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Awareness and Practice on Prevention and Control of Dengue among Community People of Lalitpur Metropolitan City

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ABSTRACT

Background

Dengue is a mosquito-borne viral disease that has rapidly spread in many countries worldwide in recent years. Dengue is a major public health problem in many countries. Dengue is a rapidly emerging disease in Nepal that is endemic across most provinces. The incidence of dengue has increased in recent years due to the expansion of the *Aedes aegypti* vector. The increasing outbreak of dengue in Nepal is becoming a major concern for the public health.

Objective

The objective of the study was to assess awareness level and practice on prevention and control of dengue among community people in Lalitpur metropolitan city.

Method

A community-based cross-sectional study was conducted from January to June 2023 at ten different wards in Lalitpur metropolitan city. Sample populations of 368 residents of Lalitpur metropolitan city above the age of 18 years were selected for the study. Simple random probability sampling technique used for the sample selection. Statistical Package for the Social Sciences (SPSS) 16 version used to analyze the data.

Result

Majority (98.1%) of respondents knew about dengue fever. Most of the respondents (47.1%) answered that dengue is caused by aedes mosquito. Majority (71.4%) of respondents stated that dirty water was breeding sites of dengue mosquito. Primary preventive measures used were cleanliness 34.1 percent followed by use of mosquito net/coil 31.4 percent. The community people had good awareness (79.3%) of dengue, but poor practice (56.79%) in prevention and control of dengue.

According to this study, socio-demographic factors such as age, sex, and education level were significantly linked to the knowledge level of the participants.

Conclusion

According to this study, the community people had a good awareness level of dengue (79.3%). However, their practice of prevention and control of dengue was found to be poor (56.79%).

KEYWORDS
Dengue fever, Level of awareness, Practice of dengue prevention and control

INTRODUCTION
Dengue fever is one of the most common vector-borne infectious diseases, endemic throughout the tropics and subtropics of the world(Rahman et al., 2021).

Dengue is a virus that infects humans through the bites of female mosquitoes, particularly the Aedes aegypti mosquito. The virus spreads mainly in urban areas where there is a high population density, poor water sources, and inadequate water storage practices. Dengue has no known cure, and early detection and access to proper medical care can significantly reduce the mortality rate of severe cases (WHO, 2023).

Dengue fever is a widespread arboviral infection caused by any of the four serotypes of dengue virus (DENV-1, 2, 3, and 4). An estimated 390 million cases occur annually, with 20,000 associated deaths. Approximately 40% of the world's population lives in at-risk areas. In severe cases, it can lead to dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS), both of which can be fatal.(Nguyen et al., 2019).

According to a recent study by Hossain et al. (2021), it has been reported that approximately 52% of people in Southeast Asia are at risk of contracting dengue fever (Hossain et al., 2021). The number of dengue fever cases has increased drastically in recent years, with 10,148 cases reported in 2018, up from 2,769 cases in 2017, as noted by Abir et al. (2021). The situation worsened in 2019, with over 100 thousand confirmed cases and 164 deaths due to dengue fever - an alarming 11-fold increase compared to the previous year. (Directorate General of Health Services (DGHS), 2020; Rafi et al., 2020) (Rahman, Mehejabin, & Rashid, 2022).

Dengue is a mosquito-borne viral disease that has rapidly spread worldwide, including Nepal. It is endemic across most provinces in Nepal and has increased in recent years due to the expansion of mosquito vectors and imported cases. All four dengue serotypes exist in Nepal, with DENV-1 being historically the most common cause (EDCD, 2019).

As per the latest update from the Epidemiology and Disease Control Division on Dengue 2022, as of 11th October 2022, a total of 37131 cases of dengue fever have been identified in Nepal. Among the provinces, Bagmati has reported the highest number of cases (28682), followed by Lumbini province with 4180 cases. The top 10 districts with the highest number of dengue cases are Kathmandu (11607), Lalitpur (8266), Makwanpur (3604), Bhaktapur (2475), Dang (1875), and Chitwan (1291) (EDCD, 11 Oct 2022).

Nepal has been facing outbreaks of Dengue Fever (DF), with an increasing number of cases being reported from lower altitudes up to hilly regions, causing a significant impact on public health. In 2019, Nepal experienced a large outbreak of dengue fever, with over 17,000 reported cases found across the country's lowlands to highlands, including some areas that had not previously been reported as dengue-endemic (Phuyal et al., 2022).

METHODOLOGY
A community-based cross-sectional study was conducted from January to June 2023 at ten different wards in Lalitpur metropolitan city. The sample size was 368 which were calculated by using sample size calculation formula. Sample populations of 368 residents of Lalitpur metro city

above the age of 18 years were selected for the study. Simple random probability sampling technique used for the sample selection.

