Knowledge, Attitude, and Practice about Dengue Transmission among Residents of Dengue Prevalent Zones of Rawalpindi

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Abstract

Background: Over the past decade the incidence of Dengue Fever (DF) has increased substantially, and it has emerged as a major public health threat. The objective of this KAP study was to evaluate the knowledge, attitudes, and practices regrading dengue fever.

Methods: This Cross-Sectional Study was carried out in Dengue epidemic zones of Rawalpindi. One individual from each household (n = 110) was interviewed. KAP valuation was done by recording scheme. Data were analyzed using MS Excel and SPSS version 21. Chi-square / Fischer exact test and correlation were performed to check the significance of the association.

Results: The Participants were from the age bracket of 17 to 26 years; the mean age was 20.2 ± 1.9 years. 53.6% were male and 46.4% were female, and most of them 59.1% were illiterate. A major source of information about infection was reported as news/ radio (73.6%) each, followed by newspaper 68.2%. The mean score obtained by participants was as: knowledge 6.19 ± 1.267; attitude 4.67 ± 1.2 and practice score 3.6 ± 1.03. The correlation of these scores revealed a significant positive correlation between knowledge and attitude, and knowledge and practice (p value < 0.001). 40.9% of respondents had sufficient knowledge, 54.5% had a good attitude and 64.5% had good practices. Cross tabulation results showed a significant association between knowledge and practices at p-values of 0.02.

Conclusion: Overall score for all three categories seems not satisfactory. There is a need to improve the knowledge of the studied area population by involving the residents and health care professionals.

Keywords: Dengue, infection, epidemic, Rawalpindi

Introduction

Dengue Fever (DF) is increasing surprisingly and is considered an emerging disease throughout the world (1). It is regarded as a threat to public health, as it is estimated that about 50% of the world population is living in dengue indigenous countries and is at risk (2, 3).

Dengue is a vector-borne viral infection. The main signs and symptoms of this infection are high fever (40 °C) followed by severe headache, nausea, vomiting, muscle and joint pain or discomfort, swollen glands, and pain behind the eyes. After four to ten days from an infected female mosquito bite, symptoms generally appeared and last for two to seven days. Lethal symptoms include respiratory distress, plasma leaking, fluid accumulation, severe abdominal pain, severe bleeding, or organ injury (4).

Among south-east Asia, Pakistan is one of the most prominent subtropical countries. It is the main spot for many vector-borne diseases such as Malaria, Crimean-Congo hemorrhagic fever (CCHF), Leishmaniasis, and West Nile virus disease. Dengue fever is a new and fast emergent infectious disease in this region. Both Aedes aegypti and Aedes albopictus has reported from all the dengue-affected districts of Punjab, Pakistan, while Aedes albopictus was identified from more regions. Both species had resistance to DDT, malathion, bendiocarb, and permethrin (5, 6). The disease can occur the whole year with peak outbreaks between September to November, during post-monsoon periods (7).

The first dengue fever case was reported in the late 1980s (8). Multiple dengue virus occurrences have happened in Pakistan during the last three decades. Dengue outbreak in Pakistan is the main public health concern since 2005; allowing millions of people in danger, till 2016, 71649 cases were reported with 797 deaths (9-11). The outbreak of dengue in Pakistan in 2011 was very severe in different regions and elicited questions about possible parts of its vector distribution and its cause (12). The actual zero numbers of dengue cases are reported, and many cases are misclassified (1).

Aedes mosquitoes flourish in areas withstanding water, including water containers, puddles, water tanks, Plant vessels, tree holes, old tires, and the

absence of proper sanitation (4). absence of proper sanitation (4).

An important aspect of DF infection control through health education about its causative agent, its clinical features, and spread and control measures especially in epidemic localities (13). Therefore, this study aimed to assess the knowledge, attitude, and practice regarding dengue fever among the population residing in the disease epidemic area of Rawalpindi.

Methodology

A Cross-sectional quantitative research was conducted in a rural area of Rawalpindi which is a Dengue epidemic area between July 2019 to Oct 2019. The study population included the persons residing in the disease epidemic area.

