Awareness of Dengue Fever in Non-Medical University Students in Punjab

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ABSTRACT

Objective: To assess the awareness and knowledge of dengue virus infection in the non-medical university students of Punjab.
Study Design: A cross-sectional survey.
Place and Duration of Study: Rawalpindi and Lahore region from May to Jun 2020.
Methodology: The survey was based on a structured questionnaire, covering general information about dengue fever, its transmission, common symptoms, treatment, prevention and vector control.
Results: A total of 208 students from the engineering and IT graduate programs participated in our study. The mean age of the participants was 21.6 ± 1.8 years. 122 (58.7%) participants knew that dengue fever was a viral disease. 57 (27.4%) had the correct knowledge about breeding places of Aedes egypti. Most of the students knew that headache, fever and body aches were the common symptoms of dengue fever. About 151 (72%) thought every patient with dengue fever was a serious patient and should be taken to the hospital. Out of 200 (96%) students were aware that anti-mosquito measures could prevent the disease. There was no statistically significant difference in the responses of male and female students.
Conclusion: Considering the education level of our participants, we noted some gaps in the important knowledge, such as the timing of the mosquito bite, avoidance of Aspirin and some misconceptions regarding the management of infection. We need to bridge these gaps by making health education campaigns more effective.

Keywords: Aedes Egypti, Dengue fever awareness, Dengue fever knowledge, University students.

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INTRODUCTION

Dengue is a rapidly spreading acute ar boviral infection transmitted through a human and Aedes mosquito cycle.[1] Dengue fever virus (DENV) has four common and genetically distinct serotypes. The disease is a significant public health problem in more than 100 countries of tropical and sub-tropical regions of Asia-Pacific, the Americas, the Middle East, and Africa.[2] The incidence of dengue fever (DF) has significantly increased worldwide in recent decades. Over the past 50 years, the global dengue incidence has dramatically increased to almost 30 fold.[3] The vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under-reported.[4]

According to WHO, 3.9 billion people, representing half of the global population, are at risk of dengue infection.[5] DF is endemic in Pakistan. The first serologically and virologically confirmed dengue outbreak was reported from Karachi in 1994.[6,7] Dengue fever has been occurring regularly in Pakistan during and after the rainy season since 2005. The most significant outbreaks were at Lahore in 2011,[8] and at Swat (KPK) in 2013.[9,10]

As there is no specific treatment for severe dengue fever yet, prevention remains the most important action to reduce the risk of infection. Since 2011, regular awareness and educational campaigns have been carried out throughout the country through electronic and print media, health education posters and seminars. Preventive attitudes and practices are usually a translation of disease awareness and knowledge among the people. The present study was conducted to assess the awareness and knowledge of dengue infection in the non-medical university students of Punjab.

METHODOLOGY

This was a cross-sectional survey conducted among non-medical university students from Rawalpindi and Lahore. The online survey was conducted in the early summer, i.e. May to June 2020, before the dengue fever season in Pakistan, which usually extends from July to October. The sample size was calculated using the Epi-info calculator of CDC.[11] The minimum sample size was 196, at a 95% confidence level and a 7% margin of error.

Inclusion Criteria: Non-medical university students studying different engineering and IT graduate programs from Rawalpindi and Lahore.

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Exclusion Criteria: Non-consenting students were excluded.

The survey was based on a structured questionnaire, covering general information about dengue fever, its transmission and vector, breeding habitats of vector, common symptoms, treatment, prevention and vector control. These aspects are usually covered in health education campaigns, literature and posters.

Twenty-three questions were based on "yes" and "no" responses, and three questions had multiple choices with one best answer to be selected. There was an option of "don't know" in addition to "yes" and "no" responses, which was counted as an incorrect response. The questionnaire was developed in the light of some similar awareness studies reported earlier.[12] The questionnaire was pretested on four participants to remove any ambiguities in the questions.

Statistical Package for Social Sciences (SPSS) version 22.0 was used for the data analysis. Correct responses have been shown as numbers and percentages. The chi-square test was used to analyse the difference in correct response between male and female students. The *p*-value of ≤0.05 was considered statistically significant.

