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A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING DENGUE FEVER AMONG PEOPLE LIVING IN URBAN AREA OF JHANSI CITY (UP)

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ABSTRACT: BACKGROUND: Dengue is the major public health problem leading to increase in disease burden in terms of disability and deaths. Despite the magnitude of problem no documented evidence exists in India, which reveals the awareness and practices of country's adult population regarding dengue fever, its spread, symptoms, treatment and prevention. **OBJECTIVES:** To access the knowledge, attitude and practices among the people living in urban area of Jhansi city. **MATERIAL AND METHODS:** A field based cross-sectional study was conducted during April –July 2014 among 100 respondents (>18 years) from 223 households of green park colony of urban area of Jhansi city. Simple random sampling was used for interview by using a pretested, structured questionnaire. Knowledge was recorded and classified. Data obtained were collected and analysed statistically by simple proportions and chi-square test. **RESULTS:** Of the total 100 respondents (59%) were male. When the socio-demographic characteristics of the study population were analysed, majority were young adults (20-40 years) and were literate. Majority of participants cited mosquito bite as the commonest mode of spread. About 80% of the respondents identify fever as the most common clinical symptom. Nearly half of the respondents had insufficient knowledge about the causative agent of dengue. Television and media were important source of information. Around 60% of respondents correctly reported biting time of mosquito vector. Most prevalent preventive method was coils, liquid vaporisers. **CONCLUSION:** The study indicated that the respondents were quite familiar with dengue. Need for information, education, and communication programme to identify barrier and provide positive preventive practices about dengue. We conclude that there is need to increase health promotion activities to increase knowledge which forms the basis for preventive practices as a part to control dengue.
KEYWORDS: Knowledge, attitude, practice, dengue, awareness, vector.

INTRODUCTION: Dengue viruses are single-stranded RNA viruses of the family Flaviviridae (togaviridae) are the most common cause of arboviral disease in the world has the ability to infect humans and cause disease, imparted generally by bites of Culicine mosquitoes of genus Aedes, principally Aedes aegypti(in urban areas) and Aedes albopictus (In rural areas).[1] Dengue virus infection is increasingly recognized as one of the world's emerging infectious diseases.[2,3] About 50–100 million cases of dengue fever and 500,000 cases of Dengue Hemorrhagic Fever (DHF), resulting in around 24,000 deaths, are reported annually. In India[1] dengue has been endemic for over two centuries with mostly a benign and self-limited course. The first major outbreak of dengue was reported in India in 1991.[1] In 2006 another major epidemic affected India and strained the already

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stretched healthcare system. India alone, recorded 37,000 cases of dengue, including 227 deaths in the year 2012.[4,5] Despite the escalating burden of this disease no major steps have been undertaken to promote the awareness with regards to dengue fever in the community. This might be due to the dearth of baseline data of the population regarding knowledge of dengue. In 2009 and 2010, the number of fatalities due to dengue was 96 and 110 respectively.[6] Incidence of dengue has been attributed to increased air-travel, increased urbanization, amplified mosquito population due to deterioration in the public health infrastructure and changing climatic conditions. According to the World Health Organization (WHO),[7] incidence of dengue has shot up 30 fold in the past 50 years. South-East Asia is one of the regions with highest risk of DF/DHF[2,3,7] accounting for 52% of the global risk. "India emerges in the analysis as the country with the world's highest dengue burden, with about 34% of all such cases occurring here. It is estimated that ~2.5 billion people globally are at risk of dengue infection, of which 52% reside in Southeast Asia.[8] Dengue fever (DF) is an acute febrile disease due to a viral infection and presents with severe headache, pain in the eyes, muscle and joint pain as well as rash. Dengue hemorrhagic fever (DHF)[3] presents with dengue-like symptoms in addition to hemorrhagic manifestations for example, petechial skin haemorrhage, hepatomegaly, and circulatory disturbances.[1,7]

There are four known virus serotypes (DEN 1, DEN 2, DEN 3, and DEN 4).[2] Since there is no vaccine, vector control is the ideal way to control dengue. Vector control methods can be successful, only if there is community participation, and for the success of a community –based programme, it is important to assess the community's perception regarding the disease, its mode of transmission and breeding sites. Knowledge, attitude and practice studies serve as an educational diagnosis of a population.[9] This information helps programmes set communication objectives linked to increased community engagement and demand for services and develop tailored strategies appropriate for the social, cultural and political contexts of at-risk communities. Primary prevention in the form of health education and community participation is important as a part of strategy to combat dengue fever. The aim of the study is to assess the knowledge and awareness of dengue among the participants, to assess the most prevalent preventive measure according to the participants, to ascertain the source of information regarding dengue.

