

Original Article

Are Dengue Patients Aware Enough ? — A Cross-sectional Study among Dengue In-patients in a Rural Based Tertiary Hospital in West Bengal

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Background : Dengue fever is endemic in many parts of South-east Asia and the tropical countries including India. It takes a huge toll on lives every year during the rainy season due to the upsurge of the vector mosquitoes. Numerous studies have been performed on the Knowledge, Attitude and Practice (KAP) about Dengue prevalent in the community but very few have been performed among admitted patients.

Aims and Objectives : To find out the Socio-demographic profile, predictors of KAP and the correlation among KAP parameters among in-patients of dengue.

Results : In 50.7% patients had a good KAP score. Age, Sex and Floor of residence had significant associations with KAP and there was a good correlation between Knowledge, Attitude and Practice.

Conclusions : The KAP scores were not satisfactory enough even though the subjects were going through the suffering of dengue which potentiates the need for a robust Information, Education and Communication (IEC) campaign for the admitted patients from the authorities.

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Key words : Dengue, In-patients, KAP, Correlation, Predictors.

Dengue fever is endemic in various parts of India including West Bengal. Many regions of the world for example the South-east Asian region and the islands of the Western pacific represent a significant proportion of the Dengue global burden. It is endemic in some parts of India. The number of Dengue cases has currently been on a rising trend in India¹. Recently after the COVID pandemic managing Dengue patients has become a real challenge to healthcare professionals. During the indoor rounds in hospitals, it has been noticed that indoor patients and their relatives lack knowledge about Dengue and other mosquito-borne infections endemic in the community. This knowledge deficiency was noticed even among the patients suffering from dengue. Even on the day of discharge, they remain sternly ignorant about the facts. The global incidence of Dengue fever and its complications are increasing at an alarming pace and it poses a threat to almost more than a half of the world's population. An estimated 100-400 million infections occur each year worldwide². Dengue/Dengue Haemorrhagic Fever (DHF) is a fast upcoming disease

Editor's Comment :

■ Lack of awareness regarding Dengue Fever symptomatology and prevention is quite widespread in the community as is evident by a lot of studies. But the situation remains the same or even worse in those who have suffered from it and similar assessments are scarce. Thus active IEC campaigns, as done outdoors, are also required indoors to educate the sufferers as they may turn out to be a useful resource for experience sharing with the community after their discharge. A lot of administrative efforts need to be kickstarted to support this beneficial purpose.

in India. It is a major contributor of sporadic outbreaks in the country and finds its place among the many endemic diseases of the country³. A survey on 625 Bangladeshi University students reported 66.67% of students had exemplary knowledge of Dengue with 89% good attitude and 68% good practice⁴. Though there is adequate KAP related to Dengue still there is increased requirement for awareness activities⁵. Prevention may be the only way to combat any emergent situation in Dengue, as an effective prophylaxis or working vaccine is not known till date⁶. Certain health behaviors like bearing a positive attitude towards Dengue, possessing adequate knowledge and proper preventive procedures may only help to reduce Dengue fever in the community^{7,8}. Our study is thus intended to assess the Knowledge, Attitude and Practice (KAP) related to Dengue infection amid indoor admitted patients suffering from Dengue fever, their predictors and the correlation between the different parameters. Numerous community based surveys are

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being conducted related to the same issue in various parts of the world but KAP surveys on patients already suffering from Dengue ie, indoor admitted patients is intended to give an impression of the burden of reluctance related to disease prevention. This study may also provide an imprint of the requirement of an active hospital indoor Awareness program during the admission period which finally can lead to behavioral change.

