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**Original Research Article**

# Knowledge, attitude and practice on dengue fever and its prevention and control measures in urban slums of South India

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## ABSTRACT

**Background:** Dengue fever (DF) is a viral infection carried by Aedesaegypti. Dengue is one of the major public health concerns and an emergent disease and contributes annual outbreaks in India. The aims and objectives of the study were to know the levels of knowledge regarding causation and modes of transmission Dengue fever in urban slums of Chittoor and to know the levels of awareness and practices regarding the prevention and control measures against dengue fever.
**Methods:** A community based cross sectional study was done in urban slums of Chittoor district in Andhra Pradesh. The data from the family members residing in 100 households of urban slums were randomly selected from the list and interviewed individually. Apart from education and occupation of the participants, information on knowledge about Dengue fever, preventive practices are taken. The results were shown in proportions, percentage and association of the knowledge attitude and practices with the different factors.
**Results:** Over all 100 (males 57 and females 43) people were interviewed with the mean age of 34.5 years. Almost 68% of the individuals knew mosquito causes vector borne diseases irrespective of their educational status and majority of them were daily wagers. Amongst them more than 70% of them were using protective measures. Majority of them responded the probable breeding sites were plastic pots, muddy pots and vessels (38%). The most commonly using protective measures were mosquito repellants (33%) and coils (19%). More than 90% of the individual visit the hospital for health seeking.
**Conclusions:** The awareness regarding dengue and mosquito control measures was satisfactory to an extent. Surveillance along with periodic health education to the community and proper training of health personnel is required.

**Keywords:** Knowledge, Attitude, Practice, Dengue fever, Urban, Slums

## INTRODUCTION

Dengue virus was first isolated in India in 1945.[1] Dengue is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication called severe dengue. Dengue is an acute febrile illness caused by *Flavi virus*, which exist in four different serotypes, namely DEN-1, DEN-2, DEN-3 and DEN-4. The incidence of dengue has increased 30-fold over the last 50 years. Up to 50-100 million infections are now estimated to occur annually in over 100 endemic countries, putting almost half of the world's population at risk.[2] Around 2.5 to 3 billion people, living mainly in urban areas of tropical and subtropical regions are

estimated to be at risk of acquiring dengue viral infections.[3] Today it affects Asian and Latin American countries and has become a leading cause of hospitalization and death among children and adults in these regions.[4] One recent (2013) estimate indicates that 390 million dengue infections occur every year (95% credible interval 284–528 million), of which 96 million (67–136 million) manifest clinically (with any severity of disease).[5] Another (2012) study, of the prevalence of dengue, estimates that 3.9 billion people in 128 countries are at risk of infection with dengue viruses.[6] All four virus types circulate and cause epidemics, but only occasional cases of DHF/DSS have been reported in India.[7] The risk of dengue has increased in recent years due to rapid urbanization, and deficient water management including improper water storage practices in urban, peri-urban and rural areas, leading to proliferation of mosquito breeding sites.[1,8]

## METHODS

### *Study design and settings*

A community based cross sectional study was done in urban slums of Chittoor district in Andhra Pradesh. The primary objective was to know the levels of knowledge regarding causation and modes of transmission Dengue fever in urban slums and to know the levels of awareness and practices regarding the prevention and control measures against Dengue fever.

### *Data collection*

Slum areas were selected from the Municipal Corporation, Town planning center of Chittoor. The data was collected in two months duration (1st September to 31st October 2016). The socio-economic status was calculated by using the revised modified BG Prasad socioeconomic classification scale, January 2014.[18] A simple random sampling was done for the selections of the participants residing in 100 households of urban slums were interviewed. Dengue fever positive cases were listed out from the General Hospital in those particular slum areas during the last 6 months. The data from the family members residing in 100 households of urban slums were randomly selected from the list and interviewed individually. Apart from education and occupation of the participants, information on knowledge about Dengue fever, preventive practices like regular checking of coolers, vessels or containers etc. for mosquito breeding was taken.

### *Data analysis*

Data was entered in Microsoft Excel sheet and analyzed by using statistical software package for social science (SPSS) version 21.0. Each question was analyzed individually. The results were shown in proportions and percentage and association of the knowledge attitude and practices with the different factors.