Data collected through face to face interview and the interview schedule used as research tool. Data analyzed by Statistical Package for the Social Sciences (SPSS) software 16 versions. The administrative approval taken from Lalitpur metropolitan city office. An informed consent taken from each participant before data collection.

RESULT

Socio-Demographic Characteristics of Respondents

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Frequency(n=368)	Percent
Age		
<30 years	212	57.6
>30 years	156	42.4
Sex		
female	183	49.7
male	185	50.3
Religion		
Hindu	340	92.4
boudha	11	3.0
christian	14	3.8
muslim	3	0.8
Ethnicity		
bhramin/chhetri	132	35.9
madhesi	45	12.2
janjati	180	48.9
dalit	11	3.0
Marital status		
married	181	49.2
unmarried	184	50.0

Education status	3	0.8
illiterate	6	1.6
primary level	60	16.3
secondary level	56	15.2
higher secondary	90	24.5
bachelor	147	39.9
master	9	2.4
Monthly income		
below 10k	30	8.2
10k_50k	272	73.9
50k_100k	66	17.9

Table 1.shows socio-demographic characteristics of respondents. Majority 57.6% were of age below 30 years .Half of the respondents were male. Among total respondents 92.4% were Hindu and 3.0% Buddhism, 3.8% Christian respectively. 49.2% respondents were married. Regarding educational level of respondents 39.9% were of bachelor level, 15.2% were of secondary level, 16.3% were of primary level and 1.6% was illiterate.

Knowledge Regarding Dengue Fever

Table 2: Knowledge Regarding Dengue Fever

Variables	Frequency	Percent
Knowledge about dengue fever		
yes	361	98.1
no	7	1.9
Cause of dengue fever		
waste	101	22.8
collection of dirty water	267	60.3
contaminated food	72	16.3
dont_know	3	0.7
Mosquito causing dengue		

Aedes	171	47.1
anopheles	57	15.7
all type of mosquito	49	13.5
dont know	86	23.7
Active time of Aedes mosquito		
sunrise_sunset	130	31.9
night	149	36.6
afternoon	111	27.3
dont_know	17	4.2
Knowledge of dengue transmissible		
yes	240	65.2
no	65	17.7
dont know	63	17.1
Transmission of dengue		
blood transfusion	46	17.0
needle stick injury	16	5.9
bite from infected mosquito	141	52.2
sharing food clothes with patient	37	13.7
dont know	30	11.1

Table 2 Shows majority (98.1%) of respondents had knowledge about dengue fever. Most of the respondents (47.1%) answered that dengue is caused by Aedes mosquito and 23.7% didn't know about vector of dengue. 36.6% of respondents reported Aedes mosquito is activate during night time and mainly active in summer season. About two-third of respondents knew about transmission of dengue and 52.2% answered dengue transmitted through bite of infected mosquito.

Awareness about Prevention and Control of Dengue Fever

Table 3: Awareness about Prevention and Control of Dengue Fever

Variables	Frequency	Percent
Knowledge about Aedes mosquito as vector of dengue		
yes	226	61.4
no	142	38.6
Knowledge of prevention and control of dengue fever		
yes	301	81.8
no	46	12.5
Don't know	21	5.7
Control measures about dengue fever		
yes	345	93.8
no	23	6.3

Table 3 shows that 61.4% have knowledge about Aedes mosquito were vector of dengue and 38.6% didn't have knowledge about vector of dengue. 81.8% were aware bout prevention and control of dengue fever .Where 93.8% had knowledge about control measure about dengue fever.

Awareness Level on Dengue

Table 4: Level of Knowledge

Variables	Frequency	Percent
Level of knowledge		
poor knowledge	76	20.7
good knowledge	292	79.3

Table 4 shows that Majority 79.3% of respondents had a good knowledge and remaining 20.7% had poor level of knowledge.

Practice on prevention and control of mosquito

Table 5: Practice on prevention and control of mosquito

Variables	Frequency	Percent
Practice of prevention and control of mosquito breeding		
yes	320	87.0
no	48	13.0
Practice on prevention of mosquito bite		
use of mosquito spray	238	18.1
keep neat and clean surrounding	251	19.1
use mosquito coil	179	13.6
use of mosquito net	200	15.2
use of mosquito cream	110	8.4
cover body with long clothes	184	14.0
closed windows and door	126	9.6
use of smoke to drive away mosquito	26	2.0
Practice of preventive measures for dengue infection		
yes	335	91.0
no	33	9.0

Table 5 shows that 87.0% had practice on prevention and control of mosquito breeding. 19.1% people had practice on prevention from mosquito bite by keeping net and clean where 18.1% by using mosquito spray, by covering body by clothe by 14.0%. . 91.0% had practice preventive measure for dengue fever.

