



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

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INTRODUCTION

Dengue is a viral disease caused by Dengue RNA virus.^{1,2} It is worldwide in distribution. It is transmitted through mosquitoes mainly aedes aegypti mosquito species.^{2,3} Annually, 50-100 million infections occur worldwide which include 500,000 cases of Dengue hemorrhagic fever and approximately 20,000 deaths.^{4,5} Main forms of dengue disease are dengue fever, dengue hemorrhagic fever and dengue shock syndrome.^{6,7}

Dengue disease used to be limited in only few countries but now it is endemic in more than 100 countries of the world.^{3,5} It is estimated that around 3.5 billion people living in 128 countries

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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.

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are at risk of dengue disease, making it an important emerging arthropod borne viral disease of humans.^{3,4,8,9} Case fatality rate varies from one region to another region and countries but it generally below 1% because of early detection and access to proper medical care.³

In Pakistan, dengue disease is present for more than 30 years, the first major outbreak of dengue disease was reported in Karachi in 1994 following heavy rain fall.¹⁰ After this, dengue disease continued to be reported from different regions of the country affecting different age groups. However one of the major outbreak of dengue disease occurred in Lahore city of Punjab which affected thousands of people and caused

hundreds of deaths.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.^{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.^{9,14,15} No specific treatment or vaccine is available for the dengue disease.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.^{3,8,9,13,15,16}

Knowledge of dengue disease transmission, symptoms, prevention and management is important for healthcare and paramedical staff in order to control and prevent the disease.^{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)

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.

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.¹⁹ 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 disease²⁰ 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 aegypti* 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*.²² 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.

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.²³

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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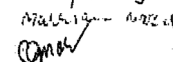
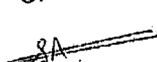

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REFERENCES

1. Filomatori CV, Carballeda JM, Villordo SM, Aguirre S, Pallarés HM, Maestre AM, et al. **Dengue virus genomic variation associated with mosquito adaptation defines the pattern of viral non-coding RNAs and fitness in human cells.** PLoS pathogens. 2017; 13(3):e1006265.
2. Guzman MG, Gubler DJ, Izquierdo A, Martinez E, Halstead SB. **Dengue infection.** Nature reviews Disease primers. 2016; 2:16055.
3. WHO. **Dengue and severe dengue:** World Health Organization (WHO) 2019 [Available from: <https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue>].
4. Murray NEA, Quam MB, Wilder-Smith A. **Epidemiology of dengue: Past, present and future prospects.** Clinical epidemiology. 2013; 5:299.
5. Guo C, Zhou Z, Wen Z, Liu Y, Zeng C, Xiao D, Ou M, Han Y, Huang S, Liu D, Ye X. **Global epidemiology of dengue outbreaks in 1990–2015: a systematic review and meta-analysis.** Frontiers in cellular and infection microbiology. 2017 Jul 12;7:317.
6. Halstead SB, Cohen SN. **Dengue hemorrhagic fever at 60 years: Early evolution of concepts of causation and treatment.** Microbiol Mol Biol Rev. 2015; 79(3):281-91.
7. Ahmad S, Aziz MA, Aftab A, Ullah Z, Ahmad MI, Mustan A. **Epidemiology of dengue in Pakistan, present prevalence and guidelines for future control.** Int J Mosq Res. 2017; 4(6):25-32.
8. Mustafa M, Rasotgi V, Jain S, Gupta V. **Discovery of fifth serotype of dengue virus (DENV-5): A new public health dilemma in dengue control.** Medical Journal Armed Forces India. 2015; 71(1):67-70.
9. Patterson J, Sammon M, Garg M. **Dengue, Zika and chikungunya: Emerging arboviruses in the New World.** Western Journal of Emergency Medicine. 2016; 17(6):671.
10. Chan Y, Salahuddin N, Khan J, Tan H, Seah C, Li J, et al. **Dengue haemorrhagic fever outbreak in Karachi, Pakistan, 1994.** Transactions of the Royal Society of Tropical Medicine and Hygiene. 1995; 89(6):619-20.

11. Rafique I, Saqib MAN, Munir MA, Qureshi H, Iqbal R, Ahmed W, et al. **Asymptomatic dengue infection in adults of major cities of Pakistan.** Asian Pacific journal of tropical medicine. 2017; 10(10):1002-6.
12. Wesolowski A, Qureshi T, Boni MF, Sundsøy PR, Johansson MA, Rasheed SB, et al. **Impact of human mobility on the emergence of dengue epidemics in Pakistan.** Proceedings of the National Academy of Sciences. 2015; 112(38):11887-92.
13. Khan J, Ghaffar A, Khan SA. **The changing epidemiological pattern of Dengue in Swat, Khyber Pakhtunkhwa.** PloS one. 2018; 13(4):e0195706.
14. Khetarpal N, Khanna I. **Dengue fever: causes, complications, and vaccine strategies.** Journal of immunology research. 2016;2016.
15. Park K. **Park's textbook of preventive and social medicine.** 24th ed. Jabalpur: M/s Banarsidas Bhanot Publishers; 2017, 410-419.
16. Wong LP, Shakir SMM, Atefi N, AbuBakar S. **Factors affecting dengue prevention practices: Nationwide survey of the Malaysian public.** PloS one. 2015; 10(4):e0122890.
17. Kumar A, Rongpharpi S, Duggal S, Gur R, Choudhary S. **Clinical, epidemiological and microbiological profile of dengue fever at a tertiary care hospital in Delhi, India.** J Infect Dis Med. 2017; 2(110):2576-1420.1000110.
18. Jahan F. **Dengue fever (DF) in Pakistan.** Asia pacific family medicine. 2011; 10(1):1.
19. Shaban R, Creedy D, Clark M. **Paramedic knowledge of infectious disease aetiology and transmission in an Australian Emergency Medical System.** Australasian Journal of Paramedicine. 2003 Oct 6;1(3).
20. Qadir S, Ahmad I, Akhtar MN, Naeem H. **Knowledge, attitude and practice about dengue fever among local population.** Gomal Journal of Medical Sciences. 2015 Jun 30;13(2).
21. Hamid SM, Siddiqui MI, Qutub RAM, Raees F, Hashmi S. **Knowledge of Dengue Fever among Health Care Professional in large hospitals of Makkah al Mukarramah.** JBUMDC. 2017:209.
22. Bota R, Ahmed M, Jamali MS, Aziz A. **Knowledge, attitude and perception regarding dengue fever among university students of interior Sindh.** Journal of infection and public health. 2014; 7(3): 218-223.
23. Ken CC, Aan GJ, Hamdi CHH, Ibrahim OAM, Maskon O. **Impact on knowledge in dengue management among medical and paramedical personnel following attendance to educational lectures.** 2014.

AUTHORSHIP AND CONTRIBUTION DECLARATION

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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.	