RESULTS

A total of 208 students participated in our study. There were 146 (70.2%) males, and 62 (29.8%) female students. The mean age of the participants was 21.6 ± 1.8 years. Regarding general information and transmission of the disease, 122 (58.7%) knew that DF was a viral disease, and 138 (66.3%) knew that the mosquito transmitting DF was different from the mosquito transmitting malaria. 166 (79.8%) students were aware that DF commonly occurs in summers, only 26 (12.5%) students knew that the mosquito transmitting DF bites in the daytime and 57 (27.4%) had the correct knowledge about breeding places of Aedes egypti.

Most of the students knew that headache, fever and body aches were the common symptoms of DF. 106 (51%) students regarded nausea/vomiting, and 99 (47.6%) considered rash as the important symptom of DF. 67 (32.2%) students were aware of abdominal pain as an important symptom, 72 (34.6%) knew that cough was not a common symptom, and 109 (52.4%) knew that every patient with DF does not present with bleeding symptoms.

151 students were aware that DF patients should increase their fluid intake, 80 (38.5%) knew that Paracetamol should be used, and 89 (42.8%) understood that patients with DF should not use Aspirin to control the fever. 59 (28.4%) thought we do not use antiviral drugs and 77 (37%) understood that we do not use antibiotics to treat DF. Only 57 (27.4%) knew that every patient with DF was not a serious patient and should not be taken to a hospital.

Regarding the prevention of disease, the majority were aware that it could be prevented by anti-mosquito measures like repellents and anti-mosquito sprays and eradicating the breeding sites of mosquitoes. Out of 162 (78%) students thought that the disease could be prevented by taking some prophylactic medicines, and 122 (58%) thought it could be prevented by easily available vaccination (Table). There was no statistically significant difference in the responses of male and female students.

DISCUSSION

The present study was conducted to assess the awareness of DF among the educated youth of Pakistan. The questions were based on the usual information provided to the public through health education literature, posters, seminars and print, electronic and social media. Regarding the general information, most of the students were aware that DF is a viral illness, its vector mosquito is different from the mosquito transmitting malaria, and the disease spreads in summer. Fever, headache and body aches are the commonest symptoms of DF, and the majority of our participants (about 80% or more) were aware of these symptoms, similar to some previous local and regional studies.[10,11] In our group, nearly 50% were aware that skin rash is a common symptom of DF. Skin rash is an important feature of DF, and its recognition helps in the diagnosis and institution of appropriate supportive measures early in the illness. It is usually the least recognised common symptom of DF by the public, as suggested by other earlier studies.[12] Abdominal pain is an important symptom and warning sign of severe DF. About 30% of our participants recognised it as an important symptom. About half of our participants believed that every patient with DF presents with bleeding symptoms.

There is no precise treatment for dengue infection.[13] Supportive therapy with the combination of fluid and analgesics-antipyretics is suggested.[14] Generally, the knowledge regarding the management of DF was fairly inadequate.

The majority of our participants did not consider Paracetamol the main antipyretic drug, and only 42% of participants knew that Aspirin should not be used

Table: Correct responses to the dengue fever questionnaire and gender difference.

