

# Knowledge, Attitudes and Practices Regarding Dengue Fever among Adult Population of Kurram Khyber Pakhtunkhwa

MUHAMMAD ASIF ALI SHAH<sup>1</sup>, ZIAN ASIF<sup>2</sup>, AIMAN FATIMA<sup>3</sup>, NEELAM RAHEEL<sup>4</sup>, MIRZA ZEESHAN SIKANDAR<sup>5</sup>

<sup>1</sup>M.Phil Epidemiology University of Veterinary and Animal Sciences, Lahore.

<sup>2</sup>M.Phil Microbiology University of Veterinary and Animal Sciences, Lahore.

<sup>3</sup>MBBS Student Department of Community Medicine, Central Park Medical College, Lahore.

<sup>4</sup>MBBS, M. Phil Epidemiology Department of Community Medicine, Rashid Latif Medical College, Lahore

<sup>5</sup>B. Sc, MBBS Department of Medicine, Central Park Medical College, Lahore.

Correspondence to Dr. Mirza Zeeshan Sikandar, Email: [m.zee.shan@hotmail.com](mailto:m.zee.shan@hotmail.com)

## ABSTRACT

**Background:** Fever caused by dengue is one of the most important potential viral re-emerging diseases, especially in sub-tropics and tropics, infecting around fifty million people all over the world. Dengue virus (DENV) is spread through mosquito bite and is a member of the genus Flavivirus and has four serotypes (DENV-1, 2, 3, and 4), all of which are capable of inducing hemorrhagic dengue fever and dengue shock syndrome. There are several fates of infection caused by dengue virus ranging from asymptomatic infection to subclinical infection and clinical presentation that may be undistinguishable fever or dengue hemorrhagic fever. Active surveillance, effective reporting and case management can reduce the threat of dengue.

**Methodology:** The current KAP survey of dengue assess the knowledge, attitudes and preventive practices of the general public which through statistical analysis showed the mismatch between the knowledge and practices towards dengue disease.

**Results:** The results of current study have identified that the participants in the survey had negative knowledge, attitudes and practices toward dengue. The KAP parameters decreased along with decreased educational status, exposure to telecommunication facilities, awareness about the signs/symptoms, severity and fatality of disease and about the mosquito related preventive measures.

**Conclusion:** It was concluded that in the current KAP survey the Knowledge, Attitudes and Preventive practices towards dengue fever among all the participants was different and this difference mainly due to backward education system, low socio-economic status.

**Keywords:** Dengue, Flavivirus, KAP, Fever.

## INTRODUCTION

These vectors are capable of spreading dengue virus due to their breeding sites, which are the homes or outdoor places including construction sites and artificial containers. Dengue virus infection has a widespread disease spectrum and its medical features vary from asymptomatic Disease to a mild self-limiting fever to a most dangerous disease<sup>1</sup>. Currently 124 countries are reporting disease prevalence with approximately 50-100 million cases of DF 0.5 million cases of DHF or DSS with over 25000 deaths<sup>2</sup>. There are several fates of infection caused by dengue virus ranging from asymptomatic infection to subclinical infection and clinical presentation that may be undistinguishable fever or dengue hemorrhagic fever along with or without dengue shock syndrome or any other high manifestations of dengue<sup>3</sup>.

The most prevalent one viral disease, dengue fever disease is caused by the family Flaviviridae<sup>4</sup>. Dengue virus transmission relies on the presence of the Aedes mosquito. The generation and production of mosquitoes is considered to be affected by the environment. The production and growth of the dengue vector is climate dependent. As a vector-borne disease, dengue virus transmission is highly dependent on its vector availability, density and extension. Worldwide research has suggested that the seasonal prevalence of both the vector A. aegypti and dengue virus is influenced by ecological and climate variables<sup>5</sup>.

DENV comprises three SP (Structural Protein) and seven NSP (Non-structural proteins) encoded by an 11kb positive-sense RNA genome<sup>6,7</sup>.

In Pakistan, 2019 has been the worst year in the country's history in which more than 44,000 cases have been reported by early November, 2019. However, many healthcare professionals believe that these numbers could be much higher as majority of cases in rural areas and slums are never reported<sup>8</sup>. Dengue is a self-limiting disease and recovery can take place between 2 to 7 days, however, there is no specific drug therapy. The main goal of treatment is to prevent shock, provide basic supportive measures which include giving fluids either by mouth or intravenously throughout the illness<sup>9</sup>.