MATERIALS AND METHODS

An Observational, Descriptive and Cross-sectional study was conducted among Dengue fever patients admitted at Diamond Harbour Government Medical College & Hospital for 3 months from September, 2022 to November, 2022 after proper ethical approval. The prevalence of awareness about Dengue was taken from a previous study to be 90% where it was noticed that almost 82% of the population was aware of Dengue fever as a Mosquito-borne disease⁹. This information was also supported by another study conducted by Podder D from West Bengal, Kolkata¹⁰. Contemplating the value of Z as 1.96 (at 95% confidence interval) and an absolute error of 5%, the desired sample size was calculated as 138. Also approximating a denial rate of 10% the final sample size came out to be 152. All the adult patients suffering from Dengue infection were included in the study. Population below 18 years of age were excluded from the study. A questionnaire related to Knowledge, Attitude and Practice on Dengue was prepared and a set of 20 questions were made. The internal validity of the total questionnaire set was calculated with resultant value of Cronbach's Alpha as 0.7, on the basis of a pilot testing on 20 patients different from the study sample. Questionnaire was administered by face-to-face interview to only those subjects who gave a verbal informed consent and the whole process was monitored by an independent observer for quality control purpose. The data after collection were entered into Microsoft Excel version 2016 and were collated and corrected for incorrect entries. They were then transferred to SPSS version 23 for further exploration. Descriptive analyses were performed using frequency distribution tables and mean, numbers and percentages of each variable was found out and recorded. The mean of each of the Knowledge, Attitude and Practice scores were established and compared using correlation coefficients and p values. Multivariate regression analyses were then performed to find out the predictors of Knowledge, Attitude and Practice about Dengue and were represented in the form of the table showing the adjusted odds and the p-values. A p-value of <0.05

was deliberated as statistically substantial at a 95% confidence interval.

ANALYSIS AND RESULTS

The study was conducted on 152 patients admitted in the indoor unit of the General Medicine Department of Diamond Harbour Government Medical College and Hospital. Table 1 illustrates the study population demographic characteristics. The subjects are mostly equally distributed between females and males with females being a majority (50.7%). The subjects mostly consisted of a young population, married and Hindu in religion. 86.8% of the subjects were literate and 97.4% of the population were affected for the first time. The subjects were residents mostly of the rural areas so 69.1% of them stayed on the ground floor.

Table 2 summarizes the correct responses given by the study subjects on the questions on Knowledge, Attitude and Practice regarding Dengue. 48.7% of the subjects had a good knowledge, 54.6% had a good attitude while only 34.9% of the subjects converted the Knowledge and Attitude to a good Practice. Overall, 50.7% of the subjects had a good KAP score. Most of the people knew that Dengue is caused by a mosquito (94.7%), Dengue is deadly (67.8%) and the principal symptoms are fever and joint pain (72.4%). But the causative agent of Dengue as a virus (32.2%) and as Aedes mosquito (24.3%) was only known to few. Also, causative agent of Dengue needs clean water for breeding, bites mostly during the late night and early morning, Dengue causes bleeding and is transmitted during rainy season was known by 47.4%, 57.2%, 50.7% and 55.9% respectively. Only age was associated with knowledge ($p=0.018$) where younger people showed lower levels of overall knowledge than older people as shown by Table 3.

About questions on attitude, maximum people (89.5%) wanted Dengue case reduction in their areas and wished to consult a doctor when suffering from fever (75.7%). But only 30.3% and 34.9% of the people thought that it's a collective responsibility to reduce Dengue and were aware of the various IEC materials in their surroundings. Most of the people understood it as an individual responsibility to reduce Dengue (67.1%). People living on the ground floor had a positive association with good attitude ($p=0.005$) towards Dengue as shown in Table.

The overall practice of the study subjects for prevention of Dengue was poor. The only good practice was use of mosquito nets by 72.4% of the people. Practice towards Dengue prevention had a positive association with male subjects ($p=0.014$) and living on the ground floor ($p=0.016$).