Questions		Correct Response n(%)		
		Males, n=146	Females, n=62	*p*-value
General Information and Transmission				
A	Is Dengue Fever a bacterial disease?	92 (63)	37 (59.7)	0.65
B	Is Dengue Fever a viral disease?	87 (59.6)	35 (56.5)	0.67
C	Does Dengue Fever spread through the same mosquito as malaria?	99 (67.8)	39 (62.9)	0.49
D	Is Dengue Fever common in summers?	119 (81.5)	47 (75.8)	0.34
E	When does the Dengue mosquito bite?	20 (13.7)	6 (9.7)	0.42
F	Where does the Dengue mosquito flourish?	38 (26)	19 (30.6)	0.49
G	Which blood cells are affected in Dengue Fever?	106 (72.6)	49 (79)	0.33
Symptoms of Dengue fever				
H	Is Fever a common symptom?	142 (97.3)	58 (93.5)	0.20
I	Is body pain, a common symptom?	119 (81.5)	52 (83.9)	0.68
J	Is headache commonly present in Dengue Fever patients?	120 (82.2)	44 (71)	0.07
K	Is nausea/vomiting common in Dengue Fever patients?	69 (47.3)	37 (59.7)	0.10
L	Is abdominal pain a symptom of Dengue Fever?	46 (31.5)	21 (33.9)	0.73
M	Is skin rash commonly present in Dengue Fever patients?	65 (44.5)	34 (54.8)	0.17
N	Is cough a common symptom of Dengue Fever?	52 (35.6)	20 (32.3)	0.64
O	Does every Dengue patient present with bleeding symptoms?	75 (51.4)	34 (54.8)	0.64
Treatment				
P	Do we use Antivirals drugs to treat Dengue Fever?	43 (29.5)	16 (25.8)	0.59
Q	Do we use Antibiotics to treat Dengue Fever?	55 (37.7)	22 (35.5)	0.76
R	Should patients increase their intake of fluids?	108 (74)	43 (69.4)	0.49
S	Should Paracetamol be used to control fever?	58 (39.7)	22 (35.5)	0.56
T	Should Aspirin be used to control fever?	62 (42.5)	27 (43.5)	0.88
U	Should we take every patient to the hospital?	38 (26)	19 (30.6)	0.49
Prevention				
V	Can Dengue Fever be prevented by taking prophylactic medications?	31 (21.2)	15 (24.2)	0.13
W	Can Dengue Fever be prevented by easily available vaccination?	56 (38.4)	30 (48.4)	0.17
X	Can Dengue Fever be prevented by applying mosquito repellent lotion?	130 (89)	58 (93.5)	0.31
Y	Can Dengue Fever be prevented by using anti-mosquito sprays in houses?	139 (95.2)	61 (98.4)	0.27
Z	Can Dengue Fever be prevented by ending the breeding sites of mosquitoes?	115 (78.8)	54 (87.1)	0.15

as an antipyretic or analgesic drug to control the symptoms, suggesting a lack of awareness that it can increase the bleeding risk. More than ten years ago, another local study on the general population revealed a poor level of awareness (22.8%) regarding the role of antipyretics in the management of DF.[10] In another study in Jamaica, 67% of the studied population reported they would take Aspirin if they had DF.[15] The majority of the participants thought every patient with DF could develop a serious illness and should be taken to the hospital for management. This is a very common misperception, resulting in a large influx of patients with fever, in-hospital emergencies and outdoor clinics during DF season.

Two major ways to prevent dengue infection are efficiently experienced, mosquito control by both larval and adult control, and reducing mosquito bites, especially during daylight hours.[16] The majority of our participants were aware that the disease could be prevented by avoiding mosquito bites using repellents, anti-mosquito sprays in and around the houses, and destroying the breeding places of Aedes egypti. Fewer students (27.4%) had clear knowledge about the breeding places of Aedes egypti, and only 12.5% of students knew that it bites in the daytime. Sixty percent thought that vaccine was effective and easily available, and about 80% thought it could be prevented using chemoprophylaxis. Dengvaxia is the only advanced vaccine available, with a WHO recommen-dation in 2016 that the vaccine is given to individuals with known past dengue infection or populations with 80% DENV seroprevalence.[17] An effective vaccine for primary infection prevention is not yet available, and there is no recommended antiviral drug for the prevention or treatment of DF.

To date, preventing or reducing DENV transmission has depended entirely on controlling the mosquito vectors. Even after vaccine deployment, vector control will continue to be part of control strategies to reduce disease risk and burden.[18] It has been shown that community education could be more effective than insecticide spraying alone in reducing mosquito breeding habitats.[19] Considering our group, an educated segment of the society, we expected a better

awareness regarding dengue fever and its prevention. We noted a lack of awareness about some important matters, such as the timing of the mosquito bite, avoidance of Aspirin and misconception regarding the management of dengue infection. We need to bridge these gaps by making health education campaigns more effective through social, print and electronic media and extending these campaigns into educational institutions.

Conflict of Interest: None.

Authors' Contribution

MA: Data analysis and contribution to manuscript writing, MM: Data collection and analysis, MJT:, HJ: Data collection and analysis, SA: Contribution to concept design and interpretation of data.

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