

# Knowledge, Attitude & Perception of Dengue among First Year Medical Students

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## ABSTRACT

**Aims:** To see knowledge, attitudes and practices (KAP) of freshly admitted first year MBBS students about dengue fever.

**Study design:** Descriptive cross-sectional study

**Place & duration of study:** Lahore Medical & Dental College, Lahore over a period of two weeks

**Material & methods:** 134 students registered in first year MBBS, academic year 2011/2012. Data was collected using a structured pretested questionnaire. Data was entered and cleaned in SPSS 19 statistical package. Data was presented in the form of tables and graphs.

**Results:** It was observed that few respondents knew that there are four types of *Dengue Fever*, quite a good number knew about the causative agent. The incubation period was well known by the students. The vector of the disease is known by good number; however half of the students rightly named the species as *aedes aegypti*. Regarding the time of transmission of disease students were cognizant that it was mostly early dawn and students were well aware of the fact that the breeding places of female *aedes aegypti* mosquitoes is stagnant water sites. Knowledge of respondents regarding the clinical picture, complications and diagnosis of Dengue Fever are also having high percentages.

**Conclusion:** Medical students had the highest ability to gain knowledge and it can be reflected in changing practices. Changes in knowledge were greater than changes in practice which reflects the fact that these changes take more time and need sustained education. Closing the gap between knowledge and practice will remain an important challenge for dengue control, as well as defining dynamic targets for reduction of *Ae. aegypti* populations.

**Keywords:** Dengue, student research, mosquito control, students, open-ended questionnaire

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## INTRODUCTION

Dengue is the most important vector-borne tropical viral disease around the globe. Dengue fever (DF) and dengue haemorrhagic fever (DHF) represent great challenges to public health at a world level. The World Health Organization (WHO) reported that about 2.5 billion people (40% of the world's population) are at risk of developing the disease<sup>1,2</sup>. Dengue or a very similar illness had a wide geographic distribution before the 18th century, when the first known pandemic of dengue-like illness began.

DF has recently re-emerged as a major international health problem and in Pakistan with a potential to cause major epidemics, dengue is emerging as one of the major public-health problem particularly since 2005 threatening the millions of people due to prevailing peculiar socioeconomic conditions and epidemiological situation. Historically dengue has been endemic in the southern parts of

country. In Pakistan first time dengue was recognized in 1994 in Karachi and 1 patient out of 145 died. In October 1995, 57 out of 76 persons were found positive for antibodies against dengue virus in Hub, Southern Balochistan. In October 2003 dengue outbreaks were detected for the first time in sub-mountainous areas of district Haripur, Khyber Pakhtoonkhwa province and district Khushab, Punjab Province claiming 6 lives among 717 cases detected. In October 2005, Dengue again hit Karachi after 10 years and 21 deaths out of total 103 confirmed cases were recorded. Since then, the disease has become widely accepted as one of the major public health problems in Pakistan reporting 26,270 cases and 156 deaths till 2010. During 2011 (Till 17 September), There are 6866 cases and 44 deaths in country. Associated with the rise of DF there has been an increase in associated mortality.

The 55th World Health Assembly declared DF prevention and control as priority and urged Member States to develop sustainable inter sectorial strategies<sup>3</sup>. In the absence of a vaccine, seroprophylaxis or specific treatment for the disease<sup>2</sup> the principal strategy is a sustainable integrated approach to prevention of transmission by controlling

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the principal vector, *Aedes aegypti*. This should be based more on community involvement to control mosquitoes in the domestic environment than on the use of chemicals<sup>4</sup>. Health education programmes involving different sectors in the community are important intervention tools to promote behaviour changes that lead to involving the community in controlling DF, particularly the vector<sup>5</sup>. To be successful, community-based strategies must be flexible and adapted to the local setting because of ecological, cultural and social differences between localities<sup>6</sup>.

*Aedes* control is largely based on source reduction. Therefore, knowledge of the types of mosquito breeding sites is a prerequisite for health personnel, schoolteachers and children and the community at large for the control of dengue. Various types of containers have been identified as potential mosquito breeding sites. These include plastic and metal containers, animal-feeding dishes, tyres, flower vases, coconut shells and water storage drums<sup>14,15</sup>.