Level of Practice

Table 6: Level of Practice

Variables	Frequency	Percent
Level of practice		
poor practice	209	56.8
good practice	159	43.2

Table 6 shows that most 56.8% of respondents had poor practice and 43.2% had good practice. More than half of respondents engage in poor practice.

Association between Levels of Knowledge with Socio-Demographic Variables

Table 7: Association between Levels of Knowledge with Socio-Demographic Variables

variable	poor knowledge	good knowledge	p value
<30 yrs	28(7.6%)	184(57.8%)	
>30 yrs	48(13.1%)	107(29.2%)	0.001*
female	22(6.0%)	160(43.6%)	
male	54(14.7%)	131(35.7%)	0.001*
illiterate	4(1.1%)	2(0.5%)	
primary level	22(6.0%)	38(10,4%)	
secondary level	20(5.4%)	36(15.3%)	
higher secondary	15(4.1%)	75(20.4%)	
bachelor	14(3.8%)	132(36.0%)	
master	1(0.3%)	8(2.2%)	0.001*

*Significant at ($p < 0.05$)

Table 7 shows the association between socio-demographic respondents and level of awareness. There is statically significant association with education (p=0.001), age (0.001), and sex (0.001).

DISCUSSION

According to a study conducted by the governorate in June 2021, 66.8% of the respondents were female. The study found that 36.6% of the participants were aware that mosquitoes usually bite at night. More than 50% of the population had completed primary or secondary education. In this study, 50.3% of the respondents were male, which was consistent with the higher education levels reported - 24.5% of the participants had completed higher education, while 39.9% had completed a bachelor's degree. Additionally, the studies found that approximately 1.6% of the respondents were illiterate.

A study conducted by Gal AO and Mohamed MH in 2022 revealed that 98.1% of respondents were familiar with dengue, with 93.8% having heard of it specifically. Interestingly, only 43.1% of those surveyed were aware that Aedes mosquitoes typically bite between sunrise and sunset, with 36.6% recognizing night-time as a peak biting period. Additionally, 68.8% of the study population incorrectly believed that Aedes mosquitoes can breed in dirty water. The study, which was cross-sectional and community-based, found that 78.1% of respondents were knowledgeable about dengue, and 86.4% had a reasonable understanding of the disease. However, over 17% of those surveyed did not mention environmental cleanup as a strategy for prevention (Gaal, 2022).

In July to November 2019, a survey was conducted with 1,010 individuals randomly selected from nine administrative regions in Bangladesh to investigate dengue. Multi-variable logistic regression was utilized to analyze the data. Although 93.8% of respondents were aware of dengue, misconceptions about Aedes breeding habitat were prevalent. Approximately 45.7% of participants believed that Aedes mosquitoes can breed in dirty water, and only 43.1% were aware that they typically bite during the day. Respondents' level of education was found to be an independent predictor of dengue knowledge and awareness. While the level of preventive practice was slightly lower than the level of knowledge, there was a significant association between knowledge and preventive practices (Hossain, 2021).

In a study conducted by Parbati Phuyal et al. in six central districts of Nepal during September-October 2018, it was found that both awareness about DF and prevention measures were lacking. Of the participants surveyed, only 40.6% had prior knowledge of DF, with higher rates in lowland areas (Phuyal *et al*., 2022).

Similarly, a study conducted in Shabwah governorate from June to November 2021 found that the majority of the population (68.4%) demonstrated good practices, while 79.3% had a good level of knowledge, with those holding a bachelor's degree having a higher level of education (39.9%). However, the level of practice was moderately lower (56.8%) than the level of knowledge (Saghir, 2022).

Research conducted in Mangalpur VDC, Chitwan district of Nepal has revealed that there is a significant correlation between knowledge on prevention and control of dengue fever and certain socio-demographic factors such as age (p=0.002), marital status (p=0.005), education status (p=0.010), religion (p=0.003), and occupation (p=0.000) (Sah, 2022).

Additionally, this study found a significant association between socio-demographic variables and level of awareness, with education (p=0.001), age (p=0.001), and sex (p=0.001) being the most strongly correlated factors.

CONCLUSION

Majority (98.1%) of respondents had knowledge about dengue fever. About two-third of the community people have knowledge about transmission of dengue and more than half answered that dengue are transmitted through bite of infected mosquito. About two-third of people were aware that Aedes mosquitoes are a dengue vector. 81.8% of respondents were aware of dengue fever prevention and control measures.

87.0% had practiced prevention and control of mosquito breeding. 19.1% people have practice on prevention from mosquito bite by keeping net and clean surroundings, 18.1% by using mosquito spray, by covering body by clothes 14, 0% and 91.0% have practice on preventive measure for dengue fever.

The awareness level on dengue fever was good (79.3%) among the community people whereas the practice of prevention and control of dengue were found poor (56.79 %).

This study showed socio-demographic factors like, age, sex and education status were significantly associated with knowledge level of respondents.

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