ORIGINAL ARTICLE

DENGUE EPIDEMICS: KNOWLEDGE PERHAPS IS THE ONLY KEY TO SUCCESS

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Background: Dengue fever/dengue haemorrhagic fever is a re-emerging vector-borne viral illness that is endemic in Tropics and poses a major public health burden in many countries of South East Asia, The objectives of the study were to correlate the dengue fever knowledge and preventive practices with age, gender, education, occupation and marital status of people of Wah Cantt. and to determine the association between knowledge level and preventive practices. **Methods:** This cross-sectional Survey was done in Wah Cantt from July to Dec 2011. Three hundred and sixty-three participants were selected through Stratified Random Sampling. Data on the knowledge and practice of the participants was collected by using structured questionnaire by the researcher. Knowledge and preventive practices were given scores on each correct response and participants were categorized into different groups according to their scores, i.e., excellent, good, poor and negligible. Associations were computed using Chi-square and Bivariate Correlation. *p*-value<0.05 was taken significant. **Results:** Mean age was 35.7±12.1 years. More participants were male (64.5%). Male sex, old age, employment without specific qualification and being parents had significant associations with both levels of knowledge and preventive practices. Level of knowledge was highly associated with levels of practice X^2=79.1, df=9, *p*=0.000 and r=0.464 and *p*=0.000. **Conclusion:** The knowledge and preventive practices of people are related to their gender, marital status, age and occupation. Unexpectedly education has no association with knowledge or better preventive behaviour. Preventive practices get better where knowledge levels are more, emphasizing the need of community education programmes.

Keywords: Dengue, knowledge, preventive practices, demographic characteristics, gender, marital status, age, occupation, education, Wah Cantt.

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INTRODUCTION

Dengue fever/dengue haemorrhagic fever is a re-emerging vector-borne viral illness that is endemic in Tropics and poses a major public health burden in many countries of South East Asia.[1] According to WHO, about 2/5th population of the world is at risk of dengue infection and 50 million infections occur worldwide every year.[2,3]

The overall burden and severity of disease is on the rise in Pakistan with a great pace. Many studies suggest that Dengue fever is now endemic in the country.[4–6] Although with appropriate diagnosis and clinical support Case Fatality Rate is less than 1% but it can be raised up to 44% if not properly handled.[7,8]

Second World War leading to vast ecological disruption, demographic changes, movement of discarded equipment, expanded the geographic distribution of the vector, *Ades aegypti*. Other contributory factors in South East Asian countries including Pakistan are climate, rapid urbanization resulting in unplanned proliferation of slums, increase international travel and inadequate water supply and sewerage disposal systems.[9,10] There is yet no specific treatment for Dengue Fever so prevention is imperative. But the vaccine development is still a far dream as it is difficult to incorporate all the four serotypes in one formulation.[11,12]

The only method to combat the disease is to stop the breeding of its vector. It could be achieved by defensive (mosquito nets, screening, coils/matt, repellents), offensive (spraying, fogging, oiling) and corrective (environmental up gradation, piped water supply etc.) measures.[13,14]

Dengue fever has been creating havoc in Pakistan for the last 4–5 years. Almost 21,000 patients were reported from the country in 2010 out of which 16,000 were from Lahore alone.[15,16] As the climate in Pakistan is suitable for the vector-human-virus relationship to flourish preventive measures have to be taken at several steps.

The great hue and cry due to Dengue morbidity and mortality and the social and economic burden caused by the disease raises the need to start a comprehensive eradication campaign. The first requirement is to create awareness among community members on disease recognition, actions which reduce vector-human

interaction and help to eradicate breeding sites both at household and community levels.

The second requirement to stop disease transmission is to initiate an effectively organized vector control programme using community-based integrated approach because if the community members are not made aware of the importance of preventive measures taken by the government they will resist and cause failure of the programme.

A few KAP surveys are done in Pakistan to assess the knowledge and preventive practices of our population. One such survey done in Karachi reported that only 35% of the respondents had adequate knowledge about dengue and its vector and it had significant association with education (p=0.004) and socioeconomic status (p=0.02).[17] Another KAP survey done in Multan reported that none of the respondent knew that dengue vector breed in clean water and only 12.6% knew that the vector breed during rainy season.[18]

One of the objectives of "Punjab Health Line Project for Dengue" initiated by the government of Punjab is to launch Awareness campaigns and ensure that people have appropriate knowledge and behaviour to protect their own health.[15] Paucity of knowledge and practice surveys necessitated the conduction of this survey to find out the baseline data which will assist in identifying the population at risk, especially in relation to their socio-demographic profiles and it can direct the policy makers to develop appropriate strategies to target the health education campaign to those who need it the most.

