

**Author Affiliation:**

<sup>1</sup>Senior Resident  
<sup>2</sup>Director, Professor and Head  
<sup>3</sup>Director, Professor,  
Dept. of Community Medicine,  
Maulana Azad Medical College,  
New Delhi 110002, India.

**Coresponding Author:**

**Ekta Arora**  
Senior Resident,  
Dept. of Community Medicine,  
Maulana Azad Medical College,  
New Delhi, 110002, India.

E-mail: [aroraekta09@gmail.com](mailto:aroraekta09@gmail.com)

Received on 28.08.2018

Accepted on 17.09.2018

## Role and Responsibilities of Medical Students in the Prevention and Control of Dengue

Ekta Arora<sup>1</sup>, Suneela Garg<sup>2</sup>, M.M. Singh<sup>3</sup>

### Abstract

Communicable diseases are on an increase and technical solutions alone cannot ensure the effective control and prevention of communicable diseases. Hence, strategies to mobilize all levels of society are also essential. Healthcare is shifting towards person-centered care and patient empowerment. Along with patient empowerment, medical education is shifting towards professional roles for students in patient care. Hence, Medical students can play a vital role in prevention of dengue. It basically focuses on IEC i.e. Information, Education and Communication to spread awareness and raise the knowledge levels in the community and involve the community in the elimination of mosquito breeding sites.

**Keywords:** Role and Responsibilities; Medical students; Prevention of Dengue; Health Education.

### Introduction

Communicable diseases are a threat that impedes national and individual development and it is now evident that technical solutions alone cannot ensure the effective control and prevention of communicable diseases. Strategies to mobilize all levels of society – from high-level decision-makers to communities and families – are also essential.

Dengue is one such fast emerging viral disease which affects many parts of the world. It flourishes in urban poor areas, suburbs and the countryside but also affects more affluent neighborhoods in tropical and subtropical countries.

It is a mosquito-borne viral infection causing a severe flu-like illness and, sometimes causing a potentially lethal complication. The incidence of

dengue has increased 30-fold over the last 50 years. Up to 50-100 million infections are now estimated to occur annually in over 100 endemic countries, putting almost half of the world's population at risk [1].

### Problem Statement

The disease is endemic in the Americas, the Eastern Mediterranean, South-East Asia, the Western Pacific, and tropical areas of Africa. Recent research shows that the global burden of dengue could be in the same order of magnitude as many other infectious diseases such as malaria, tuberculosis, and sexually transmitted infections (excluding HIV/AIDS), the prevention and control of which receive far greater political and financial support than dengue.

The actual numbers of dengue cases are underreported and many cases are misclassified. One estimate in 2013 indicates that 390 million dengue infections occur every year, of which 96 million manifest clinically [1]. Another study (2012), on the prevalence of dengue, estimates that 3.9 billion people in 128 countries are at risk of infection with dengue viruses [2].

Member States in three WHO regions regularly report the annual number of cases. The number of cases reported increased from 2.2 million in 2010 to 3.2 million in 2015 [2]. Cases across the Americas, South-East Asia and Western Pacific exceeded 1.2 million in 2008 and over 3.2 million in 2015 (based on official data submitted by Member States). In 2015, 2.35 million cases of dengue were reported in the Americas alone, of which 10 200 cases were diagnosed as severe dengue causing 1181 deaths [3]. In 2015, Delhi,

India, recorded its worst outbreak since 2006 with over 15000 cases [4]. An estimated 500000 people with severe dengue require hospitalization each year, and about 2.5% of those affected die [5]. At least 21 000 deaths from DHF occur every year, mostly among children – equivalent to one young life lost to DHF almost every 20 minutes [6].

### **Need to involve Medical Students in dissemination of Dengue Awareness**

Healthcare is shifting towards person-centered care and patient empowerment. Along with patient empowerment, medical education is shifting towards professional roles for students in patient care. Undergraduate students are progressively involved in care practice during internship, in service-learning education, and in student-run clinics.

