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Original Research Article

Knowledge, attitude and practice on dengue among residents of tribal hostel in Bilaspur: a cross-sectional study

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ABSTRACT

Background: In the present era, vector-born disease accounts for 17% of the estimated global burden of all infectious diseases. One such deadly vector-borne disease is dengue. Dengue, dengue hemorrhagic fever, and dengue shock syndrome are major international public health concerns; 2.5 billion people live in high-risk dengue areas with 50 million dengue infections worldwide annually. Aim of the research was to conduct cross-sectional knowledge, attitude and practice (KAP) study of dengue among residents of tribal hostel in Bilaspur, Chhattisgarh (C.G).
Methods: A community-based cross-sectional study was conducted among 150 students residing at a tribal hostel of Bilaspur.
Results: The study showed that 95% of the participants had previously heard about dengue. Only 34.3% of the respondents were aware that dengue is a contagious disease, and only 48.6% knew that the disease is caused by the bite of mosquito. Almost 52% were aware of the exact source of disease transmission.
Conclusions: When it came to basic knowledge about dengue, the majority of the respondents answered positively. However, there were large lacunae present within the specific knowledge of dengue such as, whether dengue is contagious, or about the biting and breeding time and site, respectively, of the mosquito.

Keywords: Dengue, Mosquito, Tribal

INTRODUCTION

In the present era, vector-born disease accounts for 17% of estimated global burden of all infectious diseases.[1] One such deadly vector-borne disease is dengue. Dengue, dengue hemorrhagic fever. and dengue shock syndrome are major international public health concerns. "Two-and-a-half-billion" people live in high-risk dengue areas with 50 million dengue infections worldwide annually.[2]

There is currently no specific treatment for dengue but the vaccine CYD-TDV has been authorized by World Health Organization (WHO).[3] *Aedes aegypti* and *Aedes albopictus* are the primary competent vectors for the dengue virus in India.[4]

Currently, India comes under category A in the dengue endemic of the South East Asian countries.[5] In India, dengue is a major public health problem and a leading cause of hospitalization and death. According to National Vector Borne Disease Control Programme (NVBDCP), in 2017 there were 1,88,401 dengue cases from all over India, with 325 reported deaths. West Bengal reported the highest number of cases with Kerala and Karnataka also being major dengue prevalent regions.

There were 89,974 dengue cases reported from 01 January to 25 November 2018, resulting in 144 deaths.[6]

According to the state government of Chhattisgarh, since 01 January 2018, 520 positive cases and 1,556 suspected cases of dengue have been reported. Of these cases 470

were reported from Durg alone, and the number of deaths reached a high of 35 in Bhilai, which is adjacent to Bilaspur.[7] Dengue had been restricted to urban areas, but now it is spreading into rural areas because of the development of rural water supply schemes, improvement of transport systems, scarcity of water, and lifestyle changes.[8]

There is a large discrepancy between the dengue burden estimated by academic groups that have notified the WHO; likely because of the lack of resources and capacity to survey dengue effectively and the fact that many countries only report laboratory-confirmed cases, which represent only small number of dengue cases reported.[9]

Tribal students mostly come from remote villages to reside in government hostel where there is always a lack of sanitation, with inadequate medical facilities compared to homes. Thus, hostellers are more susceptible to vector-borne diseases than others.

METHODS

Study design

It was a cross-sectional observational study.

Study place

The study was conducted at tribal hostel Bilaspur, Chhattisgarh.

Study setting

The setting of the study was in Chhattisgarh Institute of Medical Sciences (CIMS).

Study duration

The duration of the study was from June 2021- September 2021.

Study population

Students who were residents of the post-matric government tribal hostel in Bilaspur (C.G.) were included in the study.

Sample size

Currently 150 students reside in the post-matric government tribal hostel in Bilaspur (C.G.). Considering 10% of the students were absent or unwilling to participate, our sample size is 135 participants. We conducted four contact sessions to interview approximately 35 students at each session. Only those students who have given written consent and are present on the day of the study have been interviewed.

Inclusion criteria

Students who are residents of the post-matric government tribal hostel, and those who are willing to participate in the study after giving written consent.

Exclusion criteria

Those who did not reside in the government tribal hostel year-round, and those who were not present on the day of the study.

The questionnaire consists of four parts: a sociodemographic profile of the respondent, a section on knowledge of dengue and its vector with twelve questions, a section with five questions on attitude towards dengue and a section with nine questions on dengue-related preventive practices. Microsoft excel 2019 version was used for data entry and analysis.

This study will use four grade scale to measure the dengue knowledge of the participants.