The only way to prevent dengue transmission is to combat the vector mosquitoes and limiting exposure to mosquito bites. It should be

remembered that dengue breeds in clean stagnant water, therefore mosquito breeding places such as empty flower pots, open water tanks etc. should be either eliminated or properly covered. There should be provision of reliable water supply and regular garbage collection. Personal protection from mosquito bites can be achieved by using insecticide sprays in the house and mosquito repellents and covering most of the body parts especially after the monsoon season. Health education campaigns for the masses using the electronic and print media have always been helpful<sup>9</sup>. Therefore proper knowledge and good attitude can help in preventing spread of Dengue fever the data about knowledge, attitude and practices of local populace of Kurram district is lacking so we warrant this survey for assessment of knowledge, attitude and practice trends of local population.

## MATERIAL AND METHODS

This study was conducted by Central Park Research Society in collaboration with University of Veterinary and Animal Sciences (UVAS). The Cross-sectional KAP survey was carried out in tribal district Kurram, (Ex-FATA) Khyber Pakhtun Khwa province Pakistan for a period of 4 months from 20th April to 20th August during 2021 after obtaining ethical Research Review Board approval from Central Park Medical College and UVAS. For a period of 4 months following a suspected epidemic outbreak, a KAP survey was done. The research design was critically adopted, taking into account the nature of the field and methods of data collection.

Men and women (20 to 60 years of age) living in Upper, Lower and Central regions of various Union councils of Tribal district Kurram, Khyber Pakhtunkhwa, Pakistan were surveyed. A total of 300 specimens were obtained and were made part of the study. Both data and details were obtained on a pre-designed questionnaire using a clear and easy sampling technique comprising numerous questions on different aspects and knowledge, attitude and practice of Dengue fever. With the aid of faculty members of the Department of Epidemiology and Public Health, a systematic questionnaire was established (UVAS, Lahore).

Data collected on a pre-designed questionnaire while meeting the targeted population through arranging personal, community and Public meeting and gathering in the targeted area during the data collection. All the variables and questions included in the questionnaire were made understandable in local Pashto language in order to ensure

Received on 07-11-2021

Accepted on 27-05-2022

the originality of the information obtained. Beside these, their consent and willingness were also maintained throughout the data collection.

**Statistical analysis:** Data was entered into SPSS ver. 23 and was dully compared for errors. Frequencies and percentages of descriptive data was assessed and Chi-square test was employed. A p value of less than .05 was considered as significant.

**RESULTS**

The education status of the total (300) participants enrolled in the survey of dengue fever are mostly illiterate (104) out of them (3) had dengue fever to their relatives. Others having education status primary level are (53), secondary level (76) out of them (1) had dengue fever to their relatives, Intermediate level are (12), Graduation level are (45) out of them (1) had dengue fever to their relatives, Post-graduation level are (10) as illustrated in figure 1.

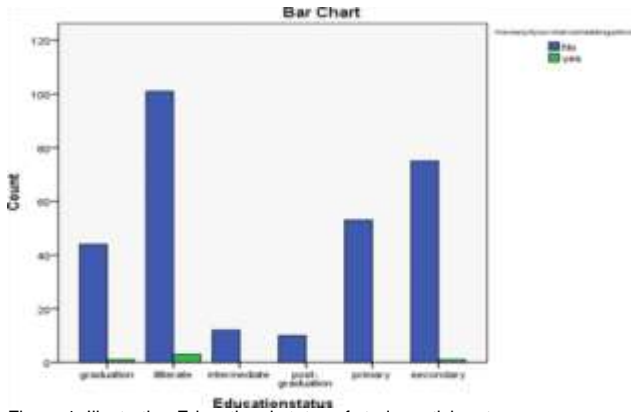


Figure 1: Illustrating Educational status of study participants

The source of knowledge about dengue fever (78) participants had heard from friends, (73) participants from internet, (78) from radio, (1) had heard from newspaper and (70) participants from television. The below table 1 showed the ratio among all the (300) participants about the breeding place of dengue mosquito. (36) Unmanaged waste, (43) bushes around residential area, (9) empty houses/buildings, (184) thinks that places that can store water are the breeding places of dengue mosquito, (19) outside the residential area and (9) have no idea about the breeding place of dengue mosquito.

