ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 9, Issue – 5, September – 2024 , Page No. : 102 – 110

Knowledge, Attitude and Practice about Dengue among Patients Attending Urban Health Training Center in Central India: A Cross-Sectional Study

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Citation this Article: Kaustubh D Khetre, Priya Dhengre, Jyotsna Deshmukh, Astha Mishra, "Knowledge, Attitude and Practice about Dengue among Patients Attending Urban Health Training Center in Central India: A Cross-Sectional Study", IJMSIR - September - 2024, Vol – 9, Issue - 5, P. No. 102 – 110.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Dengue fever, a mosquito-borne viral disease, caused 303 fatalities in India in 2022, with 233251 cases overall. In Maharashtra, 8578 cases and 27 fatalities were reported. Understanding community awareness and habits about vector-borne illnesses is crucial for effective public health education. This study analyzes dengue fever knowledge, attitude, and practice among patients visiting OPD at a tertiary hospital in Nagpur, Maharashtra.

Methods: The study was conducted at the Urban Healthcare Training Centre (UHTC) in Nagpur, Maharashtra, India, from August to October 2023. The study used a pre-designed questionnaire and interviewed 200 patients visiting OPD of UHTC over two months. Data files were checked and cleaned before analysis. A modified B. G. Prasad criterion was used to determine the socio-economic status of the study population.

Results: A study of 200 respondents found that 56% identified dengue as an infectious disease, with 54.5% knowing it could lead to death. The majority 52% knew the aedes mosquito vector had stripes and that dengue is transmitted through bites (76%). Symptoms included high fever (91%) and rash (88%). 74% knew removing breeding areas could help. 89% Family members were believed to help prevent dengue, and 83.5% agreed to remove breeding sites.

Conclusion: The study participant has moderate to sufficient knowledge of Dengue Fever, but needs awareness campaigns to increase local residents' understanding. This can be achieved through expanding Information Education Communication initiatives,

disseminating information on symptoms, and teaching in school and university curriculums.

Keywords: Dengue fever, knowledge, attitude, practice, aedes aegypti

Introduction

Dengue fever is caused by a mosquito-borne viral pathogen that belongs to the genus Flavivirus of the family Flaviviridae.[1] Due to its complicated epidemiology and clinical behaviour, dengue, an arboviral illness, continues to be a cause for concern in India, both in terms of public health and morbidity and mortality.[2] In India in the year 2022, there were 303 dengue-related fatalities and 233251 cases of dengue. In Maharashtra, there were 8578 dengue cases in 2022, and 27 dengue-related fatalities.[3]

The National Vector Borne Disease Control Program (NVBDCP), aims to prevent and control a range of vector-borne illnesses. [4] Numerous environmental management techniques, such as removing or reducing mosquito breeding areas and adapting better personal protective measures, can significantly reduce the transmission of infection by mosquitoes. [5]

Since there is no vaccination for diseases spread by mosquitoes, altering one's behaviour and taking precautions in the surroundings are the only ways to avoid contacting the infection. Despite the numerous instructional strategies and mass communication initiatives, community involvement is significantly lower than expected. The knowledge and awareness of individuals is essential for the control of vector-borne illnesses.[6]

People have inadequate knowledge about dengue and its preventive methods. Humans' tendency of storing water in their homes promotes the growth of Aedes mosquitoes, the dengue virus vector. Furthermore, rainfall causes the artificial collection of water in discarded coconut shells, tyres, and other objects. Dengue control relies heavily on public understanding of dengue signs and symptoms, transmissions, and preventative methods.[7]

In order to create an appropriate and successful public health education plan, it is vital to comprehend the community's level of awareness, knowledge, and habits around vector-borne illnesses. Hence the current study aims to analyse dengue fever Knowledge, Attitude, and Practice (KAP) among patients visiting outpatient department at an urban health training centre attached to a tertiary health care hospital in Nagpur, Maharashtra.