## RESULTS

Over all 100 (males 57 and females 43) people were interviewed. The study population largely comprised of adults and literate individuals (82%), with the mean age of the participants was 34.5 years. The respondents (Table 1) knew that mosquito transmits dengue fever in 68%, malaria in 91%, Filariasis in 74% Chikungunyain 66%. Of them 47% respondents came to know about dengue fever through television or radio, followed by 35% to newspapers and banners and 18% through friends or peers. Among those who knew mosquito transmits different vector borne diseases more than 70% were using protective measures against them irrespective of their educational status. Knowledge regarding dengue fever (Table 2) was low in daily wagers (55%). Usage of protective measures was also low in daily wagers (70%). Amongst 16 government employers 14 (88%) were having knowledge regarding dengue fever transmission and 14 (88%) were using protective measures. The respondents had the knowledge regarding the biting time was day (36%) and night (74%) and any time of the day (85%). Among the study population (Table 3) 32 were belong to lower class, of them 16 (50%) were having knowledge regarding dengue fever transmission and 20 (62%) were using protective measures. Among 13 upper class people, (Table 4) 12 (93%) were having knowledge regarding dengue fever transmission and 13 (100%) were using protective measures. With the increase in percapita income the knowledge and using of protective measures were also increasing.

**Table 1: Distribution according education and knowledge regarding vector borne diseases.**

| S. No. | Education | No. of subjects | Dengue fever (%) | Malaria (%) | Falariasis (%) | Chikungunya (%) | Protective measures (%) |
|---|---|---|---|---|---|---|---|
| **1** | Illiterate | 18 | 8 (44) | 15 (83) | 9 (50) | 7 (39) | 12 (67) |
| **2** | Primary school | 21 | 13 (62) | 18 (86) | 15 (71) | 12 (56) | 15 (71) |
| **3** | Secondary school | 35 | 22 (68) | 33 (94) | 24 (72) | 23 (66) | 27 (77) |
| **4** | Intermediate | 7 | 5 (72) | 6 (86) | 6 (86) | 5 (72) | 6 (86) |
| **5** | Graduates | 13 | 12 (92) | 13 (100) | 13 (100) | 13 (100) | 13 (100) |
| **6** | Postgraduates | 6 | 6 (100) | 6 (100) | 6 (100) | 6 (100) | 6 (100) |
| | Total | 100 | 68 (68) | 91 (91) | 74 (74) | 66 (66) | 79 (79) |

**Table 2: Distribution of the participants according to the knowledge acquired through different sources.**

| S. No. | Knowledge acquired through | Dengue |
|---|---|---|
| **1** | Television/ radio | 47 |
| **2** | Newspapers/ banners | 35 |
| **3** | Friends/peers | 18 |
| **S. No.** | **Biting time*** | **No.** |
| **1** | Day time | 36 |
| **2** | Night time | 74 |
| **3** | Any time | 85 |

* Multiple responses.

**Table 3: Distribution according occupation and knowledge regarding dengue fever and protective measures.**

| S. No. | Occupation | No. of subjects | Dengue fever (%) | Using protective measures |
|---|---|---|---|---|
| **1** | Unemployed | 12 | 9 (75) | 10 (83) |
| **2** | Daily wagers | 33 | 18 (55) | 23 (70) |
| **3** | House wife | 20 | 14 (70) | 17 (85) |
| **4** | Skilled workers | 19 | 13 (68) | 15 (79) |
| **5** | Government employers | 16 | 14 (88) | 14 (88) |
| **6** | Total | 100 | 68 (68) | 79 (79) |

**Table 4: According to percapita income (revised modified BG Prasad socioeconomic classification scale, 2014).[18]**

| S. No. | Percapita income | No. of subjects | Dengue fever (%) | Using protective measures (%) |
|---|---|---|---|---|
| **1** | <Rs. 811 (lower class) | 32 | 16 (50) | 20 (62) |
| **2** | 812-1569 (upper class) | 15 | 9 (60) | 12 (80) |
| **3** | 1570-2651( lower middle class) | 23 | 17 (74) | 19 (83) |
| **4** | 2652-5356 (upper middle class) | 17 | 14 (82) | 15 (83) |
| **5** | 5357 and above (upper class) | 13 | 12 (93) | 13 (100) |
| **6** | Total | 100 | 68 (68) | 79 (79) |