The knowledge about the types of breeding containers alone is not enough to achieve mosquito control. Attitudes and beliefs impact a person's knowledge about mosquito control. For example, the belief that dengue is not a fatal or serious problem impairs a person from carrying out adequate mosquito control practices. Some people believe that mosquitoes within the home and outside are different. So it is believed that mosquitoes inside the house do not carry disease<sup>16</sup>.

Since dengue is already endemic in this study city in the Pakistan, it was presupposed that there would already be a high level of awareness about dengue in general and specially among the newly admitted first year MBBS students at Lahore Medical and Dental College. So, this study sought to explore the more specific topic related to dengue control, through source reduction. Therefore, the objective of the study was to explore the opinions of first year LMDC students about the mosquito larvae control in a dengue endemic city like Lahore.

As DF represents an escalating health problem in Lahore and since there is a less of community-based health educational strategies, a programme/strategy for prevention and control is urgently needed and it has been stressed out at different health forms. The aim of this study was to know the knowledge, attitudes and perception of first year MBBS students, towards DF. This strategy, when adopted, at different levels of our school systems (primary, secondary or undergrad) will enable us to know that where intervention programme for imparting DF knowledge in prevention and control is required.

Although education campaigns have increased people's awareness of dengue, it remains unclear to

what extent this knowledge is put into practice, and to what extent this practice actually reduces mosquito populations. Knowledge, attitude, and practice (KAP) survey provide a suitable format to evaluate existing programs and to identify effective strategies for behaviour change in future.

## OBJECTIVE

The objective was to see knowledge, attitudes and perceptions (KAP) of freshly admitted first year MBBS students about dengue fever. The idea was to see and impart correct dengue knowledge and practice which in turn will reduce dengue vector populations. Such studies have been relatively rare in dengue research. Dengue KAP studies can be primarily used to evaluate the impact of health education and community-based programs. A total of 135 questionnaires were completed. Awareness in all areas of knowledge, attitudes and perceptions was seen through the questionnaire inducted. Students showed knowledge through data collected. There is a need to expand such programmes to all Lahore schools, even at primary levels.

## METHODOLOGY

It was descriptive cross-sectional study conducted at Lahore Medical & Dental College, Lahore during two weeks on 134 students registered in first year MBBS, academic year 2011/2012. Data was collected using a structured pretested questionnaire. Data was entered and cleaned in SPSS 19 statistical package. Data was presented in the form of tables and graphs.

## RESULTS

The present study was conducted with 1<sup>st</sup> year MBBS students (session 2011/2012). The knowledge of respondents regarding *Dengue Fever* is presented in Table I.

It was observed that 33(25%) respondents knew that there are four types of *Dengue Fever*, 59(44%) correctly named the causative agent as flavivirus and 87(65%) of students were aware that the incubation period of *Dengue Fever* is 4-7 days. Among the respondents, 117(87%) knew that the vector of this disease is female mosquitoes, though only 52(39%) of students rightly named the species as *aedes aegypti*. Regarding the time of transmission of disease 122(91%) students were cognizant that it was mostly early dawn and 115(86%) students were aware that the breeding places of female *aedes aegypti* mosquitoes is stagnant water sites. Knowledge of respondents regarding the clinical picture, complications and diagnosis of *Dengue Fever* is presented in Table II.

Table 1: Knowledge of 134 medical students regarding Dengue Fever

Knowledge about Dengue Infection	=n
<i>Types of Dengue Fever</i>	
Four Types	33(24.6%)
Two Types	37(27.6%)
One type	20(14.9%)
Still not confun	44(32.8)
<i>Causative agent of Dengue infection</i>	
Wolbachia	15(11.2%)
Rota virus	33(24.6%)
Flavi virus	59(44%)
Rubella virus	27(20.1%)
<i>Incubation period of Dengue Infection</i>	
15 days	41(30.6%)
4-7 days	87(64.9%)
30 days	5(3.7%)
25 days	1(0.7%)
<i>Dengue Infection is transmitted through</i>	
Female mosquitoes	117(87.3%)
Male mosquitoes	14(10.4%)
Dragon flies	3(2.2%)
<i>Name of principle mosquito for Dengue Infection</i>	
Anopheles	56(41.8%)
Culex	17(12.7%)
Aedes aegypti	52(38.8%)
Coquilletidia	9(6.7%)
<i>Time of transmission for DF</i>	
Early dawn	122(91%)
Late night	7(5.2%)
When raining	2(1.5%)
When humidity is maximum	3(2.2%)
<i>Breeding sites for DF mosquitoes</i>	
Plant pots only	5(3.7%)
Moist soil	2(1.5%)
Running water	12(9%)
Stagnant water	115(85.8%)