Involving undergraduate medical students in patient education has the potential to improve the quality of care and medical education. Student-provided patient education enhances knowledge of the patient in relation to health or disease, changing attitude towards positive health, health behavior, medication adherence, disease management, and shared decision-making. In addition, enabling students to provide patient education has reportedly enhanced students' education skills, relations with patients, and communication skills. Thus it is evident that students greatly appreciate and benefit from practice-based patient interaction [7].

Medical students can play a vital role in prevention of dengue. It basically focuses on IEC i.e. Information, Education and Communication to spread awareness and raise the knowledge levels in the community and involve the community in the elimination of mosquito breeding sites.

Evidence supporting impact of health educational intervention on community awareness:

Various studies provide supportive evidence on impact of imparting community health education. It demonstrated significant influence on awareness generation and adoption of some of the behaviour to prevent and control dengue. However, efforts should be made for community participation, which may contribute to sustainable behavioural change.

In a cross sectional descriptive study among 60 high school children in Karnataka, pre-tested structured questionnaire regarding causation and prevention of dengue was used followed by planned-teaching programme for the prevention of dengue. The post-test was carried out after 7 days,

using the same tool as the pre-test. Analysis of data revealed pre-test knowledge score to be 28.25% and the post-test knowledge score to be 70.83%. Hence increase from pre-test knowledge score to post-test score regarding dengue and its prevention was 42.58% [8].

Another study assessed the impact of health education on people's knowledge and practices related to causes and prevention of dengue among urban poor in Delhi. Pre and post intervention surveys were carried out followed by health education based intervention. Intervention resulted in significant increase in knowledge on cause, symptom perception and mosquito behaviour in terms of breeding and biting habits. The participation of people increased during intervention compared to the routine programme [9].

Hence, routine health educational activities as a supportive strategy in the health system need to be strengthened. New integrated approaches such as eco-bio-social approaches with community participation are to be developed and tested in endemic settings like Delhi.

### **Knowledge Assessment among Medical Students**

Medical students had the highest ability to gain knowledge and it can be reflected in changing practices. A cross-sectional study was carried out in Lahore Medical College to see the knowledge, attitudes and practices (KAP) of freshly admitted first year MBBS students about dengue fever. And it was observed that high percentages of students had good knowledge of causation, symptoms, breeding places and prevention of Dengue [10].

An enabling environment for supporting behavioral change in community

It may be noted that an individual cannot change his or her behaviour unless the setting in which he or she lives or works is also changed. So it is important to establish "enabling" environment that supports new behaviour.

This can be achieved by educating the people about structural changes if feasible, remove source of mosquito breeding, encourage a family member to check the mosquito breeding sites on weekly basis in and around the house, make available the chemicals and pesticides in collaboration with municipal corporation etc.

Thus, a suitable environment is to be created to ensure sustainable change in the community.

### An Approach for Health Education by Medical Students

Community health education is provided through health centre outreach activities and campaigns by medical students who can follow the below mentioned approach:

- *Set Objectives for the awareness drive:* Develop a comprehensive campaign plan and align goals for the same.
- *Identify Target Groups:* The target groups should be chosen such that they can be actively involved and further they can disseminate information and motivate others in changing behaviour towards elimination of mosquito breeding sites in their locality.
- *Identify available tools/Channels:* Tools that can be used by medical students for creating awareness on Dengue are as follows:
  - Role Plays
  - Health Talks
  - Community surveys
  - IEC materials preparation - posters, placards, films, pamphlets etc.
  - Students can use handouts or other material but in a language easily comprehensible to people.
  - Follow up can be made by subsequent visits and even help from para-professionals can be taken in follow up to assess the improvement in knowledge levels of community.
- *Develop Messages:* Aim to build the confidence of learners so as to make them stay in learning. These messages should have a clear agenda to promote social change. Allow sufficient time to create impact
- *Develop Campaign:* Create evidence-based strategies. Centralise campaign but decentralise implementation. Types of campaign are Social Media, Developing Environmental Groups, involvement of local community groups - Clubs, Volunteers, Municipal Corporation etc.
- *Monitor & Evaluate awareness campaign:* Role of students is limited in this context. They can do independent survey by themselves or involve another group of students not involved in IEC or BCC who can evaluate the effectiveness of the campaigns.