Random sampling was applied d

Axf9s0uring data collection where one respondent in every 2nd house that researchers passed by was chosen to answer the questionnaire. The sample size was calculated using a single population proportion formula (n = (z)2 p (1 – p) / d2) by considering the following assumption; the prevalence of knowledge about dengue fever prevention, spread, and treatment is 50% (as there was no previous data available in Pakistan with a similar setting), 95% level of confidence (Zα/2=1.96), 10% margin of error (d=0.01), making the sample size of 96. By adding 10% non-refusals 106 ≈ 110 participants were interviewed for this study. Individual more than 16 years of age, with at least one person infected with dengue fever in the family, was considered as the inclusion criteria. Newly migrated families within the timeframe of one month and those who are working in the dengue control program were excluded from the study. This study was performed through a face-to-face interview with 110 participants. Pre structured questionnaire was developed with questions regarding the dengue fever vector, mode of transmission, signs/symptoms, treatment, and prevention were included. It consisted of three sections; each concerned with knowledge having 10 questions, practices having 7 questions, and attitude consisting of 5 questions. Each appropriate response was given a score and the score for each section of the questionnaire was totaled. Knowledge (which were assessed as 'sufficient' or 'insufficient' based on an arbitrary cut-off point) to attitude and practice, are categorized as good or not good.

For better quality of data, data collection was trained. A preliminary test was taken among 5% of the total sample size to assess the clarity, length, completeness, and consistency of the questions posed. Questions difficult to ask were rephrased. The questionnaires prepared in the English language were translated into Urdu to facilitate the understanding of the respondents. It was then translated back to English to check for consistency. The filled questionnaire was checked for completeness and errors were corrected. The interview was done after obtaining verbal consent to ensure that all feedback is captured for analysis.

Data was checked, cleared, and entered into the IBM statistical package for the social sciences (SPSS) version 21.0. The results were presented in tabular and graphical form. In descriptive analysis Mean, the Standard Deviation for respondent age variable while Frequencies and Percentages were calculated for all other categorical variables. In inferential analysis, Chi-square or Fisher's exact test and correlation were carried out. A 95% confidence interval with a significance level of p-value <0.05 was used for all analyses.

Ethical clearance and permission for this research were obtained by the Ethical Committee of the Gujranwala Medical College, Gujranwala. The nature of the study was fully explained to the study participants to obtain their oral informed consent before participation in the study. Anonymity and confidentiality of the participants were maintained. Data was used solely for the study.

Results

A community-based cross-sectional study was conducted to assess the knowledge, attitude, and practices of Dengue infection in people living in the dengue epidemic area of Rawalpindi. A total of 110 participants were interviewed, lie in the age bracket of 17 to 26 years, mean is 20.2 ± 1.9 years. 59 (53.6%) respondents were male and 51 (46.4%) were female. Of participants who responded to the questionnaire, the majority 65 (59.1%) of them were illiterate, while 45 (40.9%) were literate. Source of information about dengue fever/ infection were reported as news 81 (73.6%), radio 81 (73.6), newspaper 75 (68.2), relatives/friends 11 (10%), health care professionals 5 (4.5%) and any other source as 26 (23.6%).

Most of the respondents 101 (91.8%) knew that mosquito vector transmits DF infection. However, only 15 (13.6%) knew the correct types that transmit this infection. 86 (78.2%) participants knew that fresh bread in stagnant water is the bread place where mosquitoes, are and that the use of spraying insecticides, mosquito coils, electrical mats, and mosquito nets is a way to prevent infection. Only 39 (35.5%) knew about the timings when the probability of mosquito biting is more than other timings. The majority of 100 (90.9%) knew that person can get this infection more than once in life and that it can affect all people irrespective of age 98 (89.1%) and gender 91 (82.7%). Few 45 (40.9%) respondents responded that dengue infection can occur in any season irrespective of the rainy season (Table 1). 78 (70.9%) know that fever is a symptom of DF. More than half of the participants knew other typical symptoms of DF like headache 61 (55.5%), joint pain 64 (58.2%), and stomach pain 53 (48.2%). Lesser number of participants knew about the skin rashes 28 (25.5%), nausea 16 (14.5%), fatigue 17 (15.5%), diarrhea 42 (38.2%) and complications like bleeding 39 (35.5%) and hypotension 7 (6.4%).

