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Knowledge, Attitude and Practice (KAP) Study on Dengue Fever among Medical Students in Dera Ismail Khan, Pakistan

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ABSTRACT

Dengue is a public health problem and a leading mosquito-borne viral disease. In Pakistan, the dengue virus has been the source of several epidemics. **Objective:** To find frequency, distribution, and association of KAP regarding dengue fever among students with gender and type of Students. **Methods:** This descriptive cross-sectional study using stratified random sampling was conducted in the Gomal Medical College (GMC). Sample size 235, an equal proportion of students from each class were randomly selected. Data were analyzed by using SPSS version 23.0. For inferential statistics, 95% CI was used. The chi-square test was used with p < 0.05 considered significant. **Results:** Among 235 students, 111 (47.3%), and 214 (91.1%) had good knowledge and attitude respectively. Preventive practices were as follows: 127 (54%) had good practices, 65% used mosquito repellents, and 58% used mosquito nets. There was no association of KAP with gender. Among 87 pre-clinical students, 29 (33%), 77 (89%), and 44 (51%) had good Knowledge, Attitude, And Practice (KAP) respectively. Among 148 clinical students, 82 (55%), 137 (93%), and 83 (56%) had good KAP respectively. There was an association between knowledge and Type of students at p = .002. **Conclusions:** It was concluded that 47%, 91%, and 54% of students had good KAP respectively. KAP wasn't associated with gender. The type of students was associated with knowledge while attitude and practice were not significant.

INTRODUCTION

The most common viral illness in humans spread by mosquitoes is dengue, a significant public health concern [1]. It is caused by one of the four serotypes of the dengue virus. The disease is prevalent in the tropical and subtropical regions of the world [2]. In Pakistan, the dengue virus has been the source of several epidemics. In 1982, there was the first report of dengue fever in Pakistan, affecting 12 out of 174 individuals [3]. About half of the world's population is in danger from dengue, a vector-borne viral infectious disease that is sensitive to climate change and poses a serious threat to public health in over 120 nations [4]. The first recorded incidence of dengue fever in Khyber Pakhtunkhwa was in Swat in August 2013, but the illness originally appeared in Karachi in 1994, Khyber Pakhtunkhwa topped the list of states with dengue infections in 2013, with 3177 cases reported [3]. Among these, several variables contribute to the spread of dengue fever. The rate of virus spread has risen due to changes in the environment and people moving about quickly [5]. Dengue may cause a wide range of clinical symptoms, from flu-like symptoms to serious illnesses including dengue shock syndrome and dengue haemorrhagic fever. Without appropriate care, the mortality rate from severe dengue might reach over 20% [6]. The World Health Organization (WHO) released and executed a "Global Strategy for Dengue Prevention and Control" aimed at reducing dengue fever deaths and morbidities by 2020 and determining the actual disease burden [7]. The best preventative measures for controlling dengue fever are vector control and avoiding mosquito bites, as there is currently no vaccine or

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prophylactic medication available [8]. In Pakistan, there is currently no regular vaccination available. Therefore, the cornerstone of disease prevention is the avoidance of mosquito breeding and personal protection from mosquito bites [9]. Dengue has serious detrimental effects on society and the economy, and it may significantly restrict economic growth [10]. With years of implementation experience, both developed and developing nations have faced several challenges in achieving their goals, which include encouraging their citizens to adopt healthier lifestyles [11]. The occurrence of dengue fever has significantly decreased in China thanks to strategies such as increased environmental sanitation, personal protection, national reporting system vector mosquito control, and public awareness. New technologies are also being developed for vector control [12]. For vector control programs, pesticides fall into four major classes: Organochlorines, carbamates, pyrethroids, and organophosphates [13].

The study aimed to find out what knowledge, attitudes, and behaviours undergraduate medical students had regarding dengue.

