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Research Article

Knowledge, attitude and practice regarding dengue fever among general patients of a rural tertiary-care hospital in Sasaram, Bihar

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ABSTRACT

Background: Dengue fever (DF) is a rapidly spreading mosquito-borne viral illness all over the world. DF has expanded to new countries and from urban to rural areas. DF has emerged as a notable public health problem in recent decades. Rapid urbanization, environmental changes and neglected rural areas result in vector breeding which causes rise in dengue outbreaks. The objective of this study was to assess the knowledge, attitudes and practices (KAP) regarding DF among patients of a rural tertiary care hospital in Sasaram, Bihar.
Methods: We conducted a hospital based cross-sectional survey among general OPD patients using a pre-designed questionnaire. The study was approved by institutional ethical committee. KAP assessment was done by a scoring system. KAP of DF among study population was represented as proportions (%).
Results: Out of 223 individuals interviewed, 93% identified fever as a cardinal symptom of DF. The knowledge about other symptoms of DF was low among participants. Only 17.5% knew that DF is transmitted by Aedes mosquitoes. The correct timing of biting time was known by only 14%. Despite low knowledge, the participants had good attitude and most of them reported good preventive practices against dengue prevention and control.
Conclusions: The knowledge of participants of our study was low and the attitude and practice was good in lieu of protection from other mosquito borne diseases. Therefore massive awareness campaigns are urgently required to protect the health of people against DF and to limit in future spread of DF in this part of our country.

Keywords: Dengue fever, Knowledge, Attitude, Practice, Rural, Sasaram

INTRODUCTION

Dengue fever is caused by a mosquito-borne human viral pathogen that belongs to the genus Flavivirus of the family Flaviviridae. Dengue fever predominantly occurs in Southeast Asia, the Americas, Africa and the Caribbean Islands. There has been a gradual global upsurge in the number of dengue cases in recent years.[1] 390 million dengue infections occur every year, of which 96 million manifests clinically. Dengue fever can occasionally develop into severe dengue that can cause serious illness and death. There is no specific treatment for dengue, but early detection and access to proper medical care lowers fatality rate below 1%.[2]

India is endemic for dengue fever and last year (Till 30 November, 2015) there has already 90040 cases and 181 deaths reported in India according to ministry of health family welfare. In Bihar, 1700 cases were reported.[3] In India, during the last 50 years a large number of physicians have treated and described dengue disease, but the scientific studies addressing various problems of dengue have been carried out at limited number of centres.[4]

People have inadequate knowledge about dengue and its preventive methods. They need more understanding of dengue fever. There is a need to make rural people aware of different preventive practices and reduce knowledge application gap. There is a need for information,

education and communication programmes to combat problems related to this disease.[5]

The human habit of storing water in their homes leads to breeding of Aedes mosquitoes, vector of dengue. Furthermore, rainfall leads to artificial collection of water in discarded coconut shells, tires, and other materials. An important aspect of dengue control is awareness of dengue signs and symptoms, transmissions and preventive strategies among general population. Therefore the present study aimed to assess the knowledge, attitude and practice regarding dengue fever among patients attending general OPD of a rural tertiary care hospital in Sasaram, Bihar.

METHODS

The study was conducted in Narayan Medical College & Hospital, a rural medical college located in village Jamuhar, District Sasaram, India. The hospital caters mainly to rural and semi-urban patients. A descriptive cross-sectional study was conducted in November 2015 and December 2015. The study setting was a General outpatient department (OPD). The study population included every second patient of age more than or equal to 20 years coming out of general OPD. The participants were the residents of Sasaram, who were living there for at least one year. The study tool was a pre-designed and pretested schedule 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. Cronbach's Alpha was used to assess the reliability coefficient which is a measure of the internal consistency of the questionnaire. The result showed that Chronbach's alpha coefficient of KAP domain were 0.81, 0.71 and 0.73 respectively. Interns were recruited and trained for data collection. The same individuals were involved throughout the data collection process.

There is a paucity of data regarding dengue knowledge, attitude and practices in this area. Therefore we assumed the most statistically conservative response distribution possible: 50%. To capture a representative sample of the population of Sasaram (1,31,172) with 80% confidence and a 5% margin of error, we estimated that a minimum of 165 persons were required (Raosoft Inc sample size calculator). We interviewed 235 patients during two months of study period.

The protocol of this study was approved by ethical committee of the institution. 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 were double-checked and verified on the same day for completeness and consistency. All data files were checked and cleaned by two of the authors before analysis. KAP assessment was executed using a scoring system. 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). Each correct answer was scored and wrong answers 0. We pooled "Do not know (DNK)" responses with wrong answers and scored them as 0 which is a conventional practice as "DNK" responses either come from the least knowledgeable respondents or the vast majority of those saying "DNK" really do not know.