Twelve questions directly related to the knowledge of the disease and its vector were asked of each, and four grades were assigned according to the number of correct responses- grade 1: very good-10 to 12 correct responses, grade 2: good: 7 to 9 correct responses, grade 3: average: 4 to 6 correct responses, and grade 4: poor: 0 to 3 correct responses.

Furthermore, those participants belonging to grades 1 and 2 were understood as having adequate knowledge about dengue and its vectors, while grade 3 and 4 respondents were understood as having inadequate knowledge about the disease.

RESULTS

Table 1 shows knowledge about dengue among 150 participants. The majority (95%) have heard about dengue, while 34.3% believe it is contagious. Regarding the spread of dengue, 48.6% attribute it solely to mosquito bites, with 42.9% unsure about the mosquito species responsible. Notably, 84.3% recognize a link between dengue and water collection, and 91.4% know where dengue-transmitting mosquitoes breed, with 77.1% identifying dirty water collection. Regarding the biting time of dengue mosquitoes, 50% associate it with nighttime. The rainy season (79.3%) is identified as the most common period for dengue outbreaks. Only 51.4% are aware of dengue symptoms, with high-grade fever being the most recognized (43.6%). Interestingly, 100% correctly identify that aspirin, paracetamol, and cough syrup should not be given to dengue patients. Among those aware, 55% recognize that extremes of age are most susceptible to dengue, and 58.6% would seek treatment at nearby health institutes if dengue symptoms occurred in their family. Overall, the table reflects varying levels of knowledge among participants on dengue-related aspects.

Table 2 presents the attitudes of 150 respondents towards dengue and its vectors. A significant proportion (94.3%) perceive dengue as a serious illness, while 85% believe they are at risk of contracting it. Additionally, 92.9% think dengue can be prevented. Regarding responsibility for dengue prevention and control, 61.4% believe it is the responsibility of individuals, 5.7% attribute it to the government, and 32.9% think it is a shared responsibility. Notably, 65% of respondents feel that hospitalization is required if they or their family contracts dengue. The table provides insights into the perception of dengue severity, personal risk, preventability, and the roles of individuals and the government in dengue prevention and control.

Table 3 evaluates the knowledge grading of 150 respondents regarding preventive practices against mosquito bites and mosquito breeding. The majority (97.1%) report employing preventive measures, with 61.4% using mosquito nets, 52.9% using fans, and 15.7% using mosquito coils, mats, or liquid vaporizers. While 57.1% use preventive practices only during the night, 39.3% use them both day and night. In terms of frequency, 62.9% practice preventive measures occasionally, and 20% do so always. Regarding clothing choices, 41.4% wear long-sleeved clothes, and 65.8% use methods to prevent mosquito breeding, with 51.4% engaging in proper disposal of garbage. Cleaning practices are conducted weekly by 45%, >weekly but less than a month by 13.6%, and monthly by 7.1%. Respondents predominantly check and clean garbage and trash sites (35.7%) and, notably, 100% do not use insecticide-treated bed nets in hostel rooms. The table provides insights into the frequency and types of preventive practices and cleanliness measures adopted by respondents in the context of dengue prevention.

Table 4 categorizes the knowledge of 150 respondents into four grades based on the number of correct responses out of 12 questions related to dengue. The distribution shows that 2.9% fall into grade 1, having answered 10-12 questions correctly. The majority, comprising 23.6%, fall into grade 2 with 7-9 correct responses. Grade 3, encompassing 52.9% of respondents, corresponds to those who answered 4-7 questions correctly. Lastly, grade 4 includes 21.4% of participants who provided fewer than four correct responses. This grading system provides a comprehensive overview of the varying levels of knowledge among the respondents regarding dengue-related aspects, aiding in understanding the distribution of knowledge within the surveyed population.

Table 1: Knowledge among participants about dengue (n=150).

S. no.	Questions	Frequency	Percentage
1	**Have you heard about dengue?**		
	Yes	133	95
	No	07	5
2	**Is dengue a contagious disease?**		
	Contagious	48	34.3
	Noncontagious	59	42.1
	Don’t know	33	23.6
3	**How does dengue spread?**		
	Only mosquito bite*	68	48.6
	Mosquito and other vectors	15	10.7
	Dirty drinking water and unhygienic food	25	17.6
	Don’t know	32	22.9
4	**If answer was only mosquito bite: Which mosquito species transmit dengue? (n=70)**		
	Aedes	0	0
	Anopheles	10	7.14
	Culex	0	0
	Mansonoides	0	0
	Don’t know	60	42.9
5	**Is dengue linked with water collection?**		
	Yes	118	84.3
	No	22	15.7
	Don't know	0	0
6	**Do you know where dengue-transmitting mosquito breed?**		
	Yes	128	91.4
	Dirty water collection	108	77.1
	Artificial water collection	17	12.1
	Clean water	03	2.2
	No	12	8.6

Continued.