Socio-demographic Variables		Frequency (%)
Age	< Mean	87 (57.2)
	> Mean	65 (42.8)
Gender	Male	75 (49.3)
	Female	77 (50.7)
Religion	Hindu	90 (59.2)
	Muslim	62 (40.8)
Marital Status	Married	115 (76.3)
	Single	32 (20.4)
	Widow	5 (3.3)
Educational Status	Illiterate	20 (13.2)
	Literate	132 (86.8)
Occupation	Employed	70 (46.1)
	Housewife	63 (41.4)
	Unemployed	19 (12.5)
Floor of Residence	Ground Floor	105 (69.1)
	1 st Floor	29 (19.1)
	2 nd Floor	15 (9.9)
	3 rd Floor	3 (2.0)
Past History of Dengue	No	148 (97.4)
	Yes	4 (2.6)

Further on conduction of the correlation test, there was a significant positive correlation between knowledge-attitude ($r_s = 0.517$, $p < 0.000$), knowledge-practice ($r_s = 0.498$, $p < 0.000$) and attitude-practice ($r_s = 0.445$, $p < 0.000$). the degree of correlation can be considered to be good ($r_s < 0.55$). It was also seen that subjects who had a good knowledge were 3.5 times likely to have a good attitude (OR 3.527, 95% CI:1.718-7.244) and 3.2 times likely to have a good

practice (OR:3.289, 95% CI:1.535-7.051). Similarly reciprocating the fact participants with a good attitude were 4 times likely to have a good practice (OR:4.007, 95% CI: 1.909-8.409).

DISCUSSION

The study was conducted on 152 patients admitted with dengue fever in the in patient unit of the General Medicine Department of Diamond Harbour Government Medical College and Hospital, a rural based Tertiary Hospital in West Bengal, India. The subjects are mostly equally distributed between females and males with females comprise a slight majority (50.7%). Similar studies conducted in Tanzania showed female preponderance¹¹. However, males constituted the majority of the study subjects in studies conducted by Prof Oche OM in Nigeria¹² and Tan, *et al* in Taiwan¹³. The subjects mostly consisted of a young population in present study. This observation was similar to the studies conducted by Prof Oche OM¹² in Nigeria in 2021 and Kazaura M in Tanzania in 2019¹⁴.

Most of the people in our study knew that Dengue is caused by a mosquito bite (94.7%). Similar observations of higher knowledge among the subjects regarding the fact that transmission of Dengue fever occurs by the bite of mosquito were reported by Oche OM study⁹ and the study conducted by Huong Van Nguyen in Vietnam¹⁵. But only 32.2% subjects in our study knew that the causative agent of Dengue fever

is a virus. In the study conducted by Farizah H in Malaysia, only 2.5% of the respondent knew that Dengue is caused by Dengue virus¹⁶.

In the present study, 24.3% of the subjects knew that Dengue is spread by Aedes mosquito. Similar observation was also made by Oche OM in Nigeria⁹. This contrasted with studies conducted by Rahman MM among University Students of Dhaka City (88.96%), Bangladesh and Mohammed Ali Saghir in Shabwah Governorate, Yemen (75%)^{4,5}. Also, the causative agent of Dengue needs clean water for breeding was known by 47.4%. This finding is

Questions	Correct Responses (%)
Knowledge :	
Is Dengue caused by a mosquito bite?	144 (94.7)
Is Dengue caused by a virus?	49 (32.2)
Is Dengue caused by aedes mosquito?	37 (24.3)
Do you know that a small amount of accumulated clean water is a good breeding space for aedes mosquito?	72 (47.4)
Do you know that fever and joint pain are the principal symptoms of Dengue?	110 (72.4)
Can Dengue cause bleeding?	77 (50.7)
Can Dengue cause death?	103 (67.8)
Is Dengue transmitted mostly during the rainy season?	85 (55.9)
Can Dengue be transmitted from mother to fetus?	106 (69.7)
Does aedes mosquito bite mostly in late night and early morning?	87 (57.2)
Attitude :	
Do you want Dengue cases to reduce in your area?	136 (89.5)
Do you check the existence of possible mosquito breeding sites around your area?	72 (47.4)
Do you wish to consult a doctor early if you suffer from fever?	115 (75.7)
Do you feel responsible to prevent and reduce Dengue cases in your locality?	102 (67.1)
Do you think all of us should own the responsibility to control Dengue?	46 (30.3)
Are you aware of the various IEC materials displayed in the hospital around you?	53 (34.9)
Practice :	
Do you have the practice to call authorities for spraying?	48 (31.6)
Do you contact the health authorities for fogging?	68 (44.7)
Do you regularly use mosquito net?	110 (72.4)
Do you take over the counter medications to treat your fever usually?	71 (46.7)

