KNOWLEDGE OF DENGUE DISEASE AMONGST PARAMEDICAL STUDENTS OF INDEPENDENT SCHOOL OF PARAMEDICS FAISALABAD.

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ABSTRACT... Objectives: To assess the knowledge of dengue disease cause, symptoms, prevention and management amongst Paramedical students of Independent School of Paramedics. Study Design: Descriptive cross sectional study Setting: Independent School of Paramedics Faisalabad. Period: From February till May 2018. Material & Methods: There were total of 140 paramedical students and all 140 paramedical students of Independent School of Paramedics were selected through convenience sampling technique. Data was collected through self-administered structured questionnaire after taking informed consent from all the participants. Questionnaire was adapted from already published studies. Knowledge of dengue was categorized as adequate (>80%), moderate (60-80%) and inadequate (<60%) depending upon the correct response for a particular question by study participants. Results: Knowledge on the transmission, symptoms of dengue and methods to prevent dengue was found to be adequate that is, 130 (92.9%), 113 (80.7%) and 122 (87.1%) respectively. Knowledge on cause of dengue 16 (11.4%), species of mosquito involved in transmission 30 (21.4%), likely time for mosquito to bite 32 (22.9%), dengue is preventable 77 (55%), and where to refer a dengue patient 77 (55%) was found to be inadequate. Moderate knowledge was found for route of transmission of dengue 109 (77.9%), natural habitat of mosquito 105 (75%) and medication for dengue 90 (64.3%). Conclusion: Overall knowledge on dengue symptoms and dengue prevention was found to be better than knowledge on cause of dengue and dengue management. This necessitates the comprehensive dengue educational program especially for dengue cause and dengue management for the paramedics.

Key words: Dengue Fever, Dengue Knowledge, Dengue Prevention, Paramedics, Viral Hemorrhagic Fever.
hundreds of deaths.\textsuperscript{11}

Human travelers play an important part not only in the global spread of dengue disease but also between the different regions of the same country as they carry dengue virus in their blood to dengue non-endemic areas.\textsuperscript{12,13} Main symptoms of dengue are fever, severe headache, eye pain, myalgia, arthralgia, rash, bleeding from nose, gums or teeth. Warning signs of dengue disease are severe abdominal pain, vomiting, drowsiness, cold clammy skin, difficulty in breathing and restlessness.\textsuperscript{9,14,15} No specific treatment or vaccine is available for the dengue disease.\textsuperscript{8}

Important preventive measures include elimination of Aedes mosquito breeding places like stagnant water in and around houses, environmental sanitation including disposing of solid waste, using mosquito skin repellents, wearing body covering clothes, using window and door screens, using insecticide spray and improving community participation.\textsuperscript{3,6,9,13,15,16}

Knowledge of dengue disease transmission, symptoms, prevention and management is important for healthcare and paramedical staff in order to control and prevent the disease.\textsuperscript{17,18} With this background, this study was undertaken to assess knowledge of dengue fever among paramedical students of Independent School of Paramedics as their adequate knowledge of dengue disease is important for the control and prevention of disease.

**OBJECTIVE**
The objective of this research is to assess the knowledge amongst the Paramedical Students of Independent School of Paramedics about Dengue disease mode of transmission, symptoms, prevention and management.

**MATERIAL AND METHODS**
Descriptive cross-sectional study was conducted at Independent School of Paramedics from February to May 2018. All the 140 Paramedical students of Independent school of Paramedics, Faisalabad were selected through convenience sampling technique.

**Sample Selection**
There were total of 140 paramedical students studying in Independent School of Paramedics who were selected in our study.

**Inclusion Criteria**
All the Paramedical Students of Independent School of Paramedics willing to participate.

**Data Collection Procedure**
Data was collected by self-administered structured questionnaire. Questionnaire was adapted from studies conducted previously. Verbal and written consent was taken before administration of questionnaire.

**Study Variables**
Include the following: Age, education, marital status, total monthly income, boarding status, parent’s education, course enrolled

**Data Analysis Procedure**
Data was entered and analyzed using the statistical package for social sciences (SPSS) version 19.

