

Research Article

# Assessment of Knowledge, Attitude and Practices in different Socio-Economic Groups of Population on Control of Dengue and its Vectors in Delhi

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## I N F O

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## A B S T R A C T

Active involvement of community in dengue control is a function of the knowledge and practice of that community. Correct assessment of community attitude, knowledge and practice can assist the reformulation of dengue control strategy and form basis of appropriate health education messages. This study was carried out with the objective to know the social determinant of dengue and to assess knowledge, attitude and practices of the people living in rural areas of Delhi. Community based cross sectional survey was done among 525 household respondents who were randomly selected and interviewed with pre structured questionnaires from January to June 2017. Educational status, dengue awareness, knowledge regarding transmission of disease, symptoms of disease, breeding habitat, biting time and prevention as well as sources of information were assessed. Out of 525, 60.6% were females and 39.4% males, 10.3% were illiterate and only 2.3% were post graduates. They have inadequate knowledge regarding breeding habitat and biting time of mosquito. A majority of households (447) practiced water storage and 30 of them stored water from more than 5 days. The results of study revealed that community knowledge about dengue fever, its transmission, vector breeding source, biting habits and preventive measures was poor and need main focus by the health authorities for prevention and control of dengue.

**Keywords:** Dengue, *Aedes aegypti*, Knowledge, Attitude and Practice (KAP)

## Introduction

*Aedes aegypti*, the primary vector of dengue, mainly breeds in domestic water storage containers is closely associated with man due to its endophilic and endophagic nature.

Dengue Virus (DENV) infections has globally become a major public health concern since the incidence of Dengue Fever (DF) has increased more than 30-fold over the last decade and the disease is now endemic in 128

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countries.<sup>1</sup> The geographic distribution of DF has included new countries and rural areas, making it the most rapidly expanding arboviral disease in the world. There has been a sharp increase in frequency of DF, Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) due to increasing populations in urban amalgamations and expanding mosquito breeding due to socio-economic changes, particularly irregular water supply, uncontrolled waste management and rapid human movement due to modern transportation system.

Globally, Dengue fever is emerging as a major public health challenge. It is estimated that 50 million dengue infections occur worldwide annually out of which 75% people live in Asia Pacific regions and 1.3 billion people live in 10 countries of South East Asia Region of World Health Organization.

Delhi has witnessed several outbreaks in last two decades. In 2015, the city witnessed 1587 cases, the worst crisis in 20 years with the disease claiming 60 lives. (NVBDCP, 2015). Despite progress with the development and clinical evaluation of vaccines against DENV infection, no such vaccine is on the market yet.<sup>2</sup> Vector control is the key strategy, for which community involvement is crucial. Despite mass communication and educational approaches, community participation is far below expectation. The prevalence of dengue vector and silent circulation of dengue virus have been detected both in rural and urban areas.<sup>3</sup> The lack of basic knowledge of the community on dengue epidemiology and vector bionomics would also be a major cause of increasing trend of dengue in highly populated urban environment.<sup>4</sup> Research and development of sustainable educational strategies designed to improve behavior and practice of effective control measures in the community seems to be need of the hour. Several studies have shown that dengue knowledge was associated with an increased use of preventive measures against the disease.<sup>5,6</sup> Dengue preventive strategy could be exercised by one day bottom-up programmes, water management practices by people along with the implementation of by-laws, demanding high level community participation with effective IEC activities.<sup>7</sup>

In our present study, we have tried to assess Information, Education and Communication (IEC) campaign and Behavior Change Communication (BCC) programme for dengue control due to lack of relevant studies on the Knowledge, Awareness and Practices (KAP) in Delhi.

## Materials and Methods

Delhi, with an area of 1484 sq.km. is located at 28.61° North Latitude and 77.23° East longitude. It has population of nearly 16.3 million being the 2nd most populous city of the country. It is surrounded on three sides by Haryana and to the east, across the Yamuna River by Uttar Pradesh.

The present KAP survey was conducted in these four

locations viz. Madanpur Khadar, Jamia Nagar, Badarpur and Molar Band extension of Delhi that recorded most number of cases of dengue in previous outbreaks. Out of 600 selected households only 525 could be interviewed, the other were found locked at the time of visit.

About 525 individuals were covered for interrogation on pretested questionnaire and data was collected during January 2017 to June 2017. Head of the family or any responsible above 18 years of age was interviewed following informed consent. The questionnaire was divided into three sections, the first section covered educational status and dengue fever awareness. The second section was about knowledge regarding symptoms, transmission and treatment of dengue fever. It also included knowledge of breeding habitats, biting time and preventive practices of vector as well as sources of information of dengue fever. The third section included data on water storage practices within the households and types of containers used for storage of water.