When inquired about the clinical picture of *Dengue Fever*, 121(90%) students correctly answered high fever, severe headache, pain behind eyes, muscle and joint pains and rash. Regarding complications of this disease, 102(76%) students identified them to be Dengue haemorrhagic fever and shock syndrome and 119(89%) respondents were acquainted with the fact that low platelet count is a diagnostic feature of this disease. Perceptions of first year medical students about *Dengue Fever* prevention was assessed and depicted in Fig 1.

The respondents correctly agreed that *Dengue Fever* is an important public health problem in Lahore 120(98%), it is important to search for the presence of mosquito vectors in homes 94(70%), positive

practices include going to the doctor when suspecting *Dengue Fever* 117(87%), stagnant water must be removed or reported 124(92%), mosquito repellents and home insecticides must be used for prevention and control of *Dengue Fever* 125(93%) and protective clothing must be worn against the mosquito 117(87%). However, 114(85%) students wrongly perceived that inquiring about the *Dengue* patient's condition and movements is important for prevention and control of *Dengue Fever*

Table II: Knowledge of 134 medical students regarding clinical picture, complications and diagnosis of dengue fever

	=n
<i>Clinical Picture of Dengue fever</i>	
High fever, severe headache, pain behind eyes, muscle and joint pains and Rash	121(90.3%)
Fever with chills and headache behind the ears	10(7.5%)
Flue like symptoms with headache at dawn	2(1.5%)
Long standing cough, headache and fever	1(0.7%)
<i>Complications for Dengue fever - Mouth Ulcers</i>	
Dengue haemorrhagic fever and dengue shock syndrome	7(5.2%)
Fever with chills and headache behind the ears	102(76.1%)
<i>Diagnosis of Dengue Fever</i>	
Low RBCs	9(6.7%)
Low Eosinophils	4(3%)
Low platelet count	119(88.8%)
Low Hb	2(1.5%)
<i>Clinical Picture of Dengue fever</i>	
High fever, severe headache, pain behind eyes, muscle and joint pains and rash	121(90.3%)
Fever with chills and headache behind the ears	10(7.5%)
Flue like symptoms with headache at dawn	2(1.5%)
Long standing cough, headache and fever	1(0.7%)
<i>Complications for Dengue fever</i>	
Mouth ulcers	7(5.2%)
Dengue haemorrhagic fever and dengue shock syndrome	102(76.1%)
Generalized body itching	22(16.4%)
<i>Diagnosis of Dengue Fever</i>	
Low RBCs	9(6.7%)
Low Eosinophils	4(3%)
Low platelet count	119(88.8%)
Low Hb	2(1.5%)

