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RESEARCH PAPER

Current Knowledge, Attitude and Practice about Dengue Fever among Teenage Students of South Punjab Region, Pakistan

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ABSTRACT

The objective of this study was to determine the current knowledge, attitude, and practice regarding different viral infections caused by malaria, especially dengue fever, and its spread among the teenage students of the South Punjab region. This study was conducted among the students of the government school from November 2020 to November 2021. The data was collected by adopting the proper questionnaire method which was self-constructed. The obtained data were analyzed by using SPSS statistical techniques. There were 259 students were selected for this study the average age of the students was 15.5 years and all-male (100%) were selected for this study. 79.87% of students in the first year and (85.0%) of students in the second year were aware of the existence of viral infections caused by mosquitoes and also about dengue fever. A good percentage (81.35%) was aware of the mosquitos, viral infections, and dengue fever and 84.55% were aware of the role and participation of the community to control these diseases. There is a dire need of having regular campaigns in the schools to create the proper awareness about viral infections and dengue fever and its spread and precautions among the students.

Introduction

There are many infectious diseases attached with the mosquitos. Those diseases which are produced in the human being by mosquitos may include dengue, malaria, chikungunya virus, west nile virus and zika virus. The mosquitoes are causing 17% deaths of the all diseases in the whole world (Bhatnagar *et al.,* 2016). Many mosquito borne diseases are prevalent in Pakistan and causing serious health hazards among the common people of Pakistan and other Asian countries (NGCN, 2015). Malarial infections are involved in many neurological disorders which may cause microcephaly. The infection for microcephaly may occur during the pregnancy among foetus and also involved in the trans-placental transmission. Such infections may also cause another common disease named as Guillain-Barre. This syndrome only occurs in adults (Musso & Gubler, 2016). Since 2015, many dengue fever cases has been reported in more than sixty countries and more than 750,000 confirmed cases has been reported in world (Gardner *et al.,* 2018).

Literature Review

WHO (World Health Organisation) elaborate that dengue is fast emerging pandemic-prone viral disease globally. Dengue flourishes not only in rural areas but also in urban and urban poor areas, and suburbs (WHO, 2010). Two species of dengue are involved in its spread in humans, these two species belongs to *AedIes* mosquitoes and are named as *Aedes aegypti* and *Aedes aldopictus*. The prevalence of *Aedes aegypti* is more in Pakistan than any other species and it is the major cause of dengue fever in Pakistan (Manzoor *et al.,* 2018; Dhimal, 2014; Yboa and Labrague, 2013). There are some preventable diseases in developing states like Pakistan, and dengue is also included among preventable diseases. In spite magnitude of issue, there is need of serious concern to control the mosquitos and eradication of these to control the dengue and other diseases attached with this mosquitos (Itrat *et al.,* 2008). Dengue symptoms range from none to serious flu-like symptoms. A small proportion of people develop severe dengue, which can be fatal. There are no specific antiviral drugs to treat dengue infection. Dengue is one of those diseases which are spreading not in urban areas of the Pakistan but also in many semi urban areas of the country (Patel *et al.,* 2011; Alobuia, 2016).

The percentage of the people affected by the dengue fever is increasing day by day in Pakistan. It is declared as the endemic disease in nearly 100 countries of the world. This virus can also spread in the healthy mosquito by biting with the patient who has already this virus. Humans act as the major carrier of this disease. The lack of treatment options increases the risk of people developing severe dengue, which is potentially fatal (Manzoor *et al.,* 2018). Dengue fever is a year-round and nationwide risk in Pakistan. According to the National Institute of Health (NIH) Islamabad, 22,938 dengue fever cases were reported in Pakistan in 2017, more than 3,200 in 2018, 24,547 cases in 2019 and 3,442 cases in 2020. From 1 January to 25 November 2021, a total of 48,906 cases including 183 deaths (Case Fatality Ratio (CFR): 0.4%) have been reported in the Pakistan. Pakistan is still dealing with the dengue fever crisis (Jahan, 2011).

