE. Knowledge, attitudes and practices regarding dengue infection in Westmorland, Jamaica. West Indian Med J. 2010; 59(2): 139-46. PMID: 21132094.