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Knowledge, Attitude and Practice (KAP) of Dengue Fever in the Rural Area of Central India

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Abstract

Background:

Dengue Fever (DF) is an emergent disease in India. It is endemic in some parts of country and contributes annual outbreaks of dengue.

Aims:

To study the knowledge regarding dengue and the preventive measures practiced by the rural population attending a hospital.

Setting:

The Jawaharlal Nehru Medical College, Sawangi Meghe, Wardha is the rural medical college located in Maharashtra.

Study Design: The study design was a descriptive cross-sectional study concerning Knowledge, Attitudes, and Practices of DF prevention among the people in Rural Hospital of Central India.

Study Population:

The population in this study was residents of Wardha Districts, Maharashtra State, India, who were living there for at least one year. A 410 adults (aged 18 years and above) were interviewed using a pre-tested questionnaire regarding their knowledge, attitude and practices about DF. Results: 43.91 % respondents belonged to the age group of 30 – 44 years, 84.15 % respondents were married and 31.21 % respondents were high school certificate (31.21 %). 76.58 % respondent knew that the vector for dengue is a mosquito. Whereas 47.8 % respondents knew that human to human spread occurs in dengue and mainly transmitted by mosquito bites. Around 60.48 % of them were aware of fever as the presenting symptom. With regards to the knowledge of the preventive measures,

respondents were generally aware of mosquito coils/liquid (57.08 %) and spraying (35.12 %). 74.14 % respondents knew about breeding places of mosquitoes. 94.64 % respondents strongly agreed and agreed that dengue is a serious illness. Only 17.06 % respondents strongly agreed and agreed that they are at risk of getting dengue whereas 62.92 % was not sure about the risk. Common preventive practices that were prevalent in the respondents were use of mosquito coils/liquid (45.12 %); cleaning the house (28.30 %) and mosquito spray (23.42 %). Important sources of information about DF were from television (59.75 %) followed by Friends/relatives (47.80 %).

Conclusion:

The DF remains a public health problem in this area and the people need more understanding of the disease. Our findings highlight the need for further information, education and communication programs. Preventive strategies are the only means of controlling the DF.

Keywords: Knowledge; Attitude; Practice; Rural Area; Dengue fever

Introduction

Dengue is the common and rapidly spreading mosquito-borne viral disease in the world. It is caused by the infection of dengue virus, a flavivirus in the family of flaviviridae (single-strand, non-segmented RNA viruses). There are four antigenically distinct dengue virus serotypes (DEN-1, DEN-2, DEN-3 and DEN-4). The dengue virus is transmitted by bites of *Aedes aegypti* and *Aedes albopictus* mosquito.(1-3) There are two main forms of dengue disease, DF and the more severe dengue haemorrhagic fever (DHF). Infection with dengue virus can produce a broad range of clinical manifestations including asymptomatic infection, mild flu-like symptoms and the more severe haemorrhagic fever. In severe cases, patients may suddenly deteriorate, develop hypothermia and go into circula-

tory shock (dengue shock syndrome).

Severe dengue (previously known as Dengue Haemorrhagic Fever) was first recognized in the 1950s during dengue epidemics in the Philippines and Thailand. Today, severe dengue affects most Asian and Latin American countries and has become a leading cause of hospitalization and death among children in these regions.(4)

Since the Second World War, dengue has become a global problem and is endemic in more than 110 countries. Approximately 2.5 billion people, living in tropics and sub-tropics regions are estimated to be risk of acquiring dengue infections. Estimates revealed that more than 50-100 million infections with about 500,000 cases of severe dengue are reported annually which is a leading cause of childhood mortality in several Asian countries.(4,

5) In India, major epidemics have been reported in the years 1967, 1970, 1982, 1996 and 2003.(5-8) DF treatment entails mainly supportive therapy. As there is no vaccine to protect against dengue, great emphasis is placed on control and preventive measures. Thus, evaluation of people's knowledge, attitude, and practice is of great importance to improve integrated control measures.

Methodology

Study Setting

The Jawaharlal Nehru Medical College, Sawangi Meghe, Wardha is the rural medical college located in Maharashtra.

Study Design

A descriptive cross-sectional study was conducted between October 2011 to April 2012 concerning Knowledge, Attitudes, and Practices of DF prevention among the people in Rural Hospital of Central India.