Imran et al. (2022) studied about the dengue fever and found that Among the 842 members, 84% were young ladies. Training arose as the most adversely impacted Pandemic space (41.6-64.3%). A large portion of the youths (62.0-65.8%) had revealed changes in liabilities at home incorporating expanded time spent in aiding relatives. Furthermore, expansion in responsibility of members and their folks was noticeable (41.8% and 47.6%). Social exercises were generally ended for around half (41-51%) of the members. Expanded screen time, diminished active work and stationary way of life were accounted for by 52.7%, 46.3% and 40.7% separately. 22.2-62.4% of the young people had an immediate involvement in isolation, while 15.7% experienced passing of a dear companion or relative. Positive changes in their lives were embraced by 30.5-62.4% respondents. Being male and more seasoned young people had huge relationship with pessimistic effect across most areas ($p<0.05$).

Elson et al. (2020) found that sum of 240 samples were finished with 80% of respondents being female and roughly half of all respondents depicting themselves as housewives. Although 97.9% of respondents had known about dengue, just 6.2% of individuals knew somebody who had encountered the infection. Around half (54.2%) of the respondents realized dengue was communicated by mosquitoes and 51.7% had the option to distinguish fever and another right side effect of dengue. Female sex was fundamentally connected with more prominent side effect information (OR 2.22, 95% CI 1.08 to 4.72) and anticipation information (OR 2.12, 95% CI 1.06 to 4.21). Past or current advanced education participation was fundamentally connected with side effect information (OR 2.56, 95% CI 1.25 to 5.44) and transmission information (OR 3.46, 95% CI 1.69 to 7.57). Information on dengue was not fundamentally connected with completing practices to control mosquitoes

(OR 1.76, 95% CI 0.87 to 3.54). This populace exhibited pattern dengue information. Notwithstanding, this was inadequate and considerably less when contrasted and endemic regions. Given the irregular idea of dengue transmission in Lima, it isn't is business as usual that information on the illness was not related with completing practices to lessen mosquitoes.

Saeed et al. (2017) found that dengue was spread in Pakistan already however presently it has become endemic in illness impacted regions like Punjab. This cross-sectional study was wanted to establish that why dengue fever has been diminishing in southern Punjab, Pakistan and to feature the beneficial outcomes of the dengue control programs sent off in southern Punjab. The greater part (76%) of the respondents were taught. A large portion of them (88%) knew all about mosquitoes' contribution in the spread of illnesses like dengue fever. Around 52% of respondents revealed that media was the primary wellspring of mindfulness, while 32% managed mosquitoes without help from anyone else. Around 41% and 28% overviewed individuals involved oil and net as a preventive measure against mosquitoes, separately. While the 23.2% of graduates utilize the net as a preventive measure against mosquitoes. Closing, sickness the executives programs are more effective when individuals are taught as they embrace preventive estimates all the more productively.

Jahan, F. (2011) found that dengue is a boundless mosquito-borne disease in people, which as of late has turned into a significant worldwide general wellbeing concern. Suggestive dengue infection diseases can give many clinical indications, from a gentle febrile sickness to a hazardous shock condition. Both viral and have factors are remembered to add to the appearances of illness in each tainted. It is essential to comprehend its weight on medical services, dreariness and mortality. Early finding and doubt of DF in essential consideration could lessen the entanglements whenever dealt with appropriately. We should grasp the profundity of the issue concerning its transmission, clinical show, finding, the executives and counteraction.

Kittigul et al. (2003) conducted study to recognize dengue infection tainted patients under age 15 confessed to seven government clinics in Ang Thong Province, a focal district of Thailand, and to survey the information, demeanor, and practice (KAP) of their guardians. To separate dengue cases, clinical assessment and lab analysis were utilized. Serum tests were gathered from 90 conceded kids and furthermore from 80 sound understudies. The dengue cases were named dengue fever (9 cases, 12.2%) and dengue hemorrhagic fever (DHF: 65 cases, 87.8%). Nine patients had dengue shock condition, yet no passing happened. Significant results were seen in 8 (11.3%) and clear optional disease in 49 (69%). Out of 41 serum tests, 14 (34.1%) were positive for dengue infection separation: dengue serotypes 1, 2 or 3. A sum of 131 overseers of enlisted youngsters were consulted with regards to KAP in DHF. Most of them were moms with elementary school training level. A big part of the overseers were laborers. DHF information on the overseers of the dengue cases, non-cases, and solid understudies was practically something similar. Be that as it may, the guardians of dengue cases perceived petechiae as a risk sign, p-worth of 0.006. They had a higher reaction in counteraction, control and treatment of DHF than the other two gatherings after their kids were confessed to medical clinic, p-worth of 0.000.