MATERIAL AND METHODS

A cross-sectional community based survey was conducted in the state area of Wah Cantt, a residential colony of Pakistan Ordinance Factories (POF), located 50 Km towards the North West of Rawalpindi/Islamabad, Pakistan. Total area of Wah is 35 sq. mile with a population of 0.35 million. Weather is moderate and literacy rate is 99%. Study was conducted from July to December 2011. To capture a representative sample from the population of Wah Cantt State Area with Confidence level 95%, Anticipated population proportion =39.1% and Absolute precision required =5%, the Sample size was 365. Accounting for non-respondents and incomplete interviews data was inflated up to 11%, i.e., 413**.**

Four hundred and thirteen households were visited and an adult member of the household who fulfilled the inclusion criteria, i.e., more than 18 years of age and mentally and physically capable of answering, was interviewed using a structured questionnaire. The households were selected using stratified random sampling. The sampling frame was obtained from station headquarters, Wah Cantt after taking appropriate permission from local authorities. The households which were found locked or no adult was present at the time of survey or he/she refused to participate in the survey were excluded from the sample. Three hundred and sixty-three household completed the questionnaire finally.

Selected household inhabiting any adult of age 18 year or above was included in the study. After taking informed consent, data regarding age, income range; knowledge about dengue symptoms, spreads and treatment; knowledge on vector characteristics and breeding sites; knowledge on prevention measures and actual preventive measures taken was obtained and filled in questionnaire. People were interviewed in Urdu. In case the person of selected household failed to respond to all the questions or decide not to complete the interview was excluded from the study.

Based on the number of correct answers in all the three sections of knowledge by the respondents they were categorized as following: Exceptional knowledge: 22–29/29, Good knowledge: 17–21/29, Poor knowledge: 11–16/29 and Negligible knowledge: <11/29.

Fourteen questions were asked about preventive practices and participants were categorized as following: Exceptional 11–14/14, Good 8–10/14, Poor 5–7/14 and Negligible <5/14.

All the data obtained was entered and analysed using SPSS-19. Frequencies and percentages were calculated for qualitative variables. Cross tabulation was done to determine the association between level of knowledge/prevention in people and their socio-demographic features and between level of knowledge and level of prevention. Test of significance applied was Chi- square and correlation and p-value less than 0.05 was taken as significant.

RESULTS

The study was conducted on 363 participants each from a household selected from the state area of Wah Cantt. The mean age of the participants was 35.7±12.1 years, ranging from 18 to 66 years. Most of the participants (64.5%) were male. And only 7% had education status primary or less.

The socio-demographic variables are summarized in table-1. The dengue knowledge score ranged from 0 to 29 and prevention score from 0 to 14. (Figure 1)

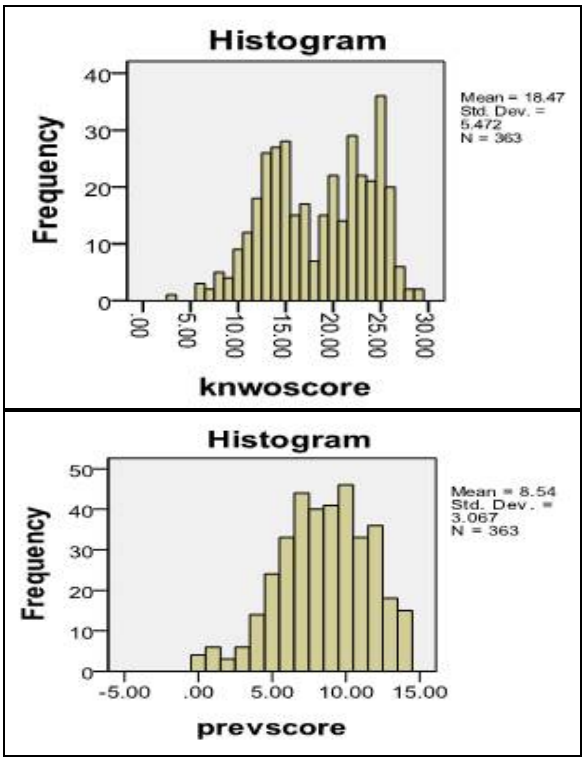
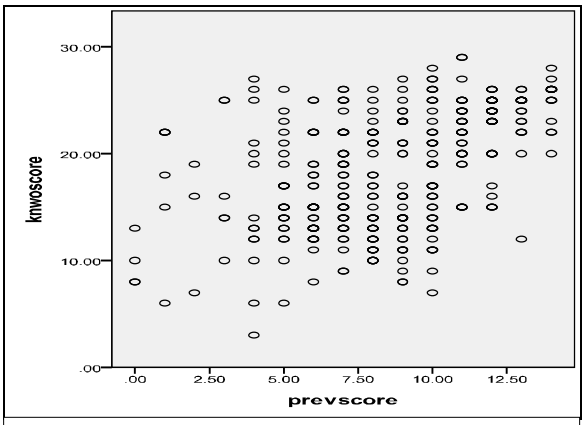


Figure-1: Distribution of knowledge and preventive scores



❖ Scores obtained in knowledge section (Y-axis) and preventive practices section (X-axis) by the participants are correlated

Figure-2: Scatter plot showing positive correlation between knowledge and prevention scores.