S. no.	Questions	Frequency	Percentage
7	**What is the most favorable biting time of dengue mosquito?**		
	Early morning (sunrise to 10:00 clock)	06	4.3
	Daytime (10:00 clock to 4:00 clock)	07	5
	Evening (4:00 clock to 7:00 clock)	38	27.2
	Nighttime	70	50
	Don't know	19	13.6
8	**Which season is most common for dengue outbreak?**		
	Summer	24	17.1
	Rainy season (monsoon)	111	79.3
	Winter	05	3.6
	Don't know	00	0
9	**Do you know which of the following are symptoms of dengue fever?**		
	Yes	82	51.4
	High grade fever	61	43.6
	Myalgia (body ache)	30	21.4
	Arthralgia (joint pain)	00	00
	Cough and cold	24	17.1
	Yellowish discoloration of skin	00	00
	Rashes	03	2.1
	Retro-orbital pain	01	0.7
	Vomiting	06	4.3
	Hemorrhagic manifestations	00	00
	No	68	48.6
10	**Do you know which medication should not be given to a patient with dengue fever?**		
	Yes	00	0
	Aspirin	00	0
	Paracetamol	00	0
	Cough syrup	00	0
	No	140	100
11	**Do you know which of the following groups are most susceptible to dengue?**		
	Yes	77	55
	Extremes of age	72	51.4
	Pregnant women	12	8.6
	Obese	00	00
	People on steroids and NSAIDs	00	00
	People with haemoglobinopathies and chronic diseases	00	00
	Young people	05	3.6
	No	63	45
12	**Where will you go for treatment - if symptoms of dengue in your family?**		
	Self-medication	30	21.4
	Home remedies	14	10
	Nearby health institutes	82	58.6
	Don't know	14	10

Table 2: Attitude of the respondents toward the disease and its vectors (n=150).

S. no	Questions	Frequency	Percentage
1	**Do you think dengue is a serious illness?**		
	Yes	132	94.3
	No	02	1.4
	Don't know	06	4.3
2	**Do you think you are at risk of contracting dengue?**		
	Yes	119	85
	No	11	7.9

Continued.

S. no	Questions	Frequency	Percentage
	Don't know	10	7.1
3	**Do you think dengue can be prevented?**		
	Yes	130	92.9
	No	08	5.7
	Don't know	02	1.4
4	**Who is responsible for dengue prevention and control?**		
	Individual only	86	61.4
	Government only	08	5.7
	Both the government and individual	46	32.9
	Don't know	0	0
5	**If you or your family contracts dengue, do you think hospitalization is required?**		
	Yes	91	65
	No	46	32.9
	Don't know	03	2.1

Table 3: Grading of knowledge of respondents (n=150).

S. no	Practices	Frequency	Percentage
1	**Do you use any of these preventive practices to reduce mosquito bites?**		
	Yes	136	97.1
	Mosquito nets	86	61.4
	Mosquito coils, mats or liquid vaporizers	22	15.7
	Repellent oils	0	00
	Repellent ointments and sprays	0	00
	Fumigation with insecticides	0	00
	fans	74	52.9
	Screening of ventilation holes and windows	12	8.6
	No	04	2.9
2	**When do you use the above preventive practices?**		
	Only during night	80	57.1
	Both day and night	05	3.6
	According to need	55	39.3
	Don't know	0	0
3	**How often do you use the above preventive practices?**		
	Always	28	20
	Occasionally	88	62.9
	Rarely	24	17.1
	Never	0	00
4	**How frequently do you wear long-sleeved clothes?**		
	If yes,	58	41.4
	Always	05	3.6
	Occasionally	41	29.3
	Rarely	12	8.6
	No	82	58.6
5	**Do you use any of the following methods to prevent mosquito breeding?**		
	If yes,	92	65.8
	Remove\drain stagnant water	52	37.1
	Add larvicidal fish to ponds	0	0
	Add sand to fill up empty tires and containers	0	0
	Proper disposal of garbage	72	51.4
	Proper cleaning of utensils and containers that can collect water	02	1.4
	No	48	34.3
6	**If yes, how frequently do you practice the above-mentioned methods?**		
	Weekly	63	45

Continued.