**Table 5: According to regular checking of breeding sites, commonly using protective measures and health care delivery.**

| Probable breeding sites | Number (%) |
|---|---|
| **Plastic pots/ muddy pots/ vessels** | 38 (38) |
| **Coolers** | 24 (24) |
| **Burrows and pits** | 14 (14) |
| **Discarded tyres** | 7 (7) |
| **Coconut shells** | 6 (6) |
| **Stagnant water** | 11 (11) |
| **Checking of breeding sites** | |
| **Regular (weekly)** | 36 |
| **Irregularly** | 48 |
| **Never** | 16 |
| **Commonly using protective measures** | |
| **Mosquito repellents** | 33 |
| **Coils** | 19 |
| **Creams** | 7 |
| **Bed nets** | 12 |
| **Mesh** | 8 |
| **Not using any measures** | 21 |
| **Health care delivery** | |
| **Government hospitals** | 56 (56) |
| **Private hospitals** | 36 (36) |
| **Self-treatment / others** | 8 (8) |

The respondents said the probable cause for breeding sites (Table 5) for mosquitoes 38% in plastic pots, muddy pots, vessels and coolers (24%), burrows and pits (14%), discarded tyres (7%) coconut shells (6%) and stagnant water (11%). Among study participants the checking of the breeding sites was done regularly (weekly) in 36% and 48% irregularly 16% were never done. In relation to commonly using protective measures 33% were commonly using mosquito repellents, 19% were using mosquito coils, 21% respondents were not using any protective measures and others are using creams (7%), bed nets (12%) and mesh (8%).

***Health seeking behavior***

As shown in Table 5 among 100 study people 56% were depending on government hospitals 36% were depending on private hospitals for the treatment of their ailments. Delay in tracing health care 79% respondents was not delaying in seeking the health care only 21% respondents were delaying in seeking the health care.

## DISCUSSION

The current study had documented the knowledge, attitude and practices and preventive and control measures in the urban slums. The majority (68%) of the respondents in this study had known about Dengue fever. Similar study in Guntur and Delhi had reported the high level of awareness.[9,10] In a study done in Brazil 78% subjects knew about dengue whereas in Thailand, knowledge about dengue was 67%.[11,12] The knowledge acquired was by the news media and print media. The study done in Kuala Kangsar district found that 78% subjects knew about dengue.[13] In the current study, television was the most important source of information (47%). This is little less compare to the study from east Delhi and Kuala Lumpur.[10,12] This shows that mass media like television is a very important source of information. This might be because the television viewers had increased in the recent past. The respondents had the knowledge regarding the biting time was day (36%) and night (74%) and any time of the day (85%) and it is comparable with the studies done Delhi and Pondicherry.[14,15]

About 79% of them are used one or another method of protective measures against adult mosquitoes. Common breeding sites in the community were plastic pots (38%), coolers (11%), burrows and pits (14%) and putting oil in their coolers (19%). It has already been substantiated that people have good idea about the breeding places of mosquitoes had similar results with the other studies.[12,13] Majority (79%) of them were using different kinds of protective measurements. About 21% people did not practice any preventive measure. In a study done in Pondicherry almost everyone (99.3%) used some personal protection measures.[16] Majority of them were using them in the night time, this highlights the existing gap in the knowledge with respect to the biting habits of *Aedes* mosquito. This is comparatively higher than the present study probably due to socio-economic differences and also issues related to reliability. Majority of them will had good health seeking behavior by visiting hospital two studies also reported the same results, this lap of knowledge in attaining the protective measures will be decreased by the active health educational programs and propaganda during that season.[15,17]

The study has its sets of limitations mainly the possibility of interviewer bias and the drawbacks of convenience sampling. The above observations may be true only for the study population and cannot be generalized to other populations belonging to different socio-economic or cultural backgrounds.

## CONCLUSION

It may be concluded that though the knowledge regarding vector borne diseases is good in the general population, practice of regular checking of breeding sites is quite poor. The awareness regarding dengue and mosquito control measures was satisfactory to an extent.

***Recommendations***

Strengthening of surveillance along with periodic health education to the community and proper training of health personnel is required for proper protection in the community. In addition, community level activities like proper water drainage, cleaning of the surroundings on weekly basis and disposal of waste bottles, coconut shells are required for controlling the disease. As vector borne diseases are seasonal diseases so mass media and active health education should be given prior to the season for community awareness.

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