Table 1: Respondents' knowledge about dengue fever

#	Knowledge related variables	N (%)
1	How is dengue fever transmitted to a person?	101 (91.8)
2	What type of mosquito transmits dengue fever?	15 (13.6)
3	Breeding place of dengue vector is?	86 (78.2)
4	When are usually mosquitoes active to bite?	39 (35.5)
5	Use of spraying insecticides, coils, electric mat, mosquito nets can prevent disease?	86 (78.2)
6	A person can get dengue more than	100 (90.9)

#		n (%)
	once?	
7	Dengue fever can affect babies, kids, and adults?	98 (89.1)
8	Everybody has the probability to be infected by dengue?	91 (82.7)
9	*Dengue outbreak only happens during rainy season?	45 (40.9)
10	What are the signs and symptoms of dengue fever?	11 (10)

*False/negative statements

Table 2 summarizes the participants' attitude regarding dengue fever. Most of them 104 (94.5%) agreed about the serious nature of the illness. 97 (88.2%) had a positive attitude towards infection prevention and 95 (86.4%) believed that it is treatable. 61 (55.5%) think that they are at risk, while 47 (42.7%) believe that healthy people can get this infection. About 68 (61.8%) viewed that only government, healthcare workers, and volunteers are responsible for the prevention of disease. While the same number of the participants had a positive attitude that they can individually contribute to the prevention and control of dengue fever.

Table 2: Respondents' attitude towards dengue fever

#	Attitude related variables	n (%)
1	Is Dengue fever a serious illness?	104 (94.5)
2	Is dengue preventable?	97 (88.2)
3	Is dengue treatable?	95 (86.4)
4	Are you at risk of getting dengue fever?	61 (55.5)
5	*Only government, healthcare workers and volunteers are responsible for prevention of disease?	42 (38.2)
6	Can we individually contribute to prevent dengue?	68 (61.8)
7	*Healthy people will never get dengue?	47 (42.7)

*False/negative statements

Table 3 shows the practices adopted by participants to protect themselves from dengue fever. Most of the participants 90 (81.8%) used mosquito repellent (coil, mat, cream, bed net, window screens, light, etc.) in their homes. 81 (73.6%) check for garbage/rubbish that can block the drainage system around the house. 94 (85.5%) claimed that they cover water containers at home and 86 (78.2%) dispose of water holding containers properly. Only 49 (44.5%) participants were involved in the area dengue campaign.

Table 3: Respondents' practices regarding dengue fever

#	Practices related variables	n (%)
1	Do you use any mosquito repellent (coil, mat, cream, bed net, window screens, light etc.)?	90 (81.8)
2	Do you check for any garbage/rubbish that can block the drainage system around your house?	81 (73.6)
3	Do you dispose water holding containers (cups, boxes, bottles, etc.) that are not in use?	86 (78.2)
4	Do you cover water containers at home?	94 (85.5)
5	Do you get involved in any dengue campaign in your area?	49 (44.5)

We calculated percentages of mean scores of participants from 10 questions of knowledge, 7 questions of attitude, and 5 questions of practice. The mean score obtained by participants was as: knowledge 6.19 ± 1.267 out of 10 (Minimum: 3, Maximum: 9); attitude 4.67 ± 1.2 out of 7 (Minimum: 2, Maximum: 7) and practice score was 3.6 ±1.03 out of 5 (Minimum: 0, Maximum: 5). The correlation of these scores revealed a significant positive correlation between knowledge and attitude, and knowledge and practice (p value<0.001), while the correlation between attitude and practices is insignificant at p-value >0.05 (Table 4).

Table 4: Correlation among the KAP variables

Variables	r-value	p-value
Knowledge-Attitude	0.338	**<0.01**
Knowledge-Practice	0.193	**0.04**
Attitude-Practice	0.108	0.261

Based on the mean of knowledge, attitude, and practices it seems that 45 (40.9%) respondents had sufficient knowledge, while 60 (54 5%) and 71 (64.5%) had a good attitude and practices respectively. Cross tabulation results showed a significant association between knowledge and practices while insignificant between knowledge and attitude, and attitude and practices.

Table 5: Crosstabulation results

Variables	Attitude-good	Attitude-Not good	P-value
Knowledge-Sufficient	26 (23.6)	19 (17.3)	0.6
Knowledge-Insufficient	34 (30.9)	31 (28.2)	
Variables	**Practices-Good**	**Practices-Not good**	**P-value**
Knowledge-Sufficient	35 (31.8)	10 (9.1)	0.02
Knowledge-Insufficient	36 (32.7)	29 (26.4)	
Attitude-Good	38 (34.5)	22 (20)	0.8
Attitude-not good	33 (30)	17 (15.5)	

Discussion

We surveyed to assess the level of Knowledge, Attitude, and Practice related to dengue infection in the selected dengue epidemic area of Rawalpindi.