Study population

Parents attending pediatric outpatient department (OPD) with their children were the target group. Parents of every other child seen at the pediatric wards were asked to take part in the study. The participants should be the residents of Wardha Districts, Maharashtra State, India, who were living there for

at least one year. Participation in the study was voluntary and no incentives were provided. The protocol for the study was reviewed and approved by the Institutional Ethical Committee (IEC) of the JNMC, Deem University, Sawangi, Wardha.

Sample size

of 385 was calculated {Representative sample of the population of the wardha district (1296157) with 95 % confidence interval, 5% sample error, and assumption of 50 % knowledge and attitudes prevalence}

Data Collection

After enrolment in the study, every respondent was interviewed with a pre-designed questionnaire. Informed consent (verbal or written) was taken from all the respondents and confidentiality was ensured throughout the study. Prior to use of the KAP questionnaire, the questionnaire was translated into local language (Marathi) by a research assistant and then back-translated to English by another research assistant, both fluent in Marathi and English. The professor who is fluent in both Marathi and English compared the two English versions and resolved any discrepancies by editing the translated version to match the original English version. Face-to-face interview was based on a pretested questionnaire which was di-

vided into five sections which included: 1) demographic 2) knowledge about dengue symptoms, signs and transmission modes 3) attitudes towards dengue 4) preventive practices against dengue and 4) sources of information regarding dengue. Modified Kuppuswamy scale was used to ascertain the socioeconomic status of the family. People who failed to respond to all questions or who left before completing the interview were excluded. All medical personnel including doctors, nurses and medical students were excluded from the study. Interviews were conducted by pediatric resident who underwent training in interviewing techniques under professional supervision. To ensure reliability, the interviewers thoroughly discussed the questionnaires before collecting data. A positive attitude was assessed based on the ability of participants to give answers to the following questions as: 1) Dengue is a serious illness; 2) You are at risk of getting Dengue; 3) Dengue can be prevented 4) Need for treatment and hospitalization for DF and 5) Government has the prime responsibility to control mosquito breeding.

Statistical Analysis

Data was entered twice and analyzed using STATA program, version 10 for

windows. Descriptive statistics for the collected data were recorded and results were shown in percentages.

Results

A total of 440 individuals were approached for participation in the study. A total of 30 individuals declined to participate in this study. Therefore, 410 respondents were successfully interviewed and data so obtained was used for the primary analysis. 43.91 % respondents belonged to the age group of 30 – 44 years, 84.15 % respondents were married and 31.21 % respondents were high school certificate (31.21 %). The sociodemographic details of the respondents are shown in Table 1. 76.58 % respondent knew that the vector for dengue is a mosquito. Whereas 47.8 % respondents knew that human to human spread occurs in dengue and mainly transmitted by mosquito bites. Regarding common symptoms of dengue, fever was the most consistent response (60.48 %) followed by muscular pain (08.04 %). With regards to the knowledge of the preventive measures, respondents were generally aware of mosquito mats / coils/liquid (57.08 %), spraying (35.12 %), clean house (31.22 %) and mosquito nets (10.48 %). Table 2 shows the Data revealing the knowledge of cause of dengue, trans-

mission, its symptoms and preventive measure. Regarding knowledge about breeding, 74.14 % respondents knew about breeding places of mosquitoes. The most common breeding place for mosquitoes recognized was dirty water (53.17 %) and water storage jar / containers (17.56 %) such as boxes, pots, cans, etc. The dengue mosquito breeds in clean standing water was unaware by all the respondents. About the timing of the mosquito biting habits, 56.58 % respondents indicated that it is evening, while about 38.53 % respondents thought it is at night. Table 3 shows the vector characteristics of dengue.

The attitudes of the respondents were assessed using a set of questions regarding dengue. 94.64 % respondents strongly agreed and agreed that dengue is a serious illness. Only 17.06 % respondents strongly agreed and agreed that they are at risk of getting dengue whereas 62.92 % was not sure about the risk. 84.88 % respondents strongly

agreed and agreed about DF can be prevented. 94.16 % respondents strongly agreed and agreed about need for treatment and hospitalization for DF. 86.58 % respondents had a consensus that the government has the prime responsibility to control mosquito breeding. Table 4 shows the attitude of respondents towards DF. Regarding personal protection against mosquito bite, 45.12 % respondents were relying upon mosquito mats/coils/liquid vaporizer, 28.30 % respondents were used to clean the house and 23.42 % were used mosquito spray (Table 5). Preventive practices regarding dengue were consistent with the knowledge about these practices, with majority of the respondents relying mosquito mats/coils/vaporizers and mosquito sprays. Regarding the source of information (Table 6) on DF, 59.75 % came to know about DF through television followed by Friends/relatives (47.80 %).