Material and Methods

This study was conducted from the teenage school students of secondary classes with the age group of 13 to 19 years for the academic session 2020-2022. The school students were focussed for this study because they have the more chances of being affected by the disease. Multistage stratified random sampling method was applied. A standardized, confidential, anonymous, self-administered questionnaire was used in this study and all the data was collected over those questionnaires with the consent of the students and school

administration as well. An expert pathologist and paediatrician consultant was also with us to assist during the studies. Pilot study was conducted to assess the clarity of the questions and the time required to complete the questionnaire. Government school was selected for this study because the Government school in Pakistan are those institutes in which students came from every category. 350 students were selected to collect the data and out of them 259 gave consent to use their data for the research purpose. All students were from different backgrounds. Some of them were living in very hygienic environment and some were from very poor hygiene and some were from poor urban areas and some were from semi-urban areas.

The data was collected by a well-structured questionnaire with closed ended question. This questionnaire having the questions which relate to knowledge, attitude and practice about mosquito and diseases spread by the mosquito especially about the dengue fever and its prevention. This dara collection was based on evaluation to measure the knowledge, attitude and practices of school students of the Multan city. The data from the questionnaires were coded and entered into a computer using IBM® SPSS® software version 22 (SPSS Inc., Chicago, IL). All p-values were two tailed and were considered statistically significant at $p < 0.05$.

Results and Discussion

Table 1
Total percentage of the school students having awareness about mosquito and dengue fever

No. of Students	Students examined(n)	Having Awareness (n)	Not having any awareness (n)	Percentage (%)
9th Class	159	127	32	79.87%
10th Class	100	85	15	85.0%

Total of 350 students were selected for the study and out of these 259 were those who gave the consent to use their data for the research purpose and out of these 159 students were from the 9th class and out of these 79.87% students were having the awareness about the mosquitos and diseases spread by the mosquito and in case of 10th class students (N=100) the awareness percentage was 85.0% which is more than the students of 9th class.

Table 2
Socio-Demographic characteristics of the studied school students from Multan, Pakistan

Sr. No.	Variable	Number	Percentage
1	**Sex:**		
	Male	259	100 %
	Female	0	0 %
2	**Educational Year**		
	First Year	159	61.39 %
	Second Year	100	38.61 %
3	**Father's Educational Status**		
	Less than University Level	173	66.80 %
	University Level or Higher	86	33.20 %
4	**Hygiene Status**		

	Proper Sanitations at Home	244	94.21 %
	Improper Sanitations at home	15	5.79 %
5	**Drinking water Status**		
	Filter Water	181	69.88 %
	Simple Underground / Tap Water	78	30.12 %
6	**Economic Status**		
	Income more than 30,000 / - PKR	137	52.90 %
	Income Less than 30,000 / - PKR	122	47.10 %
7	**Religion**		
	Muslim	258	99.61 %
	Mom-Muslim	01	0.39 %

The socio demographic situations of the students were also studied. All the studied samples (N=259) were male. The only male schools were selected for the study. 61.39% were the students of the first year (9th Class) while 38.61% were the students from the second year (10th class). 66.80 % was those students whose parent's education was less than the university's education while 33.20% parents were having the education of university level. 69.88% those who have the availability of the proper drinking water and other's don't have pure filtered water availability for drinking. 52.90% were having monthly income more than 30,000 while 47.10% were those whose monthly income was less than 30,000.