Fig I: Perceptions of 134 medical students regarding Dengue Fever

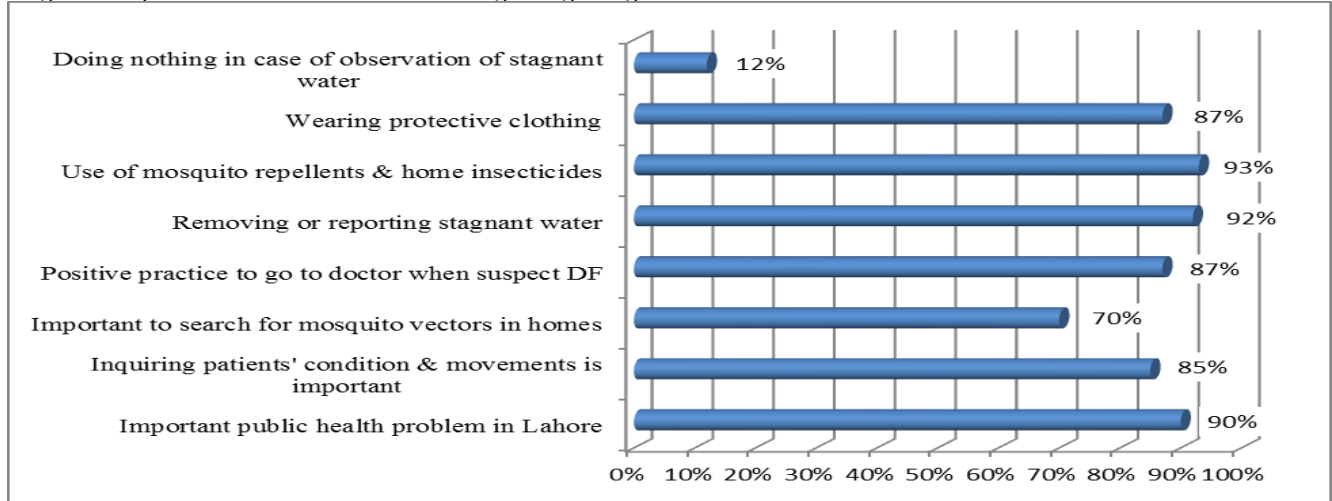
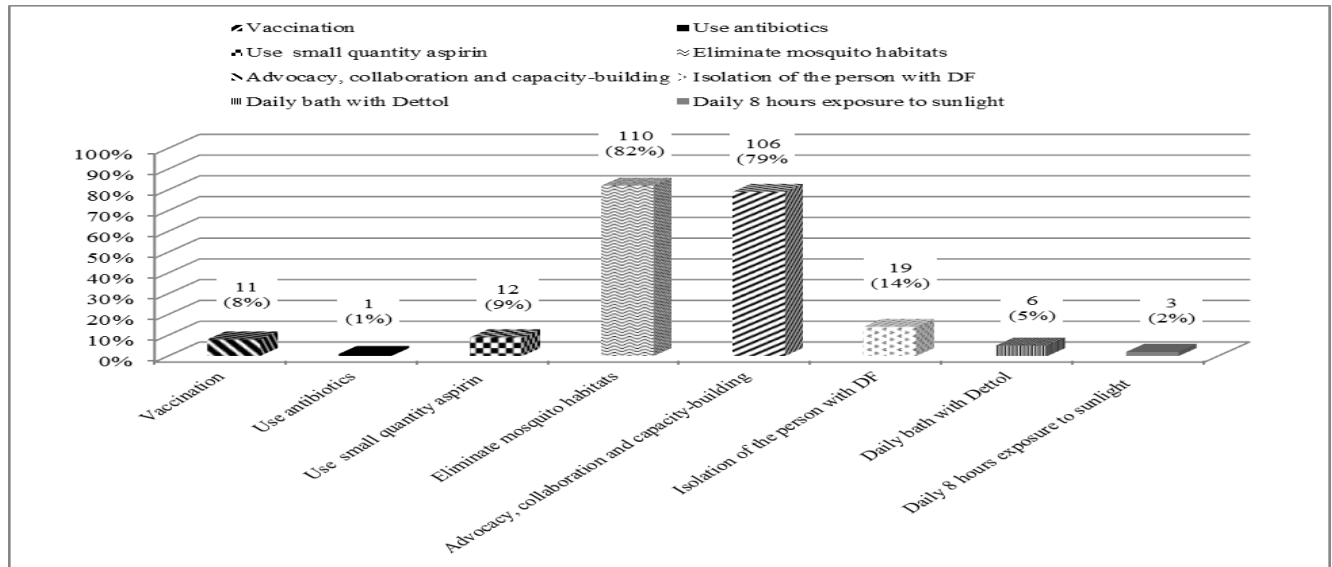


Fig. II: Perceptions of 134 medical students regarding control of dengue fever



The perceptions of medical students about control of *Dengue Fever* are presented in Fig. II. The right control measures were opted by majority of students. Elimination of mosquito habitat 110(82%) and advocacy, collaboration and capacity-building 106(79%) were among the options preferred by students for preventing the spread of the disease in question.

**DISCUSSION**

Although the level of dengue knowledge was high in freshly admitted first year MBBS students, however little evidence is there that this knowledge is being put into practice or not. Only knowledge of preventive measures had a significant and beneficial effect on protection practice. Conversely, better management

practice will have a considerable impact on *Aedes aegypti* population.