Methods

The study was conducted in Urban Health Training Centre (UHTC) of a tertiary health care hospital located in Nagpur, Maharashtra, India. A descriptive cross-sectional study was conducted from 1 August 2023 to 1 October 2023. The study setting was a general Out Patient Department (OPD). The study population included every second patient of age ≥18 years coming to general OPD. The participants were the residents of Indora (study area coming under UHTC) who were living there for at least one year. The study tool was a pre-designed and pretested questionnaire containing closed ended questions. The final draft of the questionnaire was translated into Hindi and retranslated into English to ensure that the meaning of the questions remained unchanged. Before its use in the main study, the questionnaire was pre-tested among the staff of the hospital which was not included in the final analysis. We interviewed 200 patients during two months of study period. The protocol of this study was approved by Institutional Ethical Committee (IEC). Written informed consent was obtained from participants. Participation in the study was voluntary and no incentives were provided. The objectives of the study were explained to the participants.Sufficient time was given to ask questions

and it was emphasized that the participants can quit anytime during the interview. All completed questionnaire was double-checked and verified on the same day for completeness and consistency. All data files were checked and cleaned before analysis. KAP assessment was assessed as per response. The response was defined as correct if it was valid (i.e. supported by current literature; positive attitude; can identify appropriate measure to prevent mosquito breeding and dengue transmission). A modified B. G. Prasad criterion was used to find socio-economic status of our study population. Data were entered in MS Excel and analyzed by Jamovi software, version 2.4.11.

Results

Table 1: Socio-demographic profile of the studypopulation (N= 200)

Sociodemographic Profile	No.	%
AGE in completed years		
19 -24	62	31.00
25-34	54	27.00
35-44	30	15.00
45-54	34	17.00
>55	20	10.00
Gender		
Male	158	79.00
Female	42	21.00
Education		
Illiterate	32	16.00
Primary/ Middle school	21	10.50
High school	42	21.00
Intermediate/ diploma	62	31.00
Graduate	34	17.00
Postgraduate	09	4.50
Socio-economic Status		
Class I	07	03.5
Class II	31	15.5
Class III	57	28.5
Class IV	43	21.5
Class V	62	31.0

Table 1 depicts the socio-demographic details of the study participants. The study showed that the age of the respondents (n=200) varied from 19 to 61 years (Mean- 31.88 years, SD- 2.1 years). Most (27%) of the participants were in the age

group 19-24 years. There were 158 (79%) males and 52 (21%) females. Only 16% of study participants were illiterate. According to socio-economic status, 3.5% of participants were from upper class while 31% were from lower class.

Table 2: Knowledge of symptoms of dengue fever (N= 200).

No	Question	True No. (%)	False No. (%)	Do not know No. (%)
1.	Dengue is an infectious disease.	112 (56.0)	75 (37.5)	13 (6.5)
2.	Dengue may lead to death.	109 (54.5)	80 (40.0)	11 (5.5)
3.	The vector of dengue is male Aedes mosquito.	54 (27.0)	20 (10.0)	126 (63)
4.	Aedes mosquito has stripes on the body.	104 (52.0)	26 (13.0)	70 (35)
5.	Dengue virus can be transmitted by:			
	(a) air	11(5.5)	100 (50.0)	89 (44.5)
	(b) water	60 (30.0)	68 (34.0)	78 (39.0)
	(c) mosquito bite	152 (76.0)	08 (4.0)	40 (20.0)
	(d) direct contact with an infected person	16 (8.0)	130 (65.0)	54 (27.0)
6.	Aedes mosquito breeds in dirty water.	88 (44.0)	108 (54.0)	04 (2.0)
7.	Adult Aedes mosquito can transmit dengue virus into its eggs.	18 (9.0)	56 (28.0)	126 (63.0)
8.	The peak biting period of Aedes mosquitoes is:			
	(a) early in the morning after dawn	140 (70.0)	34 (17.0)	26 (13.0)
	(b) in the afternoon	24 (12.0)	96 (48.0)	80 (40.0)
	(c) in the evening before dusk	110 (55.0)	22 (11.0)	68 (34.0)
	(d) at night	42 (21.0)	113 (56.5)	45 (22.5)
9.	The common symptoms of dengue fever are:			
	(a) rash	176 (88.0)	13 (6.5)	11 (5.5)
	(b) eye pain	38 (19.0)	106 (53.0)	56 (28.0)
	(c) diarrhea	24 (12.0)	114 (57.0)	62 (31.0)
	(d) headache	168 (84.0)	23 (11.5)	09 (4.5)
	(e) high fever	182 (91.0)	08 (4.0)	10 (5.0)
	(f) numbness	06 (3.0)	188 (94.0)	06 (3.0)
	(g) joint pain	156 (78.0)	24 (12.0)	20 (10.0)
10.	The spread of dengue virus can be overcome by removing Aedes breeding areas.	148 (74.0)	28 (14.0)	24 (12.0)

Table 2 depicts that the majority 112 (56%) of the participants were able to identify that dengue is an infectious disease. Also, 109 (54.5%) study participants were knowing that dengue may lead to death.