Table 3
Multiple Linear Regression analysis of the studied school students from Multan, Pakistan

Parameter	Standard Beta	t - test	p-value	R^2	p-values
Having Knowledge of Dengue Fever	4.89	0.24	<0.001	0.198	<0.001
Gender (Male)	3.5	0.27	<0.001		
Family history about dengue fever	1.12	0.18	<0.01		
Any activity to increase knowledge about Dengue Fever	1.03	0.17	<0.01		

Multiples linear regression analysis were made for the people having knowledge of dengue fever, and also among the gender as all samples were male and family history about the mosquito attached diseases or about the dengue fever and also about the need of activities to create the awareness among the common people to control this disease were found t be significant <0.001.

Table 4
Knowledge about the mosquito and dengue fever among the common school students of Multan, Pakistan

Statement	Response	Frequency	Percentage	P-value[a]
Dengue Fever is a serious Health issue				
	Agree	211	81.468 %	P<0.05
	Disagree	48	18.53 %	
Removing the breeding sites of the mosquito's will be helpful for control on the Dengue fever				
	Agree	209	80.69 %	P<0.05
	Disagree	50	19.31 %	

Use of Mosquito's Repellent lotions / coils are beneficial			
	Agree	212	81.85 %	
	Disagree	47	18.15 %	P<0.05
Removal of stagnant water from the residential areas is beneficial			
	Agree	212	81.85 %	
	Disagree	47	18.15 %	P<0.05
Community participation is important for control of Dengue fever			
	Agree	219	84.55 %	
	Disagree	40	15.44 %	P<0.05
The Government campaigns to control the dengue fever are helpful			
	Agree	232	89.58%	
	Disagree	27	10.42 %	P<0.05
The use of insecticide sprays at home is good to control this dengue fever			
	Agree	192	74.13	
	Disagree	67	25.87	P<0.05
Having knowledge about the common symptoms of the Dengue Fever			
	Agree	188	72.59	
	Disagree	71	27.41	P<0.05
Use of smoke to get rid from mosquito's is good remedy to control this disease			
	Agree	124	47.88	
	Disagree	135	52.12	P<0.05
Covering of body with full body clothes is good to control this disease			
	Agree	193	74.52	
	Disagree	66	24.48	P<0.05
Elimination of breeding site of mosquitoes are good to control the dengue fever			
	Agree	188	72.59	
	Disagree	71	27.41	P<0.05

[a]P–value of a Pearson's Chi-squared test unless otherwise specified
[b]Frequency and Percentage is Knowledgeable–answered 2 knowledge items on dengue fever transmission correctly.

Overall information about the knowledge, awareness and practice about dengue fever of the common school students were noted in this regard. The health issue can be created by mosquitoes and it can cause dengue fever 81.47% students were agree with the statement and 80.69% were agree that mosquitoes population can be controlled by using diffident types of mosquito repellent including many local remedies liked use of smoke and mosquito's net. 84.55% people were willing that the contribution of the community is fruitful to control the population of mosquitoes and attached diseases with this. Low number of students (27.41%) was noted who were not familiar with the proper precautionary measures and common symptoms of the dengue fever.

First case of Dengue fever was reported in September 2013 in Multan and within a month peak cases were reported in the same area. There are many awareness campaigns in the country to control the dengue fever but still dengue is endemic in Pakistan (Naseem *et al.,* 2005). The studies revealed that those people who have poor in knowledge about mosquitos and dengue fever and living in the un-hygienic environment in those people the spread of mosquitos attached diseases especially dengue fever is more common as compared to the other areas. People had very little indication that collection of bottles, bath tubs, air coolers, stagnant water, and tires, which are the best potential breeding sites for the mosquitoes (Manzoor *et al.,* 2018). Our study showed that there is good awareness about dengue fever among the teenager students of the school but the common people especially their parents are not so much familiar with the precautionary measures of