METHODS

A descriptive cross-sectional study was conducted in the Department of Community Medicine, Gomal Medical College, Dera Ismail Khan, Pakistan from Oct –2023 to Jan–2024. The project commenced after approval from the ethical review committee of the institute with Institutional Review Board (IRB) reference number 82/GJMS/JC. The confidentiality of the participants was assured. The target population was students in Gomal Medical College from 1st professional year to the final professional year. A stratified random sampling technique was used, a probability sampling technique. On the Raosoft sample size calculator, for the population of 600 with a confidence level of 95 percent, margin error of 5 percent and response rate of 50 percent the sample size was 235. Among 235 sample sizes, 5 strata were made using the proportionate strata method to give each professional year an equal chance of representation in data i.e., the strata were 41 students from 1st professional year, 46 students from 2nd year, 46 students from 3rd year, 54 students from 4th year, and 48 from the final professional year. Then for each stratum selection was done with random sampling in respective professional years. A self-made pre-coded questionnaire was constructed using literature on dengue KAP studies [2, 14]. The questionnaire consists of two sections: (1) Demographic information: Gender with two attributes (a) male, (b) female, Type of students with two attributes (a) preclinical i.e., 1st and 2nd professional years, (b) clinical i.e., 3rd, 4th, and final professional years. (2) Research variables; (a) Knowledge regarding Dengue fever, (b) Attitude towards Dengue fever and (c) Preventive Practices of Dengue. For

questions of Knowledge, Attitude and Practice assessment, responses to questions were coded such that correct answers were scored 1 and incorrect answers were scored 0. The total scores for Knowledge, Attitude and Practice were 12, 5 and 5 respectively. For Knowledge, Attitude and Practice three categories were made (a) poor (< 33%), (b) fair (< 67%) and (c) good (> 67%). During the data collection time professional year students were having annual exams preparation and students were not available in college, so the questionnaire was distributed using Google Forms and its link was made available to students who were included in this study through social media app (WhatsApp). As it was easy and convenient to follow each participant response. The study was explained to the students upon receiving the questionnaire, the consent was obtained from all participants and help was provided to anyone having trouble in filling. The obtained data were analyzed using descriptive statistics (frequency, percentage) and for inferential statistics, we calculated the confidence interval for proportion at 95% using SPSS version 23.0. The chi-square test was used to determine any statistically significant association among variables. p-value = < 0.05 was considered statistically significant. All research and sociodemographic variables were described as frequency and percentages. Assessment was done by using a scoring system. For questions of Knowledge, Attitude and Practice assessment, responses to questions were coded such that correct answers were scored 1 and incorrect answers were scored 0. The total scores for Knowledge, Attitude and Practice were 12, 5 and 5 respectively. For Knowledge, Attitude and Practice three categories were made poor = having a score < 33%, fair = < 67%, good < 100.

RESULTS

This research study had 235 students in total. About 179 (76%) of the 235 students were male, and 56 (24%) were female. Pre-clinical year students made up 87 (37%) and clinical year students made up 148 (63%) of the student pool. The students' demographic features are shown in table 1.

Table 1: Demographic Characteristics of Participants

Variables	Attributes	Frequency (%)	Total
Gender	Male	179 (76%)	235
	Female	56 (24%)	
Type of Students	Preclinical years	87 (37%)	235
	Clinical years	148 (63%)	

According to data, out of 235 students, 5 (2.1%) had little information about dengue fever, 119 (50.6%) had fair knowledge, and 111 (47.3%) had good knowledge. Few students were able to correctly identify the peak dengue biting time, definitive treatment, and confirmation test. Most students have heard about dengue fever, including its

causative agent, mode of transmission, breeding site, common symptoms, and pain management. Students' attitudes regarding dengue disease were mostly positive. Data on attitudes concerning dengue disease revealed that 1 person (0.4%) had a poor attitude, twenty participants (8.5%) had a fair attitude, and 214 participants (91.1%) had a good attitude. Students' preventive measures against dengue fever were as follows: 127 (54%) had good level practices, 75 (31.9%) had fair level practices, and 33 (14%) had poor level practices. The frequency distribution is shown in table 2.