## Result

Out of total 525 individuals, 318 (60.6%) respondents were females and 207 (39.4%) were males. Educational status of 525 respondents showed that 10.3% (54) were illiterate, 37.7% (198) primary level, 38.1% (200) secondary level, 11.6% (61) were graduates and only 2.3% (12) with post graduate qualification. Among the 525 households, 62% of them were not aware of dengue fever Table 1.

Among the total respondents, 58.6% opined that it is transmitted through mosquito bites but they were unaware of *Aedes aegypti* as a vector for dengue transmissions. 27.3% didn't know about it and 14.1% opined that it spread through contaminated water. When asked about common symptoms, high (30.5%) fever was the most common symptom. 26.7% were not aware of common symptoms of dengue fever. The poor knowledge of symptoms with DF among our study population means that this disease may be easily confused with other fever such typhoid, influenza etc. 66.8% of respondents did not know about treatment against dengue fever. Only 20.2% opined that there is no medicine against dengue Table 2.

50.3% of respondents opined drain and garbage as main breeding sites. 25.9% were opined that vector breed in stagnant water. Only 9.3% knew that dengue mosquito breed in clean water holding containers and 9.9% were not aware about breeding habitat of vector. Majority of respondents told that vector usually bites either Evening (38.3%) or morning time (30.3%).

Majority of respondents were using liquid vaporizer (39.2%) followed by repellent coil (23.1%) as preventive practice, using of full sleeve clothes (17.7%), keeping environment clean (10.7%) and by taking medical care (9.3%) were of the opinion that may prevent the dengue fever Table 3.

**Table 1. Educational status, dengue fever awareness of study population**

Particulars		Male (n=207)		Female (n=318)		Total (n=525)	
		Respondents	%	Respondents	%	Respondents	%
Educational Status	Illiterate	15	7.2	39	12.2	54	10.3
	Primary	74	35.9	124	39	198	37.7
	Secondary	80	38.8	120	37.8	200	38.1
	Graduate	29	13.9	32	10.2	61	11.6
	Post Graduate	9	4.3	3	0.8	12	2.3
	Total	207	100	318	100	525	100
Dengue Fever Awareness	Aware	83	40	117	36.8	200	38
	Not aware	124	60	201	63.2	325	62
	Total	207	100	318	100	525	100

**Table 2. Knowledge of Dengue transmission, symptom and treatment**

Variable	No. of Respondents	%
<b>Mode of spread</b>		
Mosquito bite	308	58.6
Contaminated water	74	14.1
Don't know	143	27.3
<b>Common Symptoms</b>		
High fever	160	30.5
Headache	142	27
Don't know	140	26.7
Vomiting	31	5.9
Body pain	29	5.5
Abdominal pain	23	4.4
<b>Treatment</b>		
Yes	68	13
No	106	20.2
Don't know	351	66.8

Television (30.5%) was identified as the main source of information followed by radio (25.1%), awareness campaign (24%), social media (12%) and only 8.4% got informed in school Table 4.

Majority of respondents 55.6% come under middle income group whereas 35.1% belong to low income group and 9.3% are high income group. Majority of respondents, irrespective of income status stored water for short period of 1-2 days, whereas 6.2% of low income group and 8% of middle income group stored water for more than 5 days which could be the main reason of breeding of *Aedes aegypti* in household Table 5.

**Table 3. KAP about biology of vector and Personal protection measures**

Variable	No. of Respondents	%
<b>Breeding habitats</b>		
Drain and garbage	264	50.3
Stagnant water	136	25.9
Don't know	52	9.9
Clean water holding containers	49	9.3
Septic Tanks	24	4.6
<b>Biting time</b>		
Evening	201	38.3
Morning	159	30.3
Night	61	11.6
Noon	104	19.8
<b>Preventive Practice</b>		
Liquid vaporizer	206	39.2
Repellent coil	122	23.1
By taking medical care	48	9.3
Keeping environment clean	56	10.7
Full sleeve clothes	93	17.7

**Table 4. Knowledge of sources of information about dengue fever received by respondents**

Variable	No. of Respondents	%
Television	160	30.5
Radio	132	25.1
Awareness campaign	126	24.0
Social media	63	12.0
School	44	8.4

**Table 5. Details of water storage practices in different income groups in house hold**

Particulars of water storage practice in household	Income groups (n=525)		
	Low	Middle	High
Surveyed	184 (35.1%)	292 (55.6%)	49 (9.3%)
Water storage practice adopted	170 (92.6%)	234 (80.2%)	43 (87.8%)
Water storage practice not adopted	14 (7.4%)	58 (19.8%)	6 (12.2%)
Among the storage practice adopted			
Water stored for 1-2 days	123 (72.6%)	187 (80%)	41 (96%)
Water stored for 3-4 days	36 (21.2%)	28 (12%)	2 (4%)
Water stored for >5 days	11 (6.2%)	19 (8%)	0

Majority of people 62.6% were storing water in small plastic/ metal containers having about 10-15 litres capacity whereas only 9.2% were storing in cement tank having capacity of more than 20 litres which were found potential breeding habitats of *Ae. aegypti* Table 6.

