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## VECTOR BORNE DISEASES WITH SPECIAL REFERENCE TO DENGUE IN DELHI: AN ANALYSIS OF DISTRIBUTION AND VULNERABILITY

### Doctoral Thesis Abstract (2020)

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Health involves health of all the people across the world irrespective of rich and poor and the stages of development. Better health is central to human happiness and well-being. The term health has been defined by WHO as a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Thus, the *‘Place of Health’* and *‘Health of Place’* approach is an important aspect in the study of Medical and Health geography. We occupy space and location and move from place to place. We all have our own 'geographies' as well as our biographies. Our health and geographies are inextricably linked.

In medical geography, health and disease are viewed from the ecological and the social standpoints as expressed holistically through three approaches namely disease ecology, human ecology and cultural ecology in a spatio-temporal perspective. Disease ecology is considered as the study of the regional variation in environmental conditions related to incidence and prevalence of disease. While human ecology is concerned with the patterns of human interaction with their physical environment, cultural ecology relates more particularly to behaviour and belief system within a particular culture. The integration of the three approaches is necessary for the systematic study of diseases causation

as well as understanding the matters concerning control and management of diseases and promotion of health.

The developed and affluent nations have reached a level in status of health where they have overcome some of the communicable diseases and disorder related to nutrition. However, some diseases specially vector borne, still need big attention. In contrast developing countries are struggling with eradicating communicable diseases as well as emerging non-communicable diseases at a large scale. Therefore, it is a double burden for developing countries in general and India in specific.

Dengue has emerged as a major vector borne disease and public health challenge in recent years in India and particularly in Delhi. Along with the approaches for the study of health and diseases, analysis of vulnerability is also very important. One of the important aspects in the study of health is to assess the levels of Knowledge, Attitude and Practice (KAP) that reflects Everyday Geography of a particular place or a community. The concept of Everyday Geography focuses on three aspects i.e., ordinary people, everyday actions, and commonplace events.

### Objectives

Major objectives of the study are:

- to locate the spatio-temporal distribution of vector borne diseases with special reference to dengue in India and Delhi;
- to identify the factors responsible for dengue vulnerability and
- to assess knowledge, attitude and practices about dengue in Delhi at household level.

### **Database and Methodology**

The present study has employed both primary and secondary data for analyzing the problem. The secondary data relating to spatio-temporal distribution of Vector Borne Diseases (VBD) state-wise in India have been collected mainly from government agencies especially, Directorate of National Vector Borne Diseases Control Programme (NVBDCP); Ministry of Health and Family Welfare, Government of India and publications in the form of reports, research papers etc. The data of distribution of VBDs and particularly dengue in Delhi have been collected mainly from Public Health Department and Municipal Corporation of Delhi (MCD). The data related to demographic parameters have been collected from Primary Census Abstract (PCA), 2011, Census of India, Statistical Abstract of Delhi and Economic Survey of Delhi. The primary data at household level has been collected by using structured questionnaire. Firstly, a reconnaissance survey has been carried out to understand the complexity of the processes that explain the relationship among different aspects of KAP and Dengue Health Disaster Vulnerability Programmes and Policies carried out by public health department, MCD, Government of Delhi etc. On the basis of field experience, a draft questionnaire has been developed. The responses to the questionnaire have been

mainly collected at household level in selected sample wards.

The secondary data sets have been used for analysis of trends and patterns of vector borne diseases in India and Delhi at first stage. Not only this, the secondary data have also been used to analyze and explain the incidence and prevalence of dengue in Delhi. In the second stage, secondary data have also been used to develop Dengue Vulnerability Index. In the third stage, the primary data have been used for the assessment of knowledge, attitude and practices, behavior and behavioural change in practices of people towards dengue at household level in the sample wards. This has been done for establishing relationship among different dependent and independent variables and the preventive strategies as well as barriers being perceived by households in implementing the preventive and controlling measures.

The methodology employed both qualitative and quantitative methods during the process of field investigation, data collection and analysis with certain procedures. The study is basically based on extensive household survey, but it has also incorporated secondary data to fulfill the desired requisite of the present study. A sample of 267 households has been taken for household questionnaire survey. Human Development Index (HDI) technique has been employed to calculate index, while chorochromatic technique has been used for mapping to show the spatio-temporal patterns of vector borne diseases. For mapping, georeferencing and digitization has been done using the ERDAS Imagine and ArcGIS software. Observations, interviews and focused group discussions have been conducted to get the primary information. In this study, different dimensions like role of media and its reporting, hospitals and authority in the government and

nodal agency for the management and control of vector borne diseases, particularly dengue in Delhi have also been looked into.

### Major Findings

Dengue, Chikungunya and Malaria are three commonly occurring VBDs in various parts of India. The spatial and temporal variation of these diseases has been showing high reported cases in Delhi, West Bengal, Karnataka and Kerala. Odisha, Chhattisgarh, Madhya Pradesh and Jharkhand have recorded the highest incidence of Malaria in India. Karnataka, Gujarat, Maharashtra and West Bengal have reported highest cases of Chikungunya. The maximum concentration of dengue cases has been reported from Delhi, West Bengal, Gujarat, Karnataka and Kerala.

Out of three major VBDs in Delhi, dengue emerged as a major public health challenge. The major outbreaks of dengue in Delhi have been reported in the years of 2003, 2006, 2010, 2013 and 2015. Initially the outbreak occurred at the interval of 3-4 years but of later it has also been observed that the interval has reduced to 2 years.

The spread of dengue in Delhi has not been uniform with cases being more concentrated in some zones namely Shahdara North and Shahdara South in East Delhi Municipal Corporation (EDMC); Najafgarh in South Delhi Municipal Corporation (SDMC); and Narela in North Delhi Municipal Corporation (NDMC). The ward-wise analysis reveals that some wards namely Rajnagar and Bijwasan in SDMC, Sonia Vihar, Karawal Nagar West, and Dilshad Garden in EDMC and Narela with Bawana in NDMC have reported high cases of dengue fever. The major reasons of high incidence of dengue fever in these wards are attributed to poor drainage facility, lack of

storm water disposal facility, irresponsible practices of throwing plastic disposal, poor water storage practices.

Dengue Vulnerability Analysis (DVA) among all the nine districts in Delhi, reveals that New Delhi district has been less vulnerable, whereas north-east and north-west districts have been found to be highly vulnerable. Rest of the six districts have been moderately vulnerable. The major reasons for low vulnerability to dengue in New Delhi has been high rate of literacy and better facilities and amenities like housing conditions, water availability and infrastructural development, whereas both north-west and north-east Delhi are highly vulnerable, because of low literacy rate, poor housing conditions and high density of population.

The primary data reveals that although there is high level of literacy as well as awareness, yet severity of dengue is also high. The major reason responsible for this situation is lack of preventive practices in daily life.

The correlation between KAP and Dengue Fever (DF) morbidity and mortality revealed that attitude of respondents toward DF has been found to be highly correlated and significant, whereas the response on activities by health department has been found to be less correlated and significant at 0.01 level. Late identification of symptoms of dengue, delay in check, and lack of sufficient facilities has been some of the reasons of morbidity and mortality.

In case of media reporting, difference of opinions prevailed and there has been lack of coordination among various reporters regarding dengue cases.

Based on the study findings, it can be suggested that future campaigns should involve more dynamic health education through active involvement of health workers,

community representatives, academicians and researchers. Role of all types of media can be enhanced and also be used as a tool for community awareness. Health education programmes should not only focus on provid-

ing knowledge and creating awareness but also ensure that this knowledge gets translated into practice as well. So, effective Information, Education and Communication (IEC) campaigns should be done.

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