Table 2: KAP Frequency Distribution of Students Regarding Dengue Fever with 95% Confidence Interval

Categories	Frequency (%)	95 % CI	
		Lower	Upper
Knowledge			
Poor	5 (2.1)	0.4	4.3
Fair	119 (50.6)	45.1	56.2
Good	111 (47.3)	41.7	52.8
Total	235 (100)	100	100
Attitude			
Poor	1 (0.4)	0.0	1.3
Fair	20 (8.5)	5.1	12.4
Good	214 (91.1)	87.1	94.9
Total	235 (100)	100	100
Practice			
Poor	33 (14)	9.8	19.1
Fair	75 (31.9)	26.3	37.9
Good	127 (54)	48.5	60.4
Total	235 (100)	100	100

Correct Responses to Knowledge Questions of Students Regarding Dengue Fever are shown in table 3.

Table 3: Correct Responses to Knowledge Questions of Students Regarding Dengue Fever (N=235)

Knowledge Questions	N (%)
Heard about dengue?	226 (96.2)
Causative agent of dengue fever?	180 (76.6)
Dengue mode of transmission?	217 (92.3)
Dengue mosquito breeding site?	176 (74.9)
How does dengue mosquito look like?	152 (64.7)
Peak biting time of dengue mosquito?	69 (29.4)
Common symptoms of dengue?	185 (78.7)
Incubation period of dengue?	213 (90.6)
Is there any definitive treatment for dengue fever?	112 (47.7)
Drug commonly used for pain management in dengue fever?	149 (63.4)
Vaccine of dengue	148 (63)
Confirmation test for dengue?	88 (37.4)

The knowledge distribution among the 148 male participants was as follows: 4 (2.2%) had poor level knowledge, 87 (48.6%) had fair level knowledge, and 88 (49.2%) had good level knowledge. Out of the 56 female participants, 1 (1.8%) had poor understanding about dengue disease, 32 (57.2%) had fair knowledge, and 23 (41%), had

good knowledge. The stat on male attitude is as follows: 1 (0.6%) had a poor attitude, 16 (9%) had a fair level, and 62 (90.4%) had a good level. while 52 (93%) of the female participants had a good level attitude and 4 (7%), had a fair level attitude. Male participants' preventive practices showed that 28 had a poor level (15.6%), 62 had a fair level (34.6%), and 89 had a good level (49.8%). Of the female students, 38 (68%) had good preventative practices, 13 (23%) had fair practices, and 5 (9%), had poor preventive practices. Using the chi-square test, it was shown that there was no significant correlation between students' gender and their knowledge, attitudes, or preventative practices. As the p-values greater than 0.05, the values of association with Gender are shown in table 4.

Table 4: KAP Association of Dengue Fever with Gender

Gender	Knowledge			Total	Pearson Chi-square		
	Poor	Fair	Good		Value	df	p-value
Male	4	87	88	179	1.245	2	0.536
Female	1	32	23	56			
Total	5	119	111	235			
Attitude							
Male	1	16	162	179	0.500	2	0.779
Female	0	4	52	56			
Total	1	20	214	235			
Practice							
Male	28	62	89	179	5.709	2	0.058
Female	5	13	38	56			
Total	33	75	127	235			

Data showed Among 87 preclinical years participants the knowledge distribution was as follows, 1 (1%) with poor level knowledge, 57 66%) with fair level knowledge and 29 (33%) with good level knowledge of dengue fever. While among 148 clinical years' students 4 (3%) with poor level knowledge, 62 (42%) with fair level knowledge and 82 (55%) with good level knowledge on dengue fever. On applying chi-square test there was significant association between knowledge on dengue fever with Type of students with p = 0.002. Attitude among 87 preclinical year students 10 (11%) with fair level attitude while 77 (89%) with good level attitude. Among 148 clinical year students 1 (0.7%) with poor level attitude, 10 (6.3%) with fair level attitude and 137 (93%) with good level attitude. Among 87 preclinical year students, 14 (16%) with poor level practices, 29 (33%) with fair level practices and 44 (51%) with good level preventive practices. While in clinical years out of 148, 19 (13%) with poor level practices, 46 (31%) with fair level practices and 83 (56%) with good level practices. On applying the chi-square test there was no significant association between the Attitude and preventive practices of students with Type of students with p-values greater than 0.05. the values of association with type of Students are given in table 5.