Table 1: Participant’s knowledge in regard to breeding sites of mosquitos

Where is the breeding sites of mosquitos responsible for transmission of dengue fever	Have any of your relatives had dengue fever		Total
	No	Yes	
Unmanaged waste	35	1	36
Bushes around residential area	42	1	43
Empty houses/buildings	9	--	9
Places that can stored water	182	2	184
Outside the residential area	18	1	19
Don't know	9	--	9
Total	295	5	300

Table 2: Knowledge of Participants regarding prevention of Dengue Fever

1	Have any of your relatives had dengue fever		Total
	No	Yes	
Mosquito spray	51	2	53
Mosquito coil	15	--	15
Mosquito net	39	1	40
Cleaning house	3	--	3
Cleaning of garbage/waste	22	1	23
Prevent water stagnation	165	1	166
Total	295	5	300

The following table describes the knowledge of all the (300) participants about the way we prevent dengue and their response was (53) through mosquito spray, (15) mosquito coil, (40) mosquito net, (3) cleaning house, (23) cleaning of garbage/waste, (166) prevent water

stagnation we may prevent dengue.

Table 3 showed the knowledge of all the (300) participants in the survey about the time when dengue mosquito most likely to be. The response of participants was (190) says that Night time, (40) daytime, (46) anytime dengue mosquito bite, (24) have no idea about that.

Table 3: Participants knowledge regarding dengue mosquito bite

When does the dengue mosquito most likely to bite	Have any of your relatives had dengue fever		Total
	No	Yes	
Night	188	2	190
Daytime	39	1	40
Anytime	45	1	46
No idea	23	1	24
Total	295	5	300

The following table and graph describes the response of all (300) participants in survey to the attitudes towards dengue that how dengue would be prevented and their response was (28) through education, (30) awareness, (167) clean surrounding area and (75) have no idea about that. Figure 2 describes the preventive measures of all (300) participants towards the mosquito bite and their response was (86) use of bed nets, (22) full clothing, (13) door/window screening and (179) respond to repellent was helpful to prevent bite.

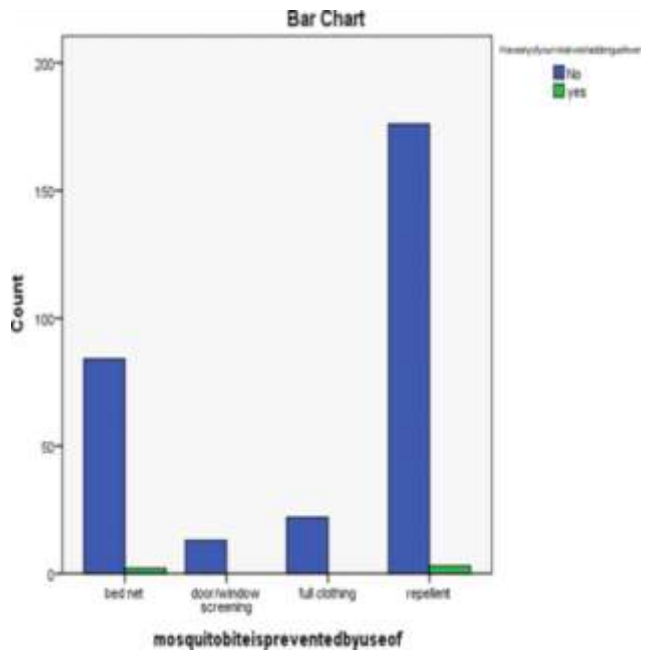


Figure 2: Attitude of participants regarding prevention of mosquito bite methods

**DISCUSSION**

Major breeding sites of Aedes in indoor houses were water containers, under the ground cemented reservoirs, big clay containers, flower pots, water jug, room coolers (evaporation coolers) and other water-storage receptacles. All these sites act as mother foci for breeding around the year. The only way to prevent dengue transmission is to combat the vector mosquitoes and limiting exposure to mosquito bites, therefore mosquito breeding places such as empty flower pots, open water tanks etc. should be either eliminated or properly covered<sup>8</sup>. The generation and production of mosquitoes is considered to be affected by the environment. The production and growth of the dengue vector is climate dependent<sup>9</sup>.

Knowing the cause of dengue fever all the participants response for the cause of dengue fever was 9(30%)drinking water, 4(1.3%) houseflies, 18(6%) unhygienic food, 217(72.3%) mosquito bites, 52(17.3%) was the response for don't know. More than half of the respondents know that dengue is caused by the mosquito and the remaining have different response to cause of dengue fever. The

response about the transmission of dengue from one individual to other individual was that more than half of the participants in the survey was that dengue is transmitted through bite of mosquito, the remaining has responded to different options. In recent decades dengue fever is the most prevalent mosquito born infection and major public health concern. Dengue fever (DF) is caused by a virus, which transmits through bites of the female mosquitoes<sup>10</sup>.