**RESULTS**

**Knowledge on the Cause of Dengue**
Among 140 participants, only 16 (11.4\%) gave the correct answer regarding the causative agent of dengue as Dengue virus while 124 (88.6 \%) of the participants gave incorrect answer. 130 (92.9\%) participants knew the correct answer (mosquito) regarding transmission of dengue while 10 (7.1\%) of participants gave incorrect answer. About species of mosquito involved in transmission of dengue, 30 (21.4 \%) of participants gave the correct (Aedes mosquito) answer while majority of the participants that is, 110 (78.6 \%) gave incorrect answer. 109 (77.9\%) participants knew the correct answer (mosquito bite) of route of transmission of dengue while 31 (22.1\%) gave the incorrect answer. Table-I

Regarding most likely time for mosquito to bite, only 32 (22.9 \%) of students gave correct answer (dawn and dusk) while 108 (77.1 \%) students gave incorrect answer.
Knowledge on the Symptoms
Regarding knowledge on the symptoms of dengue fever, 113 (80.7%) of the students marked the correct answer while 27 (19.3%) marked the incorrect answer.

Knowledge on Dengue Prevention
Regarding question whether dengue is preventable or not, 77 (55%) marked the correct answer (preventable) while 63 (45%) of participants marked incorrect answer. 105 (75%) of participants correctly knew the natural habitat of mosquitoes (stagnant water) while 35 (25%) did not know. A vast majority of participant 122 (87.1%) knew the methods to prevent dengue while 18 (12.9%) participant did not.

Knowledge on Management
90 (64.3%) of participants had the correct knowledge (paracetamol) of dengue management while 50 (35.7%) did not had sufficient knowledge.

Miscellaneous
133 (95%) participants never suffered from dengue. Only 7 (5%) responded that they suffered from dengue. 126 (90%) participants replied that none of their friends or relatives suffered from dengue while only 14 (10%) said that their friends or relatives suffered from dengue.

For our study, knowledge of the study participants was considered to be adequate if more than 80% participants responded correctly to a particular question, moderate if correct response for a question was by 60%-80% of the study participants and inadequate if correct response was by less than 60% of the study participants. These results are summarized in Table-II.

For questions, ‘what are the symptoms of dengue’ and ‘what methods can be adopted to prevent dengue’ consisted of 7 options and was regarded as correct response if 4 or more than 4 correct answers were ticked.

| Demographic Variables | Frequency | Percentage |
|-----------------------|-----------|------------|
| Gender                |           |            |
| Male                  | 119       | 85%        |
| Female                | 21        | 15%        |
| Marital Status        |           |            |
| Single                | 135       | 96.4%      |
| Married               | 5         | 3.6%       |
| Age                   |           |            |
| 20 years or less      | 98        | 70%        |
| More than 20 years    | 42        | 30%        |
| Income                |           |            |
| Upto 30000            | 101       | 72.1%      |
| More than 30000       | 39        | 27.9%      |
| Basic Education       |           |            |
| Upto Matric           | 70        | 50%        |
| Above Matric          | 70        | 50%        |
| Working Status        |           |            |
| Working               | 32        | 22.9%      |
| Not working           | 108       | 77.1%      |
| Boarding Status       |           |            |
| Day scholar           | 114       | 81.4%      |
| Hostelite             | 26        | 18.6%      |
| Course Enrolled       |           |            |
| Dispenser course      | 26        | 18.6%      |
| Medical laboratory technology | 40 | 28.6% |
| Operation theatre technology | 30 | 21.4% |
| Radiology and imaging technology | 30 | 21.4% |
| Physiotherapy course | 14        | 10%        |

Table-I. Frequency distribution of socio demographic variables of study participants (n=140)
DISCUSSION
This study was conducted to assess knowledge of dengue disease among paramedical students of Independent school of Paramedics, Faisalabad. Our study highlighted deficiency of knowledge on dengue cause, symptoms, prevention and management.

In our study, paramedics’ knowledge of cause of dengue was found to be inadequate as only 11.4% (16) correctly answered that dengue is caused by DEN virus as compared to another survey done in 2003, in Australia, to assess the paramedical knowledge of several infectious diseases, mainly their etiology and transmission. Dengue fever was also included in that study where 39.7 % correctly answered the question of cause of dengue. In contrast to cause of Dengue, however large number of people 130 (92.9%) were able to correctly identify that dengue is transmitted by mosquito. Our results were similar to a study conducted in Dera Ismail Khan in 2015 where 96% correctly identified mosquito as vector of Dengue disease and also to another cross sectional study conducted in 2017 in large hospitals of Makkah Al Mukarramah, where 89.4% participants had correct knowledge about the vector responsible for transmission of dengue fever.21

Knowledge that Aedes aegypt species of mosquito transmits DEN virus to humans was poor and inadequate that is 30 (21.4%) whereas a cross sectional study conducted in Makkah Al Mukarramah hospitals in 2017, 68.1% knew that Aedes Mosquito species is the vector of dengue fever transmission.21 This is an area of concern and demands proper education of paramedical students.