A modified B. G. Prasad criterion of 2014 was used to find socio-economic status of our study population. Data were entered in MS Excel and analysed by statistical package SPSS software, version 16.0. Spearman's rank correlation (rs) was used to calculate correlation values between KAP scores because the KAP scores were not normally distributed as revealed by a Shapiro-Wilk normality test.

RESULTS

Out of 235 participants, a total of 223 responded to the questionnaire giving a response rate of 95%. Table 1 depicts the socio-demographic details of the study subjects. The study showed that the age of the respondents (n=223) varied from 20 to 89 years (Mean-42 yrs, SD- 14.3 yrs). Most (35%) of the participants were in the age group 31-40 years. There were 134 males and 89 females giving a male to female sex ratio of 1.5:1. Only 8.1% of study participants were illiterate. According to socio-economic status, 13.9% of participants were from upper class while 18.4% were from lower class.

The majority (93.3%) of the participants were able to identify fever as an important symptom of DF. However, when further queried about the typical symptoms of DF, a significantly lower number of participants were able to correctly identify these. A good percentage of participants (56.6%) knew that not all mosquitoes can transmit dengue but only few (17.5%) knew that Aedes mosquitoes transmit it. On the other hand, more than half of the participants were aware of the fact that flies and ticks do not transmit dengue. About 66.8% of the participants responded that DF could be contracted through blood transfusion (Table 2).

Figure 1 presents knowledge of participants about biting time of dengue mosquitoes. Only 14% knew that these mosquitoes mostly bite in day time. Figure 2 presents findings on sources of information on DF. The majority of the research participants reported that they had heard

of DF through the TV/ Radio (84%) followed by newspaper (42%).

Table 1: Socio-demographic profile of the study population (N= 223).

Variable	No (%)
Age group (Years)	
21-30	48 (21.5)
31-40	78 (35.0)
41-50	35 (15.7)
51-60	18 (8.1)
>60	44 (19.7)
Sex	
Male	134 (60.1)
Female	89 (39.9)
Residence	
Rural	93 (41.7)
Semi-urban	130 (58.3)
Marital Status	
Single	27 (12.1)
Married	195 (87.4)
Widowed	1 (0.4)
Education Level	
Illiterate	18 (8.1)
Primary	65 (29.1)
Secondary	64 (28.7)
UG and above	76 (34.1)
Occupation	
Farmer	35 (15.7)
Service	49 (22.0)
Business	30 (13.5)
Housewife	68 (30.5)
Others	41 (18.4)
Socio-economic Status	
Class I	31 (13.9)
Class II	61 (27.4)
Class III	50 (22.4)
Class IV	40 (17.9)
Class V	41 (18.4)

Table 3 summarizes participants' attitude regarding DF. Most of them strongly agreed (50.7%) or agreed (37.2%) that DF is a serious illness. Thus, 81% of the participants effectively appreciated the serious nature of the disease. None of the participants strongly disagreed on facts related to DF. Also, about 80% of participants strongly agreed (21.1%) or agreed (58.7%) that the disease is preventable. Almost 90% believed that dengue can be prevented by controlling breeding sites of mosquitoes. Nearly half of the participants disagreed to this proposition that it is only governments' responsibility to control mosquitoes. This is indicative of the fact that general public is very much responsible as almost 90% of them thought that everybody should actively participate in controlling mosquitoes.

Almost all respondents stated that preventing mosquito-man contact is the best strategy for the prevention of DF. Table 4 shows the different measures employed by participants to protect themselves from DF. Almost all participants have the habit of using mosquito net. Nearly half of them use insecticidal sprays to reduce mosquitoes and equal number of them used screen windows. Mosquito repellents are also favoured by them. Nearly 94% covered water containers at home.

The mean scores obtained by participants was as follows: Knowledge-12.6 (Minimum-5, Maximum-24, SD-4.1), Attitude- 6.17(Minimum-2, Maximum-8, SD-1.3) and Practice- 9.1 (Minimum-2, Maximum-14, SD-2.6). We calculated percentages of mean scores of participants from 24 questions of knowledge, 8 questions of attitude and 14 questions of practice. The percentages for knowledge, attitude and practice were 52.5%, 77.1% and 65% respectively. The correlation of KAP scores overall revealed a significant positive correlation among knowledge-attitude (r_s= 0.21, p=0.002), knowledge-practice (r_s= 0.28, p<0.001) and non-significant although positive correlation among attitude-practice (r_s= 0.06, p=0.323). However, the degree of correlation was fair (r_s<0.5).