Most (70.9%) identified that fever was a major symptom. More than half of the participants knew about other common symptoms of dengue-like headache (55.5%), and joint pain (58.2%). When further queried about the typical symptoms of infection, a significantly lower number of participants were able to correctly identify these. Many could not identify the complications and warning signs of dengue. This is like the observations of various other studies (14-17). The ability to recognize the signs and symptoms of dengue is of great importance, guiding people to seek timely treatment and prevent morbidities and mortalities due to this infection.

This study's results revealed that most of the respondents (91.8%) identified the mosquito as the vector for dengue infection transmission. However, only a few (13.6%) could identify the correct type of mosquito that transmit this infection. These results are like the study done in Bihar which indicates that a good percentage of participants knew that not all mosquitoes can transmit dengue but only a few (17.5%) knew that Aedes mosquitoes

transmit it (14). Another study found that out of the total, 77.4% knew that dengue was transmitted by mosquitoes. When prompted further, only a few respondents could name the type of mosquito (17).

Most of the participants (78.2%) knew that clean stagnant water is the breeding place for the mosquito and that the use of spraying insecticides, mosquito coils, electrical mats, and mosquito nets is a way to prevent infection. Other studies reported that 90% of respondents believed that dengue can be prevented by controlling breeding sites of mosquitoes (14, 17). Commonly used preventive measures are mosquito nets, use of insecticidal sprays to reduce mosquitoes, and screen windows. Mosquito repellents are also favored by them. Nearly 94% covered water containers at the home (14). Another study revealed that the two most common measures taken were the use of mosquito coils (74.5%) and insecticides (68.0%) (17).

Less than half (35.5%) of participants knew about the timings when the probability of mosquito biting is more than other timings, still, our study findings are quite better than other studies according to these only 14% and 29.5% knew that these mosquitoes can bite both at dawn and dusk (14, 17). This means that methods of preventing mosquito bites such as mosquito coils and bed netting are usually used at night, which is not very much effective in prevention.

Most of the respondents reported the source of information about dengue fever/ infection as TV news/ radio (73.6%), followed by a newspaper (68.2%). This illustrates the importance of the mass media in conveying important health issues to the public. A very low number of participants reported health care professionals (4.5%) as a source of information. The role of medical personnel as the source of information was important and reported in other studies in contrast to this study (18, 19). This shows the benefit of public education campaigns launched by the state to the people. Includes media, particularly television has played a major role this may indicate the importance of targeting partial educational campaigns for Behavioral change communication.

Most of the respondents of this study (94.5%) agreed about the serious nature of the illness. (88.2%) had a positive attitude towards infection prevention and (86.4%) believed that it is treatable. These results are like another study that found that most participants knew that (87.9%) it is a serious illness. Also, about 80% of participants agreed that the disease is preventable (14). Another research indicates that most respondents (96.0%) considered dengue as a serious disease, and that about all respondents believed that they should seek treatment for dengue (17).

In this study about (61.8%) viewed that only government, healthcare workers, and volunteers are responsible for the prevention of disease. While the same number of the participants had a positive attitude that they can individually contribute to the prevention and control of dengue fever. In another study, nearly half of the participants disagreed with the proposition that it is only the government's responsibility to control mosquitoes and almost 90% of them thought that everybody should actively participate in controlling mosquitoes. (14) Another study indicates that a substantial portion of the respondents (57.0%) felt that it was their responsibility to control Aedes,

while another 9.5% felt it was solely the government's responsibility. Another one-third of the respondents have the opinion it was a shared responsibility (17).

It was noted that only (44.5%) of participants were involved in the area dengue campaign. These results are much less than other study results which indicate that 90.5% of the respondents would support any activities organized by the health authorities aimed at eradicating Aedes (17).

The correlation of scores revealed a significant positive correlation between knowledge attitude and knowledge practice. There was no significant association between attitude and practice. Similar findings were reported in another study (14).

Our study results showed that less than half (40.9%) of the participants had sufficient knowledge about dengue fever. The knowledge about dengue fever spread, control treatment, and prevention appeared to be lagging. Good attitude and practices are found in more than half (54.5%, and 64.5%) of them, it is because most of the respondents know that dengue is a serious disease and had a positive attitude towards its treatment and prevention. This may be high because the respondents of this study belong to the dengue fever epidemic area. However, the practices recorded in our study were more towards personal protection than the environmental control of the vector indicating the gap in the education of the public regarding the transmission and ecological factors. Cross-tabulations were done between knowledge and practice, knowledge and attitude, and attitude and practice. Cross tabulation results showed a significant association between knowledge and practices while insignificant between knowledge and attitude; and attitude and practices, contrasting the results of another study which showed a significant association seen between knowledge and attitude and no significant association seen between knowledge and practice; and attitude and practice (17).