The results of the present first year medical students based dengue drive showed a significant positive result of knowledge and practices related to DF prevention among the group of students. In term of knowledge, the results revealed a significant know how in students. This may be because the recall memory in this age group is greater. The results of the present study also agree with the results of research conducted to assess the effectiveness of a DF community-based programme in 2 Thai villages which revealed improvements in knowledge of their target group after the programme<sup>7</sup>.

The health education programme in our study can improve the percentage of participants with satisfactory knowledge scores from the test. A study

that evaluated knowledge, attitudes and practices concerning DF in rural and urban resettlement areas of New Delhi reported that a high level of DF awareness was observed among the respondents, which could be attributed to the health education and information campaign of the audiovisual media and health care personnel. Knowledge about DF was fair to good, particularly among urban residents<sup>8</sup>.

Other studies have also shown that knowledge takes a shorter time to change compared to practices. A DF educational programme conducted in Puerto Rico in 2002 in the form of televised public service announcements and posters, elementary and preschool educational programmes, and an exhibit at the children's museum reported high levels of awareness and some behaviour change [9]. A study among Venezuelan school children aged 8–16 years found that by using a game as an educational strategy they acquired greater knowledge and skills about DF than using a theoretical programme alone<sup>10</sup>. A study conducted in Mexico, found that an education intervention was successful in stimulating changes in both knowledge and behaviour<sup>6</sup>. A study of a DF educational programme in Grenada in 2005 found that although many people had knowledge and were familiar with DF and mosquitoes, their knowledge of the important relationships of mosquitoes and human behaviour with disease transmission was incomplete<sup>11</sup>. A study that aimed to identify changes in knowledge and practices to prevent DF using educational aids in a study area and a control area in Brazil from 1999 to 2001 found that there was improvement in knowledge and practices after the programme in the study area only<sup>12</sup>. Our study if taken one step ahead by imparting knowledge where it is required can show improvements in all areas of knowledge, attitudes and perceptions of the study group towards DF, which agrees with the results of a quasi-experimental study reported from Havana, Cuba, in 2005, which found significant changes in knowledge, attitudes and perceptions in the intervention population compared to the control group after the intervention<sup>3</sup>. Our results also agree with those of Swaddiwudhipong et al from Thailand<sup>13</sup>.

## CONCLUSION

In Lahore, being the overcrowded city with its dense population, it is necessary to promote DF control as a priority. The educational interventions that could be conducted through studies as ours can be very successful in raising correct awareness with respect to the problem of DF, and in encouraging to change their practices. Medical students had the highest

ability to gain knowledge and it can be reflected in changing practices. Changes in knowledge were greater than changes in practice which reflects the fact that these changes take more time and need sustained education. Although it was not directly associated with better practice, knowledge of symptoms is important to recognize the severity of dengue at an early stage because this can lead to proper case management, which saves lives.

There is a direct link between knowledge about dengue preventive measures and protection practice, whereas measures against adult mosquitoes are probably only used when people experience a mosquito nuisance problem. Closing the gap between knowledge and practice will remain an important challenge for dengue control, as well as defining dynamic targets for reduction of *Ae. aegypti* populations.

**Recommendations:** Longer term changes in knowledge and practices should be studied by carrying out post-tests and comparing knowledge, attitudes and practices in both tests. The fact that this disease is endemic in and around Lahore with its peak incidence between September and November highlights the need for proper monitoring and surveillance of Dengue infection right from the time when the transmission season is about to start. Strengthening of surveillance along with health education to the community and proper training of health personnel can go long way in control of Dengue infection.

The overall knowledge of dengue was high in Medical students, but housewives, unemployed and old persons in our society will have relatively little knowledge of dengue. Therefore, these groups may need special attention in future dengue education programmes. Persons with knowledge of the disease more frequently say for the use of preventive measures, indicating the value of education programmes as a tool in dengue prevention.

Due to time and resource limitation, the study has been conducted only in one medical college and only first year class and hence it might not be a representation of the rest of the medical colleges in the country. In future, more studies should be conducted with other students also to find out the pattern of Knowledge, Attitude and Perceptions of dengue fever in them.

In the measurement tool of the practice part few questions are of double barrelled questions and the main problem with this type of question is that one does not know which particular question a respondent has answered, In future studies, these types of questions should be avoided, especially if it is a self-administered questionnaire.

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