The response of the participants regarding breeding sites of Aedes mosquitos was that half of them had knowledge about the breeding sites of Aedes mosquitos and the remaining had various thoughts. All the respondents in the survey heard about dengue fever but more than half could not identify the breeding sites which in turn could lead to poor preventive practices. A descriptive study was conducted in which 100 individuals from Gujarat are participated. Their response about the breeding sites of Aedes mosquito was 63% responded stagnant water and almost in our study the response is 61.3% which is almost equal but the remaining participants are not properly know the sites for dengue mosquitos<sup>11</sup>.

Regarding the breeding sites of Aedes mosquitoes 43(14.3%) response was that bushes around the residential area, 9(3%) empty houses, 19(6.3%) outside the residential area, 9(3%) don't know about the breeding sites of dengue virus, 184(61.3%) of the participants responded that places that can stored water are responsible for the breeding sites of mosquitoes. A study was conducted to evaluate the knowledge, attitudes and practice levels among students of university and whether the impact of educational intervention on KAP levels. 90% had knowledge that dengue can be controlled and prevented by combating the breeding sites of mosquitos<sup>12</sup>.

Aedes species is a daytime feeder, its peak biting time is early in the morning and in the evening before dusk. The response of all the participants in the survey was 46(15.3%) anytime, 40(13.3%) daytime, 190(63.3%) night time. Regarding the signs and symptoms of dengue 2(0.7%) bleeding, 32(10.6%) body ache, 215(71.6%) fever, 30(10%) headache, 2(0.7%) loss of consciousness, 19(6.3%) don't know the signs and symptoms about dengue fever. This huge fluctuation of not knowing the proper signs and symptoms about dengue fever should be fulfilled through various awareness campaigns about these vector born disease<sup>13</sup>.

The way through which we prevent the dengue fever is through the prevention of water stagnation and mosquito spray. Regarding the preventive knowledge the response of the participants was 3(1%) cleaning houses, 23(7.7%) cleaning of garbage, 14(4.7%) mosquito coil, 41(13.6%) mosquito net, 53(17.7%) mosquito spray, 166(55.3%) prevent water stagnation. More than half of respondents had knowledge that dengue fever mosquito is prevented by removing and preventing the water stagnation, other participants responded different ways of prevention. In Yemen 2016 a household based survey of knowledge, attitudes and practices regarding dengue fever was conducted in which 90% of respondents had knowledge that stagnant water and water that are stored in uncovered containers are the factors contributing to the spread of dengue transmitting vector<sup>14</sup>.

Dengue is a serious illness if not treated properly as it lead to death. The seriousness of illness become high if no medication taken. The response to the illness of dengue fever of the participants was 42(14%) think that dengue is not a serious illness, 58(19.3%) have no idea about the illness of dengue and 200(66.7%) believes that dengue is a serious illness. The participants in survey were asked whether they are at risk of dengue fever. Their response was not good as 41(13.7%) answered NO, 54(18%) have no idea, 205(68.3%) responded YES but the difference in their response was almost equal and this is largely due to unawareness and backward education system. In Various research papers and surveys it shows that dengue fever is a serious illness. In terms of attitudes showing results of 307 students in a study in which 96.7% realized that dengue is a serious illness<sup>15</sup>.

## CONCLUSION

It was concluded that in the current KAP survey the Knowledge, Attitudes and Preventive practices towards dengue fever among all the participants was different and this difference mainly due to backward education system, low socio-economic status. The results of current study have identified that the participants in the survey had negative knowledge, attitudes and practices toward dengue. Proper

understanding and practice of dengue eliminates dengue vector populations. No correlation was found between dengue experience and practice of mosquito reduction. The statistical study revealed that dengue prevalence was found in those who travelled to the endemic region. The incidence of dengue in travelers is rising. The rising number of dengue reported cases worldwide and identification of locally acquired dengue infection in non-endemic regions, emphasize the need for surveillance of travelers returning from endemic areas.

**Strategies for Dengue Control:** Strict check on breeding places of vectors. Epidemiological surveillance through prompt case notification within 24 hours of clinical diagnosis should be made. Enhancing laboratory diagnostic support through the use of rapid screening tests and confirmation by standard laboratory techniques. Improved clinical management through early case detection and effective surveillance will prove beneficial in controlling the disease.