However only 54 (27%) study participants were knowing that the vector of dengue is aedes mosquito but 104 (52%) study participants were knowing that aedes mosquito has stripes on the body. When asked regarding virus transmission 152 (76%) study participants reported that dengue virus is transmited by mosquito bite. Only 18 (9%) study participants were knowing that aedes mosquito can transmit dengue virus into its eggs. When asked about the peak biting period of aedes mosquitoes, 140 (70%) study participants were knowing that aedes mosquitoes bite early in the morning. When asked regarding the symptoms of dengue fever majority i.e, 182 (91%) study participants reported high fever followed by 176 (88%) study participants reported rash. Majority i.e. 148 (74%) study participants were knowing that spread of dengue virus can be overcome by removing aedes mosquito breeding areas.

Table 3: Attitude towards dengue fever (N= 200).

No	Statement	Agree	Disagree	Don't know
1.	My family can help to prevent dengue.	178 (89.0)	12 (6.0)	34 (17.0)
2.	My neighbours should have the responsibility to prevent dengue.	174 (87.0)	08 (2.0)	18 (9.0)
3.	Family members should spend some time during the weekends to remove *Aedes* breeding sites.	167 (83.5)	04 (2.0)	29 (14.5)
4.	It is my responsibility to make sure that there is no *Aedes* egg and/or larva in my house area.	154 (77.0)	22 (11.0)	24 (12.0)
5.	Water containers for water storage must be covered properly.	161 (80.5)	11 (5.5)	28 (14.0)
6.	The inner sides of the containers used for water storage should be scrubbed and cleaned to prevent dengue fever.	54 (27.0)	124 (62.0)	22 (11.0)
7.	I shall open the doors/windows of my house during fogging.	58 (29.0)	132 (66.0)	10 (5.0)
8.	If my family member has symptoms of dengue fever, I will bring him/her to see a doctor for immediate treatment.	188 (94.0)	04 (2.0)	08 (4.0)

Table no 3 summarizes participants' attitude regarding DF. Most of them agreed 178 (89%) that their family can help to prevent dengue . Also, 174 (87%) study participants agreed that their neighbors should be responsible to prevent dengue. And, 167(83.5%) study participants agreed that family members should spend some time during the weekends to remove aedes breeding sites.154(77%) study participants agreed that it is their responsibility to make sure that there is no aedes eggs or larva in their house area. 161(80.5%) study participants agreed that water containers for water storage must be covered properly. Only 54(27%) study participants agreed that the inner sides of the containers used for water storage should be scrubbed and cleaned. Marginal 58 (29%) study participants agreed that they should open the doors/windows of my house during fogging. Majority, i.e. 188 (94%) study participants agreed that if their family member has symptoms of dengue fever, they will bring him/her to see a doctor immediate treatment.

Table 4: Practice towards dengue fever (N= 200).

No	Statement	Everyday	At least once a week	At least once a month	Less than once a month	Never
1.	Use aerosol and/or liquid mosquito repellent and/or mosquito coil and/or electrical mosquito mat and/or mosquito bed net.	118 (59.0)	54 (27.0)	14 (7.0)	08 (4.0)	06 (3.0)
2.	Check for the presence of Aedes eggs and/or larvae inside thehouse.	22 (11.0)	25 (12.5)	68 (34.0)	38 (19.0)	47 (23.5)
3.	Check for the presence of Aedes eggs and/or larvae outside the house or the house compound.	8 (4.0)	26 (13.0)	46 (23.0)	36 (18.0)	84 (42.0)
4.	Add larvicides into the water storage containers.	1 (0.5)	12 (6.0)	28 (14.0)	32 (16.0)	127 (63.5)
5.	Scrub the inner side of water storage containers.	4 (2.0)	29 (14.5)	46 (23.0)	58 (29.0)	63 (31.5)
6.	Store water in open containers.	96 (48.0)	43 (21.5)	26 (13.0)	28 (14.0)	7 (3.5)
7.	Open windows or doors					
	(a) early in the morning after dawn	189 (94.5)	08 (4.0)	00 (0)	00 (0)	3 (1.5)
	(b) in the evening before dusk	176 (88.0)	07 (3.5)	00 (0)	00 (0)	17 (8.5)

Table 4 shows the different practice employed by participants to protect themselves from Dengue Fever. 118 (59%) study participants use aerosol and/or liquid mosquito repellent and/or mosquito coil and/or electrical mosquito mat and/or mosquito bed net every day. Maximum, 68(34%) study participants check for the presence of Aedes eggs and/or larvae inside the house at least once a month. 84 (42%) study participants never check for the presence of *Aedes* eggs and/or larvae outside the house or the house compound. 127 (63.5%) study participants never scrub the inner side of water storage containers. 96 (48%) study participants store water in open containers everyday. When asked regarding when they open windows or doors 189(59%) responded everyday early in the morning and when asked regarding evening, 176 (88%) responded that they open the windows every day in the evening.