Aedes aegypti mosquito is best known for its bite time, that is, between dawn and dusk. Only 22.9% (32) participants in our study were aware of this unique behavior of Aedes Mosquito. Our results are lower than the results reported in a study conducted in Sindh where 52.2% knew the biting habit of aedes mosquito. But our results are better than a cross sectional study conducted in 2017 in Makkah Al Mukarramah hospitals where only 5.9 % of the participants had correct knowledge about bite time of aedes mosquito.21 One of the reason might be that dengue is less common in Saudi Arabia.

| Statement                                | Correct response | %   | Incorrect response | %   | Level of Knowledge  |
|------------------------------------------|------------------|-----|-------------------|-----|---------------------|
| Knowledge on the cause                   |                  |     |                   |     |                     |
| Cause of Dengue                          | 16               | 11.4| 124               | 88.6| Inadequate*         |
| Species of mosquito involved in transmission | 30             | 21.4| 110               | 78.6| Inadequate          |
| Route of transmission of dengue          | 109              | 77.9| 31                | 22.1| Moderate **         |
| Most likely time for mosquito to bite    | 32               | 22.9| 108               | 77.1| Inadequate          |
| Knowledge on the Symptoms                |                  |     |                   |     |                     |
| Knowledge on the symptoms of dengue      | 113              | 80.7| 27                | 19.3| Adequate ***        |
| Knowledge on Dengue prevention           |                  |     |                   |     |                     |
| Dengue is preventable or not?            | 77               | 55  | 63                | 45  | Inadequate          |
| Natural habitat of mosquitoes            | 105              | 75  | 35                | 25  | Moderate            |
| Methods to prevent dengue                | 122              | 87.1| 18                | 12.9| Adequate            |
| Knowledge on Management                  |                  |     |                   |     |                     |
| Medication for dengue                    | 90               | 64.3| 50                | 35.7| Moderate            |
| Where to refer                           | 77               | 55  | 63                | 45  | Inadequate          |

Table-II. Level of knowledge of dengue of study participants
* Inadequate knowledge when correct response was by less than 60% of the study participants to a particular question.
** Moderate knowledge when correct response for a particular question was by 60%-80% of the study participants.
*** Adequate knowledge when more than 80% participants responded correctly to a particular question.
Participants’ knowledge of symptoms of dengue was adequate as 113 (80.7%) were able to correctly identify majority of symptoms of dengue. This may be due to the fact that dengue is quite common in our environment and frequent awareness campaigns are being conducted by the government and various non-governmental organizations.

Knowledge on dengue prevention was adequate as 122 (87.1%) participants were able to identify major preventive measures. The reason for having better knowledge about preventive measures may be due to the already mentioned same fact in ‘knowledge on the symptoms’ that dengue awareness campaigns are being organized frequently by the government. Knowledge about management strategies for the disease was moderate as only 90 (64.3%) participants suggested paracetamol. Our results about treatment choice is lower than cross-sectional study conducted in Malaysia where 78.7% had correct knowledge about treatment choice of dengue fever.

CONCLUSION
Knowledge on the symptoms and prevention of dengue disease was found to be better than knowledge on dengue cause and management. This poor knowledge on dengue cause and management warrants the review of relevant educational program and focus on evidence-based practice. This will result in improvement of patient care.

RECOMMENDATIONS
Education awareness activities like lectures, seminars, workshops etc need to be organized on regular basis in order to improve the knowledge of dengue among paramedical students. This is important as paramedics play an important role in health service delivery.

LIMITATIONS OF STUDY
Our study sample size is small as it is limited to only one paramedical school so results of this study need to be interpreted carefully. Authors suggest including other paramedical schools so that the results can be more generalized.

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**AUTHORSHIP AND CONTRIBUTION DECLARATION**

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|-------|---------------------|--------------------------|---------------------|
| 1     | Rabia Arshad Usmani | Concept and data.        |                     |
| 2     | Aftab Nazir         | Analysis, Writing the article. |                 |
| 3     | Marriam Nazir       | Data collection.         |                     |
| 4     | Muhammad Umar Ghafoor| Literature search.     |                     |
| 5     | Shahbaz Ahmad       | References.              |                     |
| 6     | Shahbaz Baig        | Reviewed the study.      |                     |