MATERIAL AND METHOD: A field based Cross Sectional Study was conducted in the green park area of urban Jhansi city. The study was carried out for a period of four months from April 2014 to July 2014. The total number of household in the area were 223 from where 100 household were randomly selected using simple random technique. All the households were included by census method. From each household one person was selected. Inclusion criteria for selecting a person: he/she aged more than 18 years residing in the study area for more than a year, having heard of dengue and had never suffered from dengue. Those already suffered from dengue, unaware of dengue and without consent were excluded. All medical personnel including doctors, nurses and medical students were also excluded from the study. After obtaining informed consent from the participants face-to-face interview was done based on a pretested questionnaire which comprised of 41 questions, and was divided into four core sections which included: 1) socio- demographic (11 questions). 2) Knowledge about dengue fever (14 questions). 3) Attitude about the disease (9 questions). 4) Practices related to prevention against dengue (7 questions). Interviews were conducted by investigators who underwent training in interviewing techniques under professional supervision.

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After completing the questionnaire, the investigator made an observation of the area around the participant's houses to assess it with regard to dengue prevention. The respondents were explained in detail the full description research, confidentiality and voluntary participation. Every data were treated carefully and privately with no name tag in it.

The sample size was calculated using the formula:

$n = 4pq/L^2$, where
n= sample size,
p= proportion in the population processing the characteristic of interest.
L=absolute error
q = (1-p)

Considering 95% confidence interval. Considering knowledge, "p" of 50 % and taking "L", absolute error in the estimate of "p" as 10%, the sample size was estimated to be 100 in the study area.

Knowledge score was assessed by giving each question a separate score and were classified as high, medium or low knowledge. Similarly attitude score was assessed giving each question as separate score and then classified as positive, neutral and negative attitude. Practices against dengue is also assessed through scores and classified as good, fair and poor practices similar criteria each question as separate score.

Statistical Analysis: Data were entered into a Microsoft Excel spreadsheet and then transferred to Statistical Package for Social Sciences (SPSS®) (trial version 16.0), was used to analyze data in this study. Descriptive and bivariate statistical analysis was used to provide estimates of population proportions with their respective 95% confidence intervals. Cross tabulations were performed with Chi-square test to assess statistical significance ($\alpha = 0.05$).

Results were recorded as frequencies and proportion. For all purposes, a p-value of <0.05 was considered as the criteria of significance.

RESULTS: Table no.1 shows some socio-demographic information of the respondents. A total of 100 study participants were enrolled in the study. Female respondents were (41%) of the sample and remaining were males (59%). In terms of age 21-40 years were the largest group (70%), followed by 41-60 years (20%). High literacy rate is seen among the study participants (77%-tertiary school), (20%- secondary school). Most of them belongs to upper middle (56%) and upper (25%) class according to KUPPUSWAMY classification.72% use public dustbin as the method of waste disposal. Open drainage is prevalent in 60% of participants.

Table no. 2 shows the knowledge of respondents regarding sources of information; vector characteristics and modes of spread. 95% of respondents consider TV/radio as the main source of information, followed by media (92%). Only 12% shows community help in source of information. More than half (54%) consider anopheles as the main vector for transmission, with 40% giving their votes to aedes. 6% of respondents don't know about the vector. Most prominent breeding site was standing clean water (82%) followed by garbage (66%) and water tanks (59%). 75% predicted day

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time as the frequent biting time. Mosquito bite was the most common mode of spread (98%), followed by dirty drinking water (46%). 22% consider low personal hygiene as a mode of spread.

Table no. 3 shows knowledge regarding signs and symptoms, complications and medicines of respondents towards dengue. Fever was the most common symptom100% respondents consider that, followed by bleeding (76%), nausea and vomiting (66%). 77% consider bleeding disorders are the most common complication.18% respondents don't know about the dengue complication.65% consider antipyretics were the drug of choice, followed by antibiotic (45%). Few respondents consider antimalarials (13%) for the treatment of dengue.

Table no. 4 shows the knowledge level of study participants and were classified as high, moderate or low level on the basis of scores 56% of participants have high knowledge about dengue, moderate knowledge is 30% and low level of knowledge is 14% seen in participants.

Table no. 5 shows the attitude level of study participants and were classified as positive, neutral and negative attitude. 62% of participants shows a positive attitude towards dengue. 32% were among the neutral attitude and only 6% has negative attitude.

Table no. 6 shows the preventive practices level of study participants towards dengue and were classified as good, fair and poor practices level. It shows 57% of respondents answered in the range of good practices level. While 11% are in poor practices level.