Table 5: KAP Association of Dengue Fever with Type of Students

Gender	Knowledge			Total	Pearson Chi-square		
	Poor	Fair	Good		Value	df	p-value
Pre-clinical	1	57	29	87			
Clinical	4	62	82	148	1.312	2	0.002
Total	5	119	111	235			
Attitude							
Pre-clinical	0	10	77	87			
Clinical	1	10	137	148	2.132	2	0.344
Total	1	20	214	235			
Practice							
Pre-clinical	14	29	44	87			
Clinical	19	46	83	148	0.808	2	0.668
Total	33	75	127	235			

DISCUSSION

This research study was carried out in a medical college in Dera Ismail Khan, Pakistan, to find out the knowledge, attitudes, and behaviours of undergraduate medical students regarding dengue, as the dengue is most common viral illness in humans spread by mosquitoes, a significant public health concern. The majority of participants were males (76%) in this research study which is somewhat different from KAP-based research on dengue fever among local people of Karachi, Pakistan by Ali et al., 2023 [15]. However, it aligns with the KAP study of Zohra et al., 2024 in the Malakand region, Pakistan in which male participants were predominant [16]. Although Dengue fever is prevalent in Pakistan, we discovered in our study that only 47 % of students have a good level of knowledge about dengue which is likely due to a lack of awareness programs, seminars should be arranged to address the issue which is slightly less than the previous study by Saghir et al., 2022 [17]. The majority of students have heard about dengue fever, its causative agent, its mode of transmission of dengue, its breeding site, common symptoms of dengue fever, and pain management in dengue fever, and few students were able to correctly identify the peak biting time of dengue, about confirmation test and any definitive treatment for dengue [18]. The majority of the students obtained a high attitude percentage about 91% had a good attitude in our study as the participants knew the importance of dengue as a public health-related issue and should be controlled which was somewhat like KAP based study of Phuyal et al., 2022 [19]. The practice frequency distribution was also not that much high than the previous KAP studies on dengue only 54% of students have good practice toward the prevention of dengue fever as proper awareness and appropriate preventive methods are prime in controlling dengue limited resources and personal habits can be the reason for low preventive practices which was somewhat like the previous study of Qureshi et al., [20]. The preventive practices of students' responses show that about 65% of students use mosquito repellents, 75% of students keep windows and doors closed to avoid mosquito biting, about 58% of students use mosquito nets and 76% use full sleeves clothes to avoid dengue biting [21]. Our study results showed that the students have a relatively better attitude than their knowledge and practices which is according to a study of Rahman et al., 2022 [22]. As limited resources and personal habits and lack of community involvement in dengue control may change the outcome of preventive practices, excellent practices did not always follow from excellent information [23]. A comparison of the participants' gender did not yield any apparent variation in their level of knowledge of dengue. Both males and females have the same understanding of dengue fever, like Alvarado-Castro VM et al., 2024., [24]. Most students in our study had a positive outlook in their attitude toward Dengue fever with no significant correlation with gender both males and females had good levels of attitude towards dengue fever as dengue is a public health-related issue and should be controlled like in Saghir et al., 2022 [17]. Male and female research participants did not differ in their approaches to dengue prevention. Similar results were shown in the previous study by Banik et al., 2020, which found that gender had little impact on dengue prevention behaviours this can be due to social behaviours and personal habits [25]. Although there was an association of knowledge with type of students with (p-value = .002) with clinical years having good knowledge on dengue this can be due to their wards rotation to hospitals where they get enough exposure regarding public related health issues. There was no association between the attitude and practice of students with the type of students in our study. Both preclinical and clinical years students have almost the same attitude and practice in our KAP study on dengue fever among students.

CONCLUSIONS

It was concluded that dengue fever among medical students 47% had a good level of knowledge of dengue, 91% with a good level of attitude towards dengue and 54% with a good level of preventive practices. There was no association of Knowledge, attitude and practice with gender. By checking the association of knowledge with the Type of students, the clinical years' students had good knowledge while attitude and practice were not statistically significant.

Authors Contribution

Conceptualization: NA, MO
Methodology: NA, AI, FUR, MJ
Formal analysis: NA, FUR, MK, MJ
Writing-review and editing: FUR, MO, MK

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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