Table 3 — Predictors of KAP About Dengue through Multivariate Analysis

Variables		Knowledge		Attitude		Practice	
		AOR	P	AOR	P	AOR	P
Age	<mean	0.396 (0.183-0.855)*	0.018	1.260 (0.584-2.721)	0.556	0.688 (0.309-1.529)	0.359
	>mean	1		1		1	
Sex	Male	1.138 (0.386-3.358)	0.815	2.099 (0.706-6.235)	0.182	5.219 (1.401-19.451)*	0.014
	Female	1		1		1	
Religion	Hindu	1.038 (0.513-2.097)	0.918	1.434 (0.709-2.902)	0.316	1.857 (0.882-3.910)	0.103
	Muslim	1		1		1	
Marital status	Married	0.626 (0.244-1.609)	0.331	1.200 (0.469-3.070)	0.704	0.503 (0.184-1.376)	0.181
	Single	1		1		1	
Education	Illiterate	2.111 (0.645-6.903)	0.217	1.945 (0.627-6.036)	0.250	0.537 (0.174-1.654)	0.278
	Literate	1		1		1	
Occupation	Employed	0.628 (0.221-1.786)	0.383	1.213 (0.435-3.382)	0.712	0.393 (0.110-1.405)	0.151
	Unemployed	1		1		1	
Floor of residence	Ground floor	1.836 (0.855-3.939)	0.119	3.088 (1.395-6.838)*	0.005	2.772 (1.210-6.352) *	0.016
	Upper floors	1		1		1	
Other family members	Unaffected	1.910 (0.205-17.749)	0.570	2.809 (0.244-32.364)	0.408	0.946 (0.071-12.682)	0.966
	Affected	1		1		1	

*denotes significant values at $p < 0.05$, 1 is taken as referend value for multiple logistic regression.

analogous with the study conducted by Rahman MM in Bangladesh (54.24%)⁴. Our study reported that 57.2% people know about the biting behaviours of Aedes mosquito in early morning and late night, whereas the study conducted by Rahman MM in Bangladesh reported that 74.08% students were aware of the fact⁴. The principal symptoms of Dengue as fever and joint pain were known by 72.4% people. They were similarly identified by 87.52% of subjects in a study conducted by Rahman MM⁴. Similar finding was also reported by Oche OM in Nigeria where fever was identified by 94.7% and muscular pain was identified by 93.5% subjects as symptoms of Dengue fever¹². This contrasted with the study by Kazaura M in Tanzania where symptoms of Dengue fever were identified by only 14.3% of subjects¹⁴. The fact that Dengue is deadly was known among 67.8% cases in present study. 74.6% of people strongly agreed that Dengue is a serious disease in study conducted by Mohammed Ali Saghir in Yemen⁵. Rahman MM reported that 93.12% subjects were aware of the fact that Dengue causes death in study among students of Dhaka city in Bangladesh⁴.

Overall, 48.7% of our respondents had sufficient knowledge of the cause, transmission, principal symptoms of dengue fever. The study conducted by Oche OM revealed that most of the respondents had good knowledge of causes, spread and Dengue fever symptoms with a score of 75% and above⁹. A similar study by Farizah H showed that a good knowledge of both Dengue and Aedes was possessed by 68.5% of the respondents¹⁶. In another study by Rahman MM, around 80% of the students who participated in the study reported correctly about the symptoms, effect,

mosquito type, phenotype and cleanliness⁴. Kazaura M in his study in Tanzania reported that low knowledge about Dengue transmission, symptoms and preventive mechanisms was present in more than three quarters of the adult communities¹⁴. It was found that a good level of knowledge about DF was possessed by only 53.7% of the people in the study by Saghir MA⁵.