54.3% of the respondents had exceptional or good knowledge level about dengue fever whereas 63.1% had exceptional or good preventive practices against it. 4.5% had not even heard the name of Dengue Fever. Males, Older age groups, employed without specific qualifications and those married and had children scored higher in both dependent variables which imply that they had higher levels of knowledge and took more preventive measures. P values are summarized in table-1.

Table-1: Correlation of Socio-demographic characteristics of the study participants with knowledge and preventive behaviours, Wah Cantt, Pakistan.

Socio-demographic variables	Frequency (n)	Percentage (%)	*p*-value Knowledge* Prevention**
Age 18–28 29–38 39–48 49–58 59–68	136 76 79 64 7	37.5 20.9 21.8 17.6 1.9	0.000* 0.012**
Gender			0.001* 0.03**
Male Female	246 167	59.6 40.4	
Occupation			0.001* 0.000**
Unemployed	76	18.4	
Employed without specific qualification	154	42.4	
Employed with specific qualifications	131	36.1	
Marital status			0.001* 0.01**
Unmarried	142	34.4	
Married with children	168	40.7	
Married without children	61	14.8	
Educational status			0.16* 0.40**
Uneducated	18	4.4	
Primary	10	2.4	
Matric	60	14.5	
Graduate	97	23.5	
Post- graduate	187	45.3	

**p*-value for correlation between knowledge and socio-demographic variable. ***p*-value for correlation between preventive behaviour and socio-demographic variable

Table-2: Dengue symptoms, transmission & breeding sites named correctly by participants.

RESPONSE	participants (n) Given correct response	percentage
Symptoms		
Fever	329	80.2
headache	142	39.1
Rash	146	40.2
vomiting	86	23.7
retro bulbar pain	94	25.9
bleeding	90	24.8
unconsciousness	32	8.8
TRANSMISSION		
mosquitoes	338	93.1
water	45	12.1
biting time	291	81.2
season of breeding	327	90
BREEDING SITES		
stagnant water	279	76.9
artificial collection of water	114	31.4
tyres/coolers	111	30.6
bath tubs	146	40.2

Levels of knowledge were highly statistically associated with levels of preventive behaviours when treated as ordinal variables (X^2 =79.1, df=9, p=0.000). Knowledge and prevention were also treated as numerical variables and Correlation coefficient was calculated. Mean knowledge score was 18.5±5.2, whereas mean prevention score was 8.5±2.8. Knowledge had significant positive correlation with preventive practices (r=0.46 & p=0.000) as shown in figure II.

DISCUSSION

As the study design was descriptive the results could only be generalized to the population of Wah and not to the other communities of the region. Secondly the questionnaire was structured and people had to choose between the choices given so several aspects of knowledge and prevention may remain uncovered in the study.

Wah Cantt as a community showed reasonable levels of knowledge and preventive scores slightly towards the higher side as compared to the levels showed in KAP surveys done in Karachi, Brazil & Saudia.[17,18,20] The study results showed highly significant associations of the demographic variables with levels of knowledge and preventive practices except education (p=0.16 &0.40). This might be for the reason that most of the residents (99.9%) of Wah are literate and as shown in table-I, this was depicted in our sample where only 28 (7.7%) respondents had education level primary or less. This result was similar to the results of KAP survey done in Male [(21)] and totally different from the study done in Karachi & Jamaica[17,22] which showed highly significant association of education with knowledge (p=0.04 & 0.07 respectively). KAP survey in Thailand demonstrated associations between Sex, Age and education.[23]

Gap in the knowledge was observed in the responses regarding breeding sites. People had very little idea that artificial water collections, tires/coolers, used bottles and bath tubs can also act as potential breeding sites. This subject was also poorly known by the participants of Puerto Rico, Jamaica & Tamil Nadu KAP surveys.[22,24,25] This is an important area to be addressed during community awareness campaigns.

Knowledge on various variables regarding preventive measures against diseases ranged from 44.4% for use of matt to 62.5% for changing water regularly. Half of the study population was unaware of the preventive practices which could protect them from Dengue Fever. KAP survey done in Multan, Pakistan reported the use of fan as a preventive measure by 81.5% participants.[18] In Thailand knowledge of this aspect was quite low.[26] This is another area which should be focused while imparting health education to Wah Community. Preventive practices could have been explored better if an entomological survey was also conducted but the scarce resources limited the research topic.

Vector source reduction can only be achieved by full community involvement which could only be gained by raising community's awareness on the topic. Emphasis should be on the topics identified as deficient in future health education campaigns. However more research is needed to confirm the above findings and enhance understanding of the socio-demographic factors' role in knowledge gaining and preventive practices behaviours.

CONCLUSION

The knowledge and preventive practices of people are related to their gender, marital status, age and occupation. Unexpectedly education has no association with knowledge or better preventive behaviour. Preventive practices get better where knowledge levels are more, emphasizing the need of community education programmes.

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