DISCUSSION

The findings of our study suggest that there are relatively average knowledge, attitudes and practices regarding DF and its control among patients of a rural medical college and hospital despite belonging from a rural background.

Fever as an important symptom of DF was identified by many studies.[6,7] Many respondents could not correctly identify typical symptoms of DF apart from fever and headache. A study done in Nepal identified similar findings.[8]

Although our study showed a little less knowledge among respondents about different symptoms of DF when compared to a study done by Itrat *et al* in a cosmopolitan city.[9] The reason for the difference might be attributed to the low literacy level among participants. This is an area which needs attention because it is important for the modification of health seeking behaviour by early identification of severe cases and their prompt and timely management. Most respondents in our study reported that television and radio had been their predominant sources of information on DF followed by newspapers and health professionals. Similar findings were reported from Jamaica, Laos and the Philippines.[10-12]

Table 2: Knowledge of symptoms, signs and transmission of dengue fever (N= 223).

Variables	Yes (%)	No (%)	DNK (%)
Is fever a symptom of DF?	208 (93.3)*	4 (1.8)	11 (4.9)
Is Headache a symptom of DF?	172 (77.1)*	8 (3.6)	43 (19.3)
Is Joint pain a symptom of DF?	116 (52.0)*	15 (6.7)	92 (41.3)
Is muscle pain a symptom of DF?	95 (42.6)*	21 (9.4)	107 (48.0)
Is pain behind the eyes a symptom of DF?	80 (35.9)*	21 (9.4)	122 (54.7)
Are Nausea/ Vomiting symptoms of DF?	107 (48.0)*	29 (13.0)	87 (39.0)
Is rash a symptom of DF?	89 (39.9)*	30 (13.5)	104 (46.6)
Is diarrhoea common in DF?	60 (26.9)*	45 (20.2)	118 (52.9)
Is stomach pain common in DF?	83 (37.2)*	42 (18.8)	98 (43.9)
Can all mosquitoes transmit DF?	54(24.2)	126(56.5)*	43(19.3)
Do the *Aedes* mosquitoes transmit DF?	39(17.5)*	23(10.3)	161(72.2)
Do flies transmit DF?	29(13.0)	116(52.0)*	78(35.0)
Do Bugs/Ticks transmit DF?	28(12.6)	128(57.4)*	67(30.0)
Does person to person contact transmit DF?	55(24.7)	109(48.9)*	59(26.5)
Is DF transmitted through food and water?	84(37.7)	82(36.8)*	57(25.6)
Can DF be transmitted by blood transfusion?	149(66.8)*	20(9.0)	54(24.2)
Mosquitoes can breed in clear standing water	196(87.9)*	9(4.0)	18(8.1)
Window screen and bed net reduce mosquitoes	206(92.4)*	10(4.5)	7(3.1)
Insecticidal spray reduce mosquitoes	178(79.8)*	14(6.3)	31(13.9)
Tightly covering water containers reduce mosquitoes	190(85.2)*	19(8.5)	14(6.3)
Removal of standing water can prevent breeding	193(86.5)*	19(8.5)	11(4.9)
Mosquito repellents prevent mosquito bites	190(85.2)*	10(4.5)	23(10.3)
Can you identify *Aedes* mosquitoes?	21(9.4)	202(90.6)	0(0)

*Indicates correct response

Table 3: Attitude towards dengue fever (DF).

Variable	Strongly agree (%)	Agree (%)	Not Sure (%)	Disagree (%)
Is DF a serious disease?				
Response	113(50.7)	83(37.2)	22(9.9)	5(2.2)
Are you at risk of getting DF?				
Response	53(23.8)	101(45.3)	43(19.3)	26(11.7)
DF can be treated at home				
Response	16(7.2)	45(20.2)	52(23.3)	110(49.3)
Can DF be prevented?				
Response	47(21.1)	131(58.7)	36(16.1)	9(4.0)
Is controlling the breeding places of mosquitoes a good strategy to prevent dengue?				
Response	78(35.0)	122(54.7)	19(8.5)	4(1.8)
Do you think that stagnant water around the houses in discarded tyres, broken pots and bottles are breeding places of dengue mosquitoes?				
Response	84(37.7)	107(48.0)	19(8.5)	13(5.8)
Do you think it is only government responsibility to control mosquitoes?				
Response	43(19.3)	43(19.3)	33(14.8)	104(46.6)
Do you think everybody should actively participate in controlling mosquitoes?				
Response	87(39.0)	115(51.6)	15(6.7)	6(2.7)

Table 4: Preventive measures against dengue fever (DF).