dengue fever. The contrary findings has reported for the schools of Islamabad where the school students are not so much familiar about the dengue fever, while male students of the area were more familiar with the situations of the dengue fever (Javed *et al.,* 2018). About 81.59% of the school students were familiar with the dengue fever and its spread while the reduced percentage of 64.4% was reported in the capital city of the country and greater concentration of 86.35% with the present study was reported in united states of Arab emirates, this good concentration of awareness among the school students is because of the proper awareness campaigns in the schools and its monitoring on daily basis. This daily basis monitoring about the spread of mosquitos causing the dengue fever is a good way to control this disease. Those students who were studying in the second year of their secondary class were the 38.61 % of the total number of students and according to a study in the Jamaica there were 40% students who were aware about the spread of this disease, which is more than the present study of the second year students. Our study shows that because of various awareness campaigns in schools, a majority of the students had good knowledge of mosquito and its related diseases especially dengue fever. Contrary to this study, a study carried out in Nepal concluded that only 12% of the participants had good knowledge of dengue (Dhimal *et al.,* 2014) while a study done in Jamaica concluded that 87% of the participants had poor knowledge of dengue (Alobui *et al.,* 2015). A study in Laos reported that 93% of the participant believed that they had insufficient knowledge of dengue and mosquitos diseases (Mayxay *et al.,* 2013). The improved concentration of awareness in this study was because the Pakistan Government is teaching about mosquito and its spread in the subject of biology to all the students and focus of this study was the science students who already have studied about mosquito and its spread as a part of their syllabus.

About 80.69% of the students were agree with the situation that if breeding sites of the mosquitoes are removed from the area than the control of dengue fever will be more good while the reduced awareness of 72.9% was noted among the students in the cold areas of the country (Haider *et al.,* 2015). This reduces concentration than the current study may be because the plain areas of the Pakistan are more focused regarding to control of the dengue fever or other diseases and there are proper campaigns to control these all diseases while in the cold regions of the country the tourism is more common and hygienic situation is less developed than the plain areas. In the studied region the concentration of the hygienic situation is more good, almost 94.21% of the houses have proper sanitation systems at their homes while this is the more and increased concentration than the previous studies where the reduced sanitation concentrations was noted.

Health training on self-assurance from mosquito bites, on cleanliness of the environmental elements, and on end of reproducing sites of mosquito in the local areas and stays to be the most ideal way to control in human transmission. School-based health trainings can supplement local area of health instructions, since the previous gives a suitable vehicle to a more organized and coordinated counteraction instruction program. A few examinations have shown that creating understudies as wellbeing couriers or change specialists were powerful in combatting dengue fever in Ghana and dengue in Sri Lanka (Jayawardene *et al.,* 2011).

Information on the connection among mosquitoes and dengue in the current and past studies in different countries proposes that the mosquito training efforts the country over have been compelling (Nalongsack, 2009). Nonetheless, the respondents in our review were as yet confounded among dengue and jungle fever - a finding that was likewise tracked down in Karachi Pakistan but in current situation the link between the mosquito and dengue was much clear among the school students (Van Benthem *et al.,* 2002). The absence of personal responsibility was viewed as risky in dengue control in numerous nations, for example, Thailand (Phuanukoonnon, 2006), Malaysia (Hairi, 2003) and Puerto Rico (Pérez-

Guerra, 2009); and this was additionally the situation in Laos where 22% of the review members considered the public authority exclusively responsible (Nalongsack, 2009). In our current study, majority of the students accepted that dengue is a serious, yet preventable sickness; 33% of them don't think they are halfway answerable for dengue control. There had been knowledge, attitudes and practices surveys done on viral infections spread by mosquitoes specially dengue fever among pregnant women, university students, medical doctors and community residents in different countries but none among secondary school teachers and students. The best source to share the health information is teachers and secondary students because they are the most active part of the community. They can improve the literacy of school-based adolescents on mosquitoes' infections and dengue fever (Katler *et al.,* 2017).

Conclusion

There is a dire need to continue these awareness campaigns about dengue fever so that more effective and advanced awareness campaigns can be carried out in the future. Workshops on dengue can also be organized by the school administration for teachers and students, to improve the situations about dengue fever. Best mosquito and dengue anticipation control requests the contribution of the people of the resident's of local area. The fact that helps guide improves information expected dengue anticipation programs in their endeavors to lock in with the local area. These outcomes will direct future exploration around here and assist with training dengue avoidance programs.

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