Table 1. Socio-Demographic Characteristics of Study Population

	Frequency (n = 410)	Percent
Sex		
Female	135	32.92
Male	275	67.08
Age (years)		
15 – 29	164	40
30 – 44	180	43.91

45 – 59	58	14.14
> 59	8	1.95
Marital Status		
Unmarried	65	15.85
Married	345	84.15
Education		
Profession or Honors	12	2.92
Graduate & Postgraduate	48	11.72
Intermediate or Post High school Diploma	80	19.52
High School certificate(8 - 10std)	128	31.22
Middle school Certificate (4 - 8std.)	88	21.46
Primary school Certificate (1 - 4std)	30	7.31
Illiterate (1)	24	5.85
Occupation		
Profession / Government employee	36	8.78
Semi-Profession / Non-government employee	38	9.26
Clerical, shop - owner, Farmer	82	20.02
Skilled worker	20	4.87
Semi - Skilled worker	40	9.75
Unskilled worker Farmer, Laborer	106	25.86
Unemployed	88	21.46
Family Income Per Month (in Rs.) Modified for 2007		
> 19575	23	5.61
9788 - 19574	57	13.91
7323 - 9787	48	11.71
4894 - 7322	120	29.26
2936 - 4893	106	25.85
980 - 2935	40	9.75
< 979	16	3.91

Table 2. Knowledge on Causes of Dengue, It's Spread, Symptom and Preventive Measure

Causes of Dengue^a	Frequency	Percentage
Mosquito bite	314	76.58
Dirty drinking water	46	11.21
Unhygienic food	11	2.68
Houseflies	15	3.65
Don't know	88	21.46
Human to human Spread?		
Yes	196	47.8
No	60	14.64
Don't know	144	35.12
Mode of spread		
Mosquito bite	167	40.73
Dirty drinking water	11	2.68

Unhygienic food	2	0.48
Houseflies	9	2.19
Don't know	7	1.7
Symptoms^a		
Fever	248	60.48
Nausea/Vomiting	04	0.97
Bleeding	16	3.91
Muscular pain	33	8.04
Headache	11	2.68
Don't know	87	21.21
Preventive Measures^a		
Mosquito Spray	144	35.12
Mosquito Mat/Coil/Liquid Vaporizer	234	57.08
Mosquito Net	43	10.48
Window & Door Screen	67	16.34
Cleaning House	128	31.22
Cleaning of garbage/trash	37	9.02
Use of Smoke to drive away mosquitoes	27	6.58
Prevent Water Stagnation	12	2.92
Don't know	80	19.52

^a Multiple Responses.

Table 3. Knowledge of Vector Characteristics of Dengue

Common breeding site^a	Frequency	Percent
Water storage jars/ containers	72	17.56
Coolers, Tyre & pots	46	11.22
Dirty Water	218	53.17
Garbage/Trash	24	5.85
Plants/Vegetation	12	2.92
Do not know	106	25.85
Most frequent mosquito bite time^a		
Morning	48	11.70
Day time	63	15.36
Evening	232	56.58
Night	158	38.53
Don't know	88	21.46

^a Multiple Responses

Table 4. Attitude of Respondents towards DF

Dengue is a serious illness?	Frequency	Percent
Strongly Agree	275	67.08
Agree	113	27.56
Disagree	10	2.44
Strongly disagree	07	1.7
Not sure	05	1.22
You are at risk of getting dengue		
Strongly Agree	23	5.6

Agree	47	11.46
Disagree	54	13.18
Strongly disagree	28	6.82
Not sure	258	62.92
DF can be prevented		
Strongly Agree	216	52.68
Agree	132	32.2
Disagree	34	2.3
Strongly disagree	09	2.2
Not sure	19	4.64
Need for treatment & hospitalization		
Strongly Agree	132	32.2
Agree	254	61.96
Disagree	09	2.2
Strongly disagree	05	1.22
Not sure	10	2.44
Government Responsibility of controlling breeding mosquito		
Strongly Agree	86	20.98
Agree	269	65.6
Disagree	13	3.18
Strongly disagree	10	2.44
Not sure	32	7.8

Table 5. Personal Preventive Measure Against Dengue.