Table no. 7 shows the association between socio-demographic determinants and the knowledge level of the study participants. It is seen that the knowledge score increase with increase in education. There is significantly better knowledge amongst the participants those who are employed. The people with high knowledge had adopted appropriate method for waste disposal.

DISCUSSION: Our study revealed that almost all respondents are familiar with dengue fever. In Brazil[10] 78% heard about the disease while in Thailand[8] only 67% of respondents are familiar with dengue. Mosquito bite was cited as a cause of dengue by 98% respondents which are similar to a study done in an urban resettlement colony of South Delhi.[11] However in a study conducted in Chennai city[12] only 18.3% respondents cited this cause. Around 46% respondents had a misconception as dirty drinking water as the cause as compared to studies done in south Delhi and Chennai[12] dirty drinking water comprises only 13%. Despite dengue fever being a major public health problem in the country, the knowledge in the community is high, as highlighted in our study. Even though many respondents were familiar with dengue being a communicable disease which spreads via mosquito vector, yet several misconceptions were identified.[7] A considerable proportion of respondents regarded Anopheles mosquito as the main vector in our study. A large portion of the sample population could identify the vector as a mosquito but little was known about the species.

A study[8] reported that >90% respondents knew the disease is transmitted by Aedes mosquitoes. Three manifestations of dengue are currently known; dengue fever, dengue hemorrhagic fever[2,3] and dengue shock syndrome in which respondents are quite familiar with them in our study compared to other studies in Brazil and Thailand. However, fever is the most common presenting symptom in all of them.[1, 7] Our sample showed considerably good knowledge about the symptoms, with fever being correctly accounted as the most common. The study done in Delhi[13,14] reported 92% knew about fever followed by headache as a symptom of dengue whereas in other studies[10,15] found that rash or bleeding is a specific symptom of dengue infection indicating to distinguish dengue infection from other diseases Adequate knowledge on dengue symptoms has been reported in similar

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studies done in Pakistan[16] and Brazil.[10] TV and media are the most important source of information in our study and similar results obtained in study in Bangalore city.[17] This is similar to previous studies whereby mass media was cited to have a major role in disseminating information about dengue[9,11,12] However, one study in Laos[15] found that friends and relatives (43.9%) were the main sources of information regarding dengue fever. Another study in Thailand[8] found that health personnel were the main source of dengue fever information. This study found that the most commonly practiced preventive measures used by the respondents were use of mosquito nets and repellents, examining and draining mosquito breeding sites in both indoor at outdoor pots, discarding unused materials that hold water around the house, and emptying or covering unused water jars and tanks. These findings were consistent with those reported by previous studies.[18, 19] In this study, the majority of the respondents indicated that stagnant water was the main source for mosquito breeding[1,4,5] while the life cycle of mosquito is one week. Previous studies also found that the majority of participants reported that stagnant water is the main source of mosquito breeding.[3, 14]

When the knowledge scores were analyzed, it was observed that 88% of respondents had sufficient knowledge (both high and moderate level included) on dengue. When the socio-demographic factors influencing knowledge scores were assessed, we observed that the urban population had better knowledge 56% when compared to the urban population of Pakistan,[16] but low when compared to urban area of south Delhi (67%).[13] This could be because of the fact that literates were much higher in the urban area. Similar studies conducted[11,18] have also shown that literates have a better knowledge with regards to dengue when compared to illiterates. Only 28% people are involved in community participation which is very low in our study as compared to study done in Bangalore city[17] and Chennai[12] (41% and 47%). Since the knowledge is high in more than 50% of respondents we found evidence that knowledge was set into practices with proper observation and application.

CONCLUSION: The study indicated that the respondents were quite familiar with dengue. In conclusion, the suggestion emerged as a result of this study indicated that respondents were aware and knowledgeable about dengue fever, but they were not concerned about the impact of dengue epidemics. Regarding practices, age, knowledge, and geographical area are important factors that affect practices of the respondents to prevent dengue fever.

Aggressive health promotional campaigns and social mobilization by relevant agencies are needed to increase knowledge about dengue fever prevention. Good dengue prevention demands the involvement of the community as the community participation in our study is quite low hence intense health education campaigns should be organized to ameliorate the knowledge of dengue fever in the community and better information is required that helps guide dengue prevention programmes in their efforts to engage with the community.

On the basis of findings of the study following issues should be considered:
- Education campaigns should be organised throughout the year, not only during rainy season by ministry of health or vector borne disease control unit.
- Management plan for prevention and control should be developed.
- Involvement of community participation must be increased.