### Challenges

1. One important challenge is to scale up the availability of medical students with appropriate skills and competencies. The quality of training and impact on students is a function of many factors: faculty, curriculum, pedagogical methods, teaching aids, facilities and students, who bring their experiences and expectations.
2. Health education workshops, campaigns are not systematically evaluated, are under-funded and delivered irregularly. Also, these are restricted in terms of time and lacks follow-up in terms of practical activities for prevention and control.

### Conclusion

Imparting knowledge is an essential component to bring about behavioural changes in the community in the prevention of dengue. However, more integrative approaches with social mobilization and community participation along with other measures of vector control and surveillance are needed.

### Recommendations

- Medical students should be prepared for providing patient education in practice through the use of training or orientation sessions to improve the quality of the education they provide.
- Students should be up to date with all the recent guidelines through workshops and conferences.
- Health education strategies should educate the people to break the mosquito life cycle by destroying the possible mosquito breeding sites such as concrete pools, water tanks, aquaria, irrigation ditches and drainages as well as air-conditioners and disposable tires.
- Regular education programs in a language comprehensible to people should be conducted out at different levels to highlight the importance of personal sanitation in preventing dengue.
- The knowledge, attitude and practice (KAP) on dengue and its mosquito vector should be assessed and further action should be undertaken to improve these aspects among people.

**References**

1. WHO | What is dengue? [Internet]. [cited 2018 Jul 24]. Available from: <http://www.who.int/denguecontrol/disease/en/>.
  2. Dengue and severe dengue [Internet]. World Health Organization. [cited 2018 Jul 24]. Available from: <http://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue>.
  3. Member States in 3 WHO regions regularly report the annual number of cases The [Internet]. [cited 2018 Jul 25]. Available from: <https://www.coursehero.com/file/p6vnlbg1/Member-States-in-3-WHO-regions-regularly-report-the-annual-number-of-cases-The/>.
  4. Delhi Faces Worst Dengue Outbreak Since 1996. Over 12,000 Cases Reported. [Internet]. NDTV.com. [cited 2018 Jul 25]. Available from: <https://www.ndtv.com/delhi-news/delhi-faces-worst-dengue-outbreak-since-1996-over-12-000-cases-reported-1232700>.
  5. World Health Organization, Dengue [Internet]. SEARO. [cited 2018 Jul 25]. Available from: [http://www.searo.who.int/vector\\_borne\\_tropical\\_diseases/data/data\\_factsheet/en/](http://www.searo.who.int/vector_borne_tropical_diseases/data/data_factsheet/en/).
  6. WHO | Planning social mobilization and communication for dengue fever prevention and control. A step-by-step guide [Internet]. [cited 2018 Jul 25]. Available from: <http://www.who.int/denguecontrol/resources/9241591072/en/>.
  7. Vijn TW, Fluit CRMG, Kremer JAM, Beune T, Faber MJ, Wollersheim H. Involving Medical Students in Providing Patient Education for Real Patients: A Scoping Review. *J Gen Intern Med*. 2017 Sep;32(9):1031–43.
  8. Sandeep KR, Shettigar D, Jayappa S. An educational intervention programme on dengue and its prevention among rural high school children, Karnataka, India. *Nitte Univ J Health Sci*. 2014;4(1):109.
  9. Kusuma YS, Burman D, Kumari R, Lamkang AS, Babu BV. Impact of health education based intervention on community's awareness of dengue and its prevention in Delhi, India. *Glob Health Promot*. 2017 Mar 1;1757975916686912.
  10. Mirza H, Raza H, Bashir R. Knowledge, Attitude & perception of Dengue among First Year Medical Students. *Pak J Med Health Sci*. 2013 Mar 1;7:258–63.
-