About questions on attitude, maximum people (89.5%) wanted Dengue case reduction in their areas. But only 30.3% and 34.9% of the people in our study thought that it's a collective responsibility to reduce Dengue and were aware of the various IEC materials in their surroundings respectively. In Rahman MM study 34.08% people strongly expressed their willingness to take part in Dengue fever control⁴, whereas 76.2% subjects thought that there should be an active participation by the communities for vector control in Dengue Fever in study of Saghir MA³. 86.8% respondents considered themselves as an important to fight Dengue spread in study conducted by Nurul Akmar Ghani in selected hotspot areas of Dengue in Selangor, Malaysia¹⁷. A substantial portion of the respondents (57.0%) in Farizah H study¹⁶ felt that controlling Aedes mosquito was their own responsibility, while another 9.5% transferred the responsibility on the Government. Another one-third of the responders felt of it as a shared responsibility. 47.4% people checked the existence of possible mosquito breeding sites around their locality in our study. This was comparable to the study conducted by Rahman MM in Bangladesh where around 47.84% respondents were of the opinion of regular mosquito breeding site removal even during non-febrile periods⁴.

The overall practice of the study subjects for

prevention of Dengue was poor. Only 34.9% of the subjects in our present study converted the knowledge and attitude to a good practice. 31.6% of subjects had the practice to call authorities for spraying in our present study. 88.1% people used insecticide sprays to reduce mosquitoes populations in study by Saghir MA⁵. 44.7% subjects in our study used to contact the health authorities for fogging. In contrast, Rahman MM reported that only 25.6% of the respondents used to call the municipal authority for fogging⁴.

A good practice noted in our study was use of mosquito nets by 72.4% of the people. It was even higher in study done in Yemen (89.2%)³. In contrast to this, another study by S Matta in India reported that 20.2% people were using bed nets for personal protection against mosquito bite¹⁸.

Overall, 50.7% of the subjects had a good KAP score. Practice towards Dengue prevention had a positive association with male subjects ($p=0.014$) and those living on the ground floor ($p=0.016$). This contrasted with the study by Farizah H that reported no apparent differences between male and female in terms of the practice of *Aedes* breeding prevention¹⁶. On the other hand, Female respondents had comparatively better attitudes and practices related to Dengue than their male counterparts in study by Rahman MM⁴.

There was a positive correlation between knowledge-attitude ($r_s = 0.517$, $p < 0.000$), knowledge-practice ($r_s = 0.498$, $p < 0.000$) and attitude-practice ($r_s = 0.445$, $p < 0.000$) in our present study which was statistically significant^{4,26}. Similar associations between Knowledge, Attitude and Practice were also found in study by Rahman MM in Bangladesh and Dhimal, *et al* in Nepal^{4,26}. Saghir MA revealed that in spite of there being a significant correlation between the KAP domains in his study, there was a weak linear relationship⁵. On the other hand statistically significant correlations between the Knowledge, Attitude and Practice domains were totally absent in the study conducted by Phuyal P from Central Nepal. The overall practice score obtained was higher than the overall knowledge score. Similar findings like his study were reported in studies from Sri Lanka¹⁹, Vietnam^{20,21} and Malaysia²² but contrary to other studies of Philippines²³ and Jamaica²⁴, which reported high levels of knowledge but low level of practices. In another study conducted by Das S from Dhaka, Bangladesh again concluded the importance of mass awareness programs sponsored by the Government²⁵. It was seen in our study that subjects who had a good knowledge were 3.5 times likely to have a good attitude and 3.2 times

likely to have a good practice. Similarly, a good attitude were 4 times likely to have a good practice.

CONCLUSION

Respondent's knowledge and attitude concerning Dengue fever and its control were not good enough. It was found that the knowledge and practice were significantly associated just like knowledge and attitude. This absence of knowledge about the illness, its transmission and prevention, made the population highly vulnerable to contract the virus. This provides an impetus to the idea that the health education programmes should be intensified with a focus to improve the knowledge of Dengue fever, its cause, transmission and principal symptoms. A proposal for a holistic preparedness for Dengue fever by the various stakeholders can be drawn up, which can ultimately contribute in reducing frequent Dengue fever outbreaks in the community which has been represented by our study.

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