Variables	Yes (%)	No (%)
Use mosquito net	215(96.4)	8(3.6)
Use insecticide sprays to reduce mosquitoes	118(52.9)	105(47.1)
Use screen windows to reduce mosquitoes	126(56.5)	97(43.5)
Eliminate standing water around the house to reduce mosquitoes	162(72.6)	61(27.4)
Cut down extra bushes in the yard to reduce mosquitoes	165(74.0)	57(25.6)
Cleaning of garbage/ trash	195(87.4)	28(12.6)
Disposing water holding containers (Tyres, bottles etc.)	193(86.5)	30(13.5)
Use mosquito repellent equipment (electric/ coil)	146(65.5)	77(34.5)
Use mosquito repellent cream	35(15.7)	188(84.3)
Use mosquito repellent oil	37(16.6)	186(83.4)
Use smoke to drive away mosquitoes	113(50.7)	110(49.3)
Use fan to drive away mosquitoes	153(68.6)	70(31.4)
Covering body with clothes	178(79.8)	45(20.2)
Cover water containers at home	210(94.2)	13(5.8)

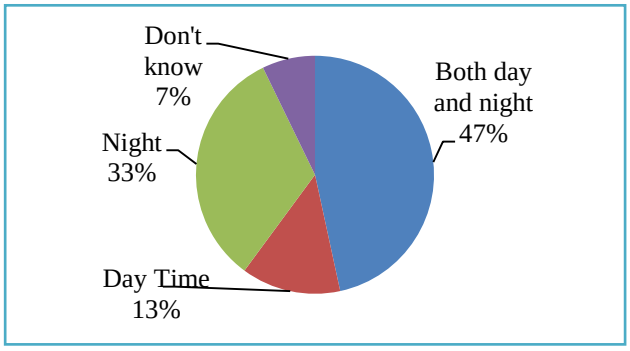
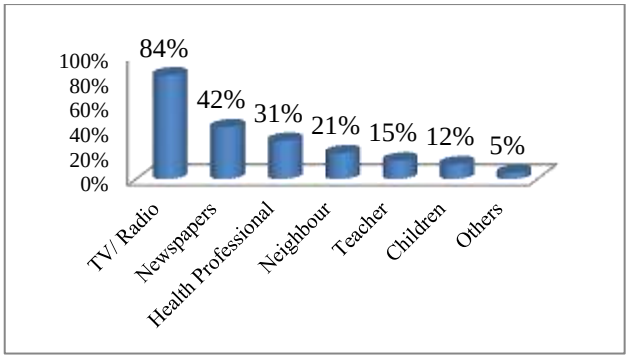


Figure 1: Knowledge of biting time of dengue mosquitoes (N=223).

In the present study only less than one third of the participants had received information about DF from health professionals. This indicates that health professionals in this area of Rohtas District are not adequately mobilized for awareness raising programmes and thus Information, Education and Communication (IEC) materials need to be developed and distributed so that health workers can maximize the benefits of health facility visits by also communicating correct information about DF and its prevention.



NB: Multiple choices were allowed

Figure 2: Source of information on DF.

Majority of the participants in our study may be classified as having good attitude. However this result might also be partially influenced by Bihari culture of trying to please the enumerators, who are regarded as great doctors, by agreeing or strongly agreeing to interview questions. 2/5th of the participants agreed that it is Governments responsibility to control mosquitoes. While the Government can erect an initial framework to eradicate the disease, capacity building measures of the community and initiatives for self help can go a long way in dengue control as suggested by Swaddiwudhipong W *et al.*[13]

Overall in our study, the reported use of preventive measures was found to be higher than the knowledge. A study done in Thailand also found similar results.[14] One of the reasons for higher practice levels attained in this study may be that many questions on practice level were related to daily practices for the control of other common mosquito borne diseases in this area like malaria and mosquito nuisance in general.

We conclude that there is a low level of good or sufficient knowledge on DF in our sample population. Despite this low level of knowledge, the practice level was fair and attitude level was good. Therefore, there is an urgent need for awareness programmes to raise the knowledge of people of this area regarding DF. These can be achieved through the development of IEC/ BCC activities on DF and more use of social as well as other source of media to spread messages regarding symptoms of DF and its control. Most importantly, it should be included in school and university curricula to raise awareness among students and use them as multipliers.

Limitations

The results of our study must be interpreted with caution because the study was cross sectional, assessed relationships based on one point in time in patients of one hospital and did not account for the dynamics of relationships between the factors analysed. It is possible that some respondents might have provided socially desirable responses to some questions, especially in the

attitude domain, since the survey was conducted by an interviewer base use of a structured questionnaire.15 Our sample might not be a representative for the whole community. However, in absence of any similar previous study, this study provides crucial baseline information on the overall KAP of people regarding DF in this part of Bihar.

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