S. no	Practices	Frequency	Percentage
	>Weekly but in less than a month	19	13.6
	Monthly	10	7.1
	1-2 times a year	0	0
7	**Which sites do you check and clean in your hostel room and premises?**		
	Water storage jars and containers	08	5.7
	Coolers, old tires, and pots	02	1.42
	Garbage and trash	50	35.7
	Dirty water collection and ditches	13	9.3
	None	67	47.9
8	**How frequently do you participate in cleanliness and hygiene in your hostel premises?**		
	Always	28	20
	Occasionally	62	44.3
	Rarely	24	17.1
	Never	26	18.6
9	**Do you use insecticide-treated bed nets in your hostel rooms?**		
	Yes	0	0
	No	140	100

Table 4: Grading of knowledge of respondents (n=150).

Grading of knowledge	Number of correct responses (out of 12)	Frequency	Percentage
Grade 1	10-12	4	2.9
Grade 2	7-9	33	23.6
Grade 3	4-7	74	52.9
Grade 4	<4	30	21.4

DISCUSSION

Knowledge

In this study, almost all the participants (95%) had previously heard about dengue, probably because the study was conducted after an epidemic in Bhilai (a neighboring city of Bilaspur) and because of exposure to mass media such as television and newspapers, and the respondents are post-matric students. Thus, the have basic knowledge about various disease vectors. This study shows 34.3% of the respondents were of the view that dengue is contagious disease (Table 1) with 23% not sure whether it is contagious or not. In a similar study conducted by Taksande et al the knowledge about transmission of the disease showed that 48.6% of the respondents knew that only mosquito bites cause the disease whereas almost 52% were unaware of the exact source of disease transmission (Table 1).[10] In other study conducted by Radhika et al concluded that study population had a good knowledge of "disease transmission".[11] The majority of students (over 75%) knew that dengue is a viral disease transmitted by mosquito vectors belonging to genus Aedes. Only 12% were aware of the actual breading site of the dengue mosquito (Table 2). The majority of respondents were not aware of the contraindicated medicines for dengue (Table 1) probably because of the lack of exposure to specific disease traits. The lack of government programs to sensitize them to these facts played a major role. Fifty-eight percent of respondents received treatment at a health institution for fever or joint pain during the peak months of dengue, whereas 21% took self-medication and 10% used home remedies. This is consistent with the finding of the current study because no one knew about the contraindicated medicines for dengue, so they took self-medication like NSAIDs. Forty-two percent of the respondents were not conscious of the importance of visiting a health institution (Table 1) because they did not think that going to health institutions was a priority during peak dengue season. This was likely due to lack of knowledge about symptoms.

Attitude

The attitude towards illness was admirable (Table 2). Almost 94% considered dengue a serious illness. The majority of participants (95.7%) believed that dengue could be prevented. The study found that 61.4% respondents were of the view that it is the individual's responsibility to protect himself from dengue. This is consistent with a study by Usman et al in schools of Jeddah (65%).[12] Mahendraker et al concluded in their cross-sectional study that majority of the respondents had an excellent attitude toward dengue (84.4%).[13] This result was supported by previous study conducted by Rozita et al who found that the urban community in Kuala Lumpur also had good attitude toward dengue.[14]

Practice

Regarding the measures to prevent contact with mosquito, mosquito coils or liquid vaporizer was used by 15% and a

bed net was used overnight by 61% (Table 3). This is inconsistent with the study about the knowledge, attitude and practice of dengue conducted by Taksande et al in a rural area of Central India (57.08%).[10] The respondents in the current study, 8.6% practiced screening of windows and holes (Table 3), 31% removed or drained stagnant water, and 51% used proper waste disposal (Table 3). In the current study, almost 41% of respondents wore long-sleeved clothes during the peak season of dengue (Table 3). Mahendraker et al revealed that the residents had poor practice toward dengue.[13] A study by Mohapatra et al concluded that, the percentages for knowledge, attitude and practice were 52.5%, 77.1% and 65% respectively.[15]

Limitations

The study was conducted in tribal hostel so its result can't be generalized to the general population.

CONCLUSION

The majority of respondents showed a favorable response regarding their knowledge of dengue fever. However, there were large lacunae present within the specific knowledge of dengue. Such as whether it is contagious and what are the biting and breeding times and sites, respectively, of the mosquito. Overall, a positive attitude for the disease can be concluded from the study with a majority of respondents realizing that the disease can be fatal and that they are at risk of contracting the disease. However, they also knew that prevention is possible. Almost 62% of the respondents used mosquito nets for prevention, but because a majority were unaware of the correct biting time of the dengue mosquito, only 4% used mosquito nets during the daytime thus rendering the nets less effective.

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