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Characteristics		Frequency	%
Age (years)	18-20	4	4
	21-40	70	70
	41-60	20	20
	>60	6	6
Gender	Male	59	59
	Female	41	41
Education	Primary school	3	3
	Secondry school	20	20
	Tertiary school (graduate & post graduate)	77	77
Occupation	Employed (government& private)	65	65
	Self-employed	34	34
	unemployed	1	1
Monthly income (per capita)	<3000	1	1
	>3000-10000	4	4
	10000-20000	40	40
	>20000	55	55
SES	Upper	25	25
	Upper middle	56	56
	Middle	18	18
	Upper lower& lower	1	1
Family type	Nuclear	60	60
	Joint	40	40
Type of house	pakka	99	99
	kutcha	1	1
Waste disposal	Public dustbin	72	72
	Throwing	21	21
	Collection	7	7
Drainage	Open	60	60
	Underground	40	40
Table 1: Socio-Demographic Determinants of Study Subjects (N=100)			

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Characteristics		Frequency	%
Sources of information*			
TV/radio		95	95
media		93	93
Health care professionals		52	52
Health facilities		41	41
Friends and family		24	24
School		18	18
Community		12	12
Temple		11	11
	Vector characteristics*		
Type of mosquito	aedes	40	40
	anopheles	54	54
	don't know	6	6
Breeding site of mosquito*	Standing clean water	82	82
	Standing dirty water	21	21
	Garbage/trash	66	66
	Water tanks	59	59
	Running clean & dirty water	7	7
	Don't know	3	3
Frequent biting time of mosquito	morning	3	3
	daytime	75	75
	Sunset/dusk	15	15
	Sunrise/dawn	1	1
	night	4	4
	Any time	2	2
Modes of spread*			
Mosquito bite		98	98
Dirty drinking water		46	46
Contaminated food		12	12
Low personal hygiene		22	22
Sharing items with infected people		10	10
Table 2: Knowledge Regarding Sources of Information, Vector Characteristics and Modes of Spread Among the Study Participants (N=100)			

*=multiple responses;

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characteristics	frequency	%
Signs and symptoms*		
Fever	100	100
Bleeding	76	76
Skin rash	36	36
headache	16	16
Joint &muscular pain	22	22
Nausea & vomiting	64	64
Pain abdomen	8	8
Complications*		
Bleeding disorders	77	77
Dengue shock syndrome	37	37
Dengue hemorrhagic fever	29	29
Don't know	18	18
Medicine to treat dengue*		
Antibiotics	45	45
Antipyretics	65	65
Antimalarials	13	13
Pain killers	74	74
Don't know	7	7
Table 3: Knowledge Regarding Signs & Symptoms, Complicatons and Medicine among the Study Participants (N=100)		

*=multiple responses.

Knowledge level	Scores	Frequency (%)
High	12-14	56(56%)
Moderate	9-11	30(30%)
Low	0-8	14(14%)
Table 4: Distribution of Knowledge Level of Study Participants on Dengue Fever (N=100)		

Attitude level	Scores	Frequency (%)
Positive	7-9	62(62%)
Neutral	4-6	32(32%)
Negative	0-3	6(6%)
Table 5: Distribution of Attitude Level of Respondents towards Dengue Fever (N=100)		

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Preventive practices level	Scores	Frequency (%)
Good practices level	6-7	57(57%)
Fair practices level	4-5	32(32%)
poor practices level	0-3	11(11%)
Table 6: Distribution of Preventive Practices Level of Respondents Towards Dengue (N=100)		

Socio-demographic determinants		High (n=56)	Moderate (n=30)	Low (n=14)	x^2 with Yates correction	df	p-value
Age (years)	18-20	0	3	1	11.728	6	0.0683
	21-40	45	20	5			
	41-60	7	6	7			
	>60	4	1	1			
Gender	Male	37	18	4	5.064	2	0.0794
	Female	19	12	10			
Education	Primary	0	0	3	13.576	4	0.0087
	Secondary	15	4	1			
	Tertiary	41	26	10			
Occupation	Employed	36	25	4	9.788	4	0.044
	Self-employed	20	5	9			
	Unemployed	0	0	1			
Income	<3000	0	0	1	12.17	6	0.058
	>3000-10000	0	1	3			
	10000-20000	23	10	7			
	>20000	33	19	3			
SES	Upper	20	5	0	7.712	6	0.2599
	Upper middle	27	20	9			
	Middle	9	5	4			
	Upper lower & lower	0	0	1			
Waste disposal	Public dustbin	41	26	5	17.594	4	0.0014
	Throwing	13	3	5			
	Collection	2	1	4			
Table 7: Association between Socio-Demographic Determinants and Knowledge Level of Study Participants							

x^2=chi-square value;

df = degree of freedom;

P-value<0.05 is considered statistically significant.

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