## REFERENCES

1. Asghar M, Asghar N, Rehman N, Sharif N, Haroon M and Rehman S 2019. Frequency of different genotypes of dengue virus in patients admitted in a tertiary care hospital Khyber Pakhtunkhwa. *KJMS*. 12(1): 20.
2. Ratnam I, Black J, Leder K, Biggs B-A, Matchett E, Padiglione A, Woolley I, Panagiotidis T, Gherardin T and Pollissard L 2012. Incidence and seroprevalence of dengue virus infections in Australian travellers to Asia. *European journal of clinical microbiology & infectious diseases*. 31(6): 1203-1210.
3. Alera MT, Srikiatkachorn A, Velasco JM, Tac-An IA, Lago CB, Clapham HE, Fernandez S, Levy JW, Thaisomboonsuk B and Klungthong C 2016. Incidence of dengue virus infection in adults and children in a prospective longitudinal cohort in the Philippines. *PLoS neglected tropical diseases*. 10(2): e0004337. Alyousefi TAA, Abdul-Ghani R, Mahdy MAK, Al-Eryani SMA, Al-Mekhlafi AM, Raja YA, Shah SA and Beier JC 2016. A household-based survey of knowledge, attitudes and practices towards dengue fever among local urban communities in Taiz Governorate, Yemen. *BMC Infectious Diseases*. 16(1): 543.
4. Niu C, Huang Y, Wang M, Huang D, Li J, Huang S, Yang F, Wan C and Zhang R 2020. Differences in the Transmission of Dengue Fever by Different Serotypes of Dengue Virus. *Vector-Borne and Zoonotic Diseases*. 20(2): 143-150.
5. Karim MN, Munshi SU, Anwar N and Alam MS 2012. Climatic factors influencing dengue cases in Dhaka city: a model for dengue prediction. *The Indian journal of medical research*. 136(1): 32.
6. Huber RG, Lim XN, Ng WC, Sim AY, Poh HX, Shen Y, Lim SY, Sundstrom KB, Sun X and Aw JG 2019. Structure mapping of dengue and Zika viruses reveals functional long-range interactions. *Nature communications*. 10(1): 1-13.
7. Raviprakash K, Wang D, Ewing D, Holman DH, Block K, Woraratanadharm J, Chen L, Hayes C, Dong JY and Porter K 2008. A tetravalent dengue vaccine based on a complex adenovirus vector provides significant protection in rhesus monkeys against all four serotypes of dengue virus. *Journal of virology*. 82(14): 6927- 6934.
8. Iqbal SP and Jaffri SA 2020. Dengue: a recent challenge in Pakistan. *J Bahria Univ Med Dent Coll*. 10(1-2). Jahan N, Tanveer A, Zafar S and Zaheer A 2014. Entomological Surveillance and Detection of Dengue Viruses in Vector Mosquitoes as an Early Warning Tool for the Control of Dengue in Pakistan. *Biologia (Pakistan)*. 60(2): 169-176.
9. Mustafa M, Rasotgi V, Jain S and Gupta V 2015. Discovery of fifth serotype of dengue virus (DENV-5): A new public health dilemma in dengue control. *Medical journal armed forces India*. 71(1): 67-70.
10. Jajarmi A, Arshad S and Baleanu D 2019. A new fractional modelling and control strategy for the outbreak of dengue fever. *Physica A: Statistical Mechanics and its Applications*. 535(12): 52524.
11. Syed Muhammad Ali Shah KM, Ali Malik, Maryam Abid, Sofia Bano 2018. Knowledge, Attitude and Practices of Dengue Fever among Rural Population of Gujrat. *Journal of Liaquat Medical Health Sciences*. 17(3): 5.
12. Wan Rosli WR, Abdul Rahman S, Parhar JK and Suhaimi MI 2019. Positive impact of educational intervention on knowledge, attitude, and practice towards dengue among university students in Malaysia. *Journal of Public Health*. 27(4): 461-471.
13. Bakhsh K, Sana F and Ahmad N 2018. Dengue fever in Punjab, Pakistan: Knowledge, perception and adaptation among urban adults. *Science of The Total Environment*. 644(1304-1311).
14. Alyousefi TAA, Abdul-Ghani R, Mahdy MAK, Al-Eryani SMA, Al-Mekhlafi AM, Raja YA 2016. A household-based survey of knowledge, attitudes and practices towards dengue fever among local urban communities in Taiz Governorate, Yemen. *BMC Infectious Diseases*. 16(1): 543.
15. Wang W-H, Urbina AN, Chang MR, Assavalapsakul W, Lu P-L, Chen Y-H and Wang S-F 2020. Dengue hemorrhagic fever—a systemic literature review of current perspectives on pathogenesis, prevention and control. *Journal of Microbiology, Immunology and Infection*. 53(6): 963-978.