Preventive Measures^a	Frequency	Percent
Mosquito Spray	96	23.42
Mosquito Mat/Coil/Liquid Vaporizer	185	45.12
Mosquito Net	36	8.78
Window & Door Screen	56	13.66
Cleaning House	116	28.30
Cleaning of garbage/trash	27	6.58
Use of Smoke to drive away mosquitoes	33	8.04
Prevent Water Stagnation	09	2.18
None	54	13.18

^a Multiple Responses**Table 6.** Source of Their Information Regarding DF

Source of information^a	Frequency	Percent
Television	245	59.76
Health personnel	105	25.6
Friends & Neighbors	196	47.8
Newspapers / Magazines	96	23.42
Brochures	43	10.48
Radio	156	38.04
Banners	89	21.7
Schools	135	32.92

^a Multiple responses

Discussion

Today, dengue ranks as the most important mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold.(9) The study done by Hairi F et al (10) found that 78 % subjects knew about dengue. The possible reasons for better awareness could be repeated exposure to health education messages on dengue and other mosquito-borne diseases. Mosquito bite was cited as a cause of dengue by 76.58 % respondents, which is similar to a study done in Brazil.(11) Whereas, 11.21 % had the misconception that dirty drinking water could be the cause. Swaddiwudhipong et al (12) reported that > 90 % respondents knew that the disease is transmitted by Aedes mosquitoes. In our study we found that 76.58 % respondents mentioned mosquito bite as cause of dengue and only 40.73 % believed that the disease could spread by mosquito bite. This indicates their inadequate knowledge and a need for more health education programme. Whereas 35.12 % people were not sure whether it has human to human transmission. These findings are consistent with similar studies done by Hairi F et al (10) and Acharya A et al.(8)

The common symptoms of DF are high fever, severe headache, severe pain behind the eyes, joint pain, muscle and

bone pain, rash, and mild bleeding. Degallier N et al (11) and Acharya A et al (8) reported the adequate knowledge on dengue symptoms. Gupta et al (13) reported that fever was the commonest symptom of the disease followed by symptoms of bleeding and headache. Our respondents showed considerably good knowledge about the symptoms with fever (60.48 %) being correctly accounted as the most common. Benthem et al (14) found that rash or bleeding is a specific symptom of dengue infection indicating to distinguish dengue infection from other diseases. The study done by Gupta et al (13) reported 92 % knew about fever followed by headache as a symptom of dengue whereas Degallier N et al (11) found, 73.1 % respondents knew about fever which was similar to our finding. Mosquito bite was cited as a cause of dengue by 68 % respondents, which is similar to a study done in Brazil.(11) Most respondents were aware of measures to protect themselves against contact with mosquitoes through window screening, mosquito coil/mats, use of bed nets, covering standing water and removal of standing water. Previous studies have reported these methods to be most effective means of prevention.(15, 16) Measures aimed at preventing water stagnation (2.12 %),

which serves as local breeding sites were the least popular techniques which respondents knew. Cleaning house was also a popular method of vector control than window & door Screen. Matta et al (17) found that, 79.8 % respondents knew about breeding places of mosquitoes. The *Aedes aegypti* mosquito typically bites during the day. But large number of respondent doesn't know the biting time of the mosquito.

A study done by Pérez-Guerra CL et al (18) regarding attitudes towards dengue prevention revealed that participants insisted that "neighbours" needed to control larval habitats, and the Government had the responsibility to fumigate. Our findings run contrary to findings in a study done by (19) where strong positive attitude was associated with knowledge about DF. Hairi et al (10) found that there was no significant association seen between knowledge and practice. However, there was a significant association seen between knowledge and attitude towards *Aedes* control. A wide gap was seen between knowledge and preventive practices most probably due to financial condition of the respondent. Knowledge and use of interventions such as use of fish that prey on mosquito larvae is rare. Many studies have reported the biolog-

ical control of dengue vectors by fish and have recommended using this intervention in the community.(20, 21) Snehalatha KS et al (22) reported that in Pondicherry south India, 99.3 % used some personal protection measures. This is higher than the present study (86.82 %) most probably due to socio-economic differences. Most important role seemed to be played by media including television and radio. In the present study, television was the most important source of information (59.75 %), similar to a study done by Swaddiwudhipong W.(12)

Conclusion

In conclusion, the rural peoples had an inadequate knowledge about DF and its vector. Also, people had inadequate knowledge of DF prevention methods and the biological control of dengue vectors. Similarly, they were practicing preventive measures application which was inadequate. There is a need to make rural people aware of different preventive practices and reduce this knowledge application gap. Television may play an important role in conveying health information to the public.

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