Discussion

The study was conducted in urban health training centre of Central India involving adults more than 18 years. Most of the study participants belong to the age group of 19-24 years. On the contrary a study conducted by Mahendraker et al[8] most of the study participants were in the age group of 36-45(55%). In the present study

majority of the study participants were male 158(79%). Most of the study participants i.e. 62 (31%) were educated upto intermediate/diploma level. A study conducted by Khobragade AW et al[9] also had similar observation showing most of the study participant 148(37%) having education of higher secondary. Most of the study participants belong to class V as per modified B. G. Prasad

Socioeconomic scale. However, a study conducted by Mohapatra S et al [7] observed that most of the study participant were belonging to class II i.e. 61 (27.4%) as per modified B. G. Prasad criterion.

The majority of participants in a study identified dengue as an infectious disease, with 54.5% knowing it could lead to death. Only 27% knew the vector is the Aedes mosquito, which has stripes on its body. The majority of participants reported that the virus is transmitted through bites. Mosquito bite was cited as a cause of dengue by 76.58 % respondents by Amar Taksande et al[10] with only 9% knowing it can transmit into eggs. Similarly a study conducted by Nijhawan DM et al[11] found that 162 (81%) knew that mosquito bite is the cause of dengue. Similarly a study conducted by Mathur SM et al[12] found that 83.69% know that it is transmitted by mosquito bite The peak biting period for Aedes mosquitoes is early in the morning known by 90%. Most participants reported high fever (91%) as symptom of dengue, while a study conducted by Potdar PA et al[13] found that 426 (88.7%) of the study participants reported fever as symptom of dengue. In the present study after fever rash was a symptom reported by (88%) of the study participants. A study conducted by Mahendraker AG et al[8] found that half of respondents knew that dengue can cause death, but only 8% knew the vector is the female Aedes mosquito. Half knew peak biting periods are early in the morning (53%), and 81.8% knew the mosquito doesn't bite in the afternoon. However, 58 falsely thought it bites at night (40%). Most correctly identified common symptoms as rash (60%), high fever (99%), and joint pain (95%).

The study found that 89% of participants believe their family can help prevent dengue, with 87% stating that neighbours should also help. 83.5% agreed that family members should remove aedes breeding sites during weekends, while 77% said they are responsible for ensuring no eggs or larvae are present in their homes. 80.5% agreed that water storage containers should be covered properly, and 29% agreed to open doors or windows during fogging. 94% agreed to take immediate treatment for dengue fever symptoms. However a study conducted Mahendraker AG et al[8] found that the majority of respondents (73%) believe that family members should work together to remove aedes breeding sites during weekends. 75% believe families can help prevent dengue, while 71% agree that neighbours are also responsible. 68% agree to ensure no aedes larvae and eggs are in their housing areas. Only 87% open windows and doors during fogging activities. 96% of respondents are positive about taking family members with dengue symptoms to a doctor for immediate treatment. Similarly a study conducted by Podder et al[14] found that 228 (79.2%)study participants agreed to visit health facility/clinic/doctor if they have fever/suspected dengue.

The study found that 59% of participants use mosquito repellent, a study conducted by Khobragade AW et al[9] found that 295(73.75%) were using mosquito repellents like coils /creams/liquid. A study conducted by Valantine B et al[15] found that (43%) of them use mosquito coils to avoid mosquito bites. a study conducted by Mohapatra S et al[7] found that 146(65.5%) use mosquito repellent equipment (electric/

coil), 34% check for Aedes eggs and larvae inside their homes at least once a month. A study conducted by Singh Get al[16] found that 107 (90.7%) look for breeding of mosquitoes in water-holding containers .42% never check outside their homes, and 63.5% never scrub the inner side of water storage containers, 48% store water in open containers daily, 59% open windows or doors early in the morning, while 88% open windows daily in the evening.

Conclusion

We draw the conclusion that the study participant has moderate to sufficient knowledge of DF. The practice level was reasonable and the attitude level was good despite the limited level of knowledge. Consequently, there is an urgent need for awareness campaigns to increase local residents' understanding of Dengue Fever. These can be accomplished by expanding Information Education Communication /Behavioural Change Communication initiatives on DF and disseminating information on the symptoms of DF and how to manage them more widely through social media and other media sources. Above all, it must to be taught in school and university curriculum in order to increase student awareness and utilize them.

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