Conclusion

The knowledge of this study participants was low, and the good attitude and practice score was relatively slightly higher than the good knowledge score. Yet overall score for all three components seems not very good or satisfactory. Therefore, massive awareness campaigns are urgently required to protect the health of people by involving the residents and health care professionals, against dengue fever and to limit the future spread of infection in this part of our country.

Limitations of the study

Our sample size is relatively small and cannot generalize existing gaps in ecological factors reliable for disease spread and prevention could not be explained.

References

1. Harish, S., et al., Knowledge, attitude and practice regarding dengue infection among parents of children hospitalized for dengue fever. Current Pediatric Research, 2018. 22(1).

2. Gubler, D.J., Dengue, urbanization and globalization: the unholy trinity of the 21 (st) century. Trop Med Health. 2011; 39 (4 Suppl): 3–11. doi:

10.2149. 2011, tmh.

3. Organization, W.H., Global strategy for dengue prevention and control 2012-2020. 2012.

4. Organization, W.H., et al., Dengue: guidelines for diagnosis, treatment, prevention and control. 2009: World Health Organization.

5. Ashfaq, M., et al., Analyzing mosquito (Diptera: Culicidae) diversity in Pakistan by DNA barcoding. PLoS One, 2014. 9(5): p. e97268.

6. Ilahi, I. and M. Suleman, Species composition and relative abundance of mosquitoes in Swat, Pakistan. Intrl J Innov Appl Studies, 2013. 2: p. 4542463.

7. Paul, R.E., et al., Expansion of epidemic dengue viral infections to Pakistan. International journal of infectious diseases, 1998. 2(4): p. 197-201.

8. Rasheed, S., R. Butlin, and M. Boots, A review of dengue as an emerging disease in Pakistan. Public health, 2013. 127(1): p. 11-17.

9. Ahmad, S., et al., Epidemiology of dengue in Pakistan, present prevalence and guidelines for future control. Int J Mosq Res, 2017. 4(6): p. 25-32.

10. Barraud, P.J., The Fauna of British India, including Ceylon and Burma. Diptera. Vol. 5. Family Culieldae. Tribes Megarhinini and Culicini. The Fauna of British India, including Ceylon and Burma. Diptera. Vol. 5. Family Culieldae. Tribes Megarhinini and Culicini., 1934.

11. Today, P., Retrieved from Pakistan Today Web site: www. pakistantoday. com. pk/2011/06/26/city/lahore/divorce-rates-climb. 2016, Accessed.

12. Khan, I.A., et al., A Study of Mosquito Fauna of District Upper Dir, Khyber Pakhtunkhwa-Pakistan. Journal of Entomology and Zoology Studies, 2015. 3(5): p. 455-458.

13. Degallier, N., et al., People's knowledge and practice about dengue, its vectors, and control means in Brasilia (DF), Brazil: its relevance with entomological factors. Journal of the American Mosquito Control Association, 2000. 16(2): p. 114-123.

14. Mohapatra, S. and A.N. Aslami, Knowledge, attitude and practice regarding dengue fever among general patients of a rural tertiary-care hospital in Sasaram, Bihar. International Journal Of Community Medicine And Public Health, 2017. 3(2): p. 586-591.

15. Dhimal, M., et al., Knowledge, attitude and practice regarding dengue fever among the healthy population of highland and lowland communities in central Nepal. PLoS One, 2014. 9(7): p. e102028.

16. Itrat, A., et al., Knowledge, awareness and practices regarding dengue fever among the adult population of dengue hit cosmopolitan. PloS one, 2008. 3(7): p. e2620.

17. Hairi, F., et al., A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district. 2003, Sage Publications Sage CA: Thousand Oaks, CA.

18. Shuaib, F., et al., Knowledge, attitudes and practices regarding dengue infection in Westmoreland, Jamaica. West Indian Medical Journal, 2010. 59(2): p. 139-146.

19. Yboa, B.C. and L.J. Labrague, Dengue knowledge and preventive practices among rural residents in Samar province, Philippines. Am J Public Health Res, 2013. 1(2): p. 47-52.