**Table 6. Types of containers used for storage of water**

Types of container	No. of HH	%
Cement Tank	48	9.2
Metal drum	148	28.2
Others (Plastic/ Metal containers)	329	62.6
<b>Total</b>	<b>525</b>	<b>100</b>

## Discussion

Despite mass communication and educational approaches, community participation is far below expectations in Delhi and NCR which depends on people awareness, knowledge and attitude towards the disease.<sup>9</sup> Several socio-economic studies in different countries indicate variations in knowledge and practice-related to mosquito-borne disease.<sup>10,11</sup>

Dengue fever remains a major health problem in many areas of the world, especially in South-East Asia.<sup>12,13</sup> The only effective strategy to control DF/ DHF outbreak, in the absence of vaccine, is to eliminate *Aedes* mosquitoes and its larval habitats.<sup>14</sup> Further efforts should be directed at addressing the barriers to behavioral change, correcting misconception on the spread of dengue by social and close contact and educating the illiterate on measures to prevent dengue.<sup>15</sup> *Aedes* larval breeding sites in the domestic and peri-domestic environment could increase due to poor hygiene and failure to check breeding and reluctance to have their homes fogged with insecticides.<sup>16</sup> Active participation of the government local organisation and the public are the keys to success in controlling dengue vector. The dengue vector surveillance programme serve as a tool not only to monitor the local dengue vector distribution but also to provide objective information

for taking appropriate actions by the community against dengue vectors. The participations and cooperation of the public with government organizations is essential for vector control measures. A carefully planned effort that includes education of residents on behaviors to reduce the breeding of mosquitoes along with community control efforts, could be successful, assuming an effective intervention strategy could be identified. Novel approaches for effective vector control are needed and community participation will be a crucial component for achieving success.<sup>17&18</sup> Among water storage containers, earthen jars and drums act as good breeding grounds for *Ae. aegypti*.<sup>19</sup>

The level of knowledge of DF reported in this study is comparable to that found in similar KAP studies conducted in India, Pakistan, Thailand and Jamaica. Fever and headache were also the most frequently stated symptoms in similar studies conducted in India, Thailand, Laos, Philippines and Jamaica.<sup>20,21,22,23&24</sup> In Pakistan and Philippines radio and television has been their predominant sources of information.<sup>25&26</sup>

Majority of respondents reported that the mosquito bite in evening or morning which is consistent with previous studies which indicated the majority of respondents knew that dengue vectors might bite at sunrise or sunset.<sup>27</sup>

Television was the most common source of information in our study which is similar to the previous studies whereby mass media played vital role in dengue awareness.<sup>28</sup>

Majority of low income group stored water for more than 5 days without proper covers which is consistent with the KAP studies in Sangam Vihar, South Delhi.<sup>29</sup>

Knowledge level among literate people was also low in this study although good attitude and practice level were higher as compare to illiterate people or those who had only completed primary education which is consistent with previous KAP study in central Nepal.<sup>30</sup>

To achieve the desired change in knowledge, attitude,

behavior and practices of the community, information education and communication campaigns are also very important. It has been pointed out that, in order to meet the growing demand for residential complexes, government are becoming increasingly dependent on public-private partnership.<sup>31</sup>

The WHO-sponsored project entitled "Eco-bio-social research on dengue in Asia" concluded that vector breeding is complex and the public health response to control these vectors should go beyond larvicide/spraying of insecticides.<sup>32</sup> Community participation is a necessary pre-requisite<sup>33</sup> and such programmes will be important to win community support towards adopting effective major for preventing DENV transmission, improving surveillance and better controlling outbreaks.

Among unauthorized and JJ colonies, people do not construct underground or roof top water tanks, so they store water in temporary containers like drums and earthen jars which is consistent with key breeding sites of dengue vector in Hanoi, Vietnam.<sup>34</sup>

## Conclusion

There is an urgent need for massive awareness programme to update the knowledge of community on vector bionomics in densely populated rural localities of Delhi for their involvement. The motivation to community health volunteers, resident welfare association and their education for the household activities especially water storage will find fruitful results in integrated vector control programme to resolve dengue problem.

There is a need to develop socially acceptable community based vector control strategies. Attempt should be made to bring in behavioral changes in the communities in water storage practices and waste management with the co-operation and participation of local health authorities. They should be sensitized to take positive steps and must be empowered with knowledge by providing the available IEC material to community leaders and health workers.

**Conflict of Interest:** None

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