

Diseases Human Confront On The Basis Of His Geographical Location - A Case Study on Kolkata Metropolitan

DIPANWITA DAS

Senior Research Fellow, Ph.D. Candidate, Department of Geography, Madhyanchal Professional University, Bhopal, Madhya Pradesh, India

Abstract: Geography is usually thought of as the generation as well as interpretation of maps which explain the physical world. Geography and health are closely linked. Where we are born, live, study and work directly influences our health. Geography of health is a sub-field at the junction of Human Geography and Biogeography. Physical environment includes both natural and man made surroundings. The air we breathe, the water we drink, the food we eat and the work we do has their implications for our health. Geographers found clear correlation between environment and health. They are concerned with the prevalence of different diseases along a range of spatial scales from a local to global view, and inspects the natural world in all of its complexity, for correlations between diseases and locations. They also consider all types of spaces as presenting health risks, from natural disasters, to interpersonal violence, stress and other potential dangers. In a word, man-environment relationship has always been a major concern of geography and geographers.

Environmental pollutants have various adverse health effects from early life. The World health organization estimates that about a quarter of the diseases facing mankind today occur due to prolonged exposure to environmental pollution. The environment of most cities in the world is quite polluted. This problem is more prevalent in developing countries like India. The environment of most cities in India plagued by various types of pollution problems. Kolkata is one of the most polluted city in India. The people of the city are always confronted with the diseases that have been created as a result of the environmental pollution of this City. The climate, people and geographical location of a city all combine to create the environment of that city. This is what I wanted to explore in this study.

Keywords: Geography, health, diseases, geographical location, environment, pollution, City, confront.

Date of Submission: 20-09-2021

Date of Acceptance: 05-10-2021

I. INTRODUCTION

In India rapid rate of urbanization and migration of population to cities and towns is witnessed. Megacities today are visualized as nucleus of growth and land of opportunities drawing people from rural areas into urban centers, in hope of better lifestyle, education, health care, employability and other benefits. About 32 percent and above of Indian population now live in cities and towns and it is increasing with time. This pace of urbanization and migration places enormous pressure on cities infrastructure resulting in unsustainable use of urban spaces- leading to human settlements in slums and ghettos and industrial activities and processes that have serious consequences on the cities environment.

Kolkata metropolitan city is no exception of this. Kolkata is the capital of the state of West Bengal, located on the east Bank of the Hooghly river. Kolkata has a tropical wet-and-dry climate. As of 2011 National census, the city has 4.5 million residents. The urban agglomeration comprising of the city and its suburbs, is home to approximately 14.1 million, making it the third-most populous metropolitan area in India. Being the state capital and a commercial hub of the eastern region, the city attracts people from all parts of the country, especially of east and north east India. A large portion of Kolkata population is formed by migrants. Kolkata is a degrading city, not only in its altitude but also degradation has occurred in its ecosystem and biophysical environment. Pollution is a major concern in Kolkata, and the suspended particulate matter (SPM) level is high when compared to other major cities of India, leading to regular smog and haze. Severe air pollution in the City has caused rise in pollution-related respiratory ailments such as lung cancer. Unplanned industrial growth, factories built in the settlements, even illegal factories without license, the burden of overpopulation, unhealthy slums, drainage mis management and unwise growth of Kolkata are leading the city towards a typical health crisis. Added to this is the modern lifestyle of the people of the city.

Mainly young people of this city are worried about diseases that are caused by an unhealthy lifestyle. Mini modern foods contain toxic materials that cannot be eliminated through normal metabolic processes. Unfortunately, even groundwater is polluted by toxins and is unsuitable for drinking without purification. The so-called modern style of life perpetrates violence against both one's own body and mind, apart from hurting the nature and civil society. Nature tries to bring the biological system back to normalcy by expelling out the unwanted matters and thoughts through various ailments and diseases. But once the body's threshold to cleans the system is overstepped by medicines that suppress the symptoms, systemic disorders like hypertension, diabetes, arthritis asthma, ulcer, heart diseases, mental disorders etc. take over the command.

Asurvey found that about 37% young people are worried about lifestyle diseases and consult doctors. They are vulnerable tonon- communicable diseases such as diabetes, hypertension, depression, cardiovascular diseases, cancer and so on. The intersections on stress and depression have remarkably increased from these metropolitan cities in the last one year. This study also found that awareness on mental and sexual health has been created in people of all age groups in Kolkata. In addition to lifestyle disorders, there are other diseases that are seen in the people of this city, like anemia, obesity, Asthma, tuberculosis,goiter, thyroid disorders etc. About 30% of the women and 18% of the men in Kolkata are obese. Kolkata has the highest percentage(55%) of woman who are having anemia and almost 47% of them are suffering from PCOD,while 20% of the men in Kolkata are anemic.Tropical diseases like malaria, dengue and chikungunya are prevalent in Kolkata, though there incidence is decreasing.

So, it is clear that, degradation has occurred in Kolkata's ecosystem and biophysical environment.As a result, the people of this city are facing various types of diseases and multiple humanitarian crisis. The various diseases of the Kolkata metropolitan and the special kind of environment and geographical location of the city responsible for them, are discussed in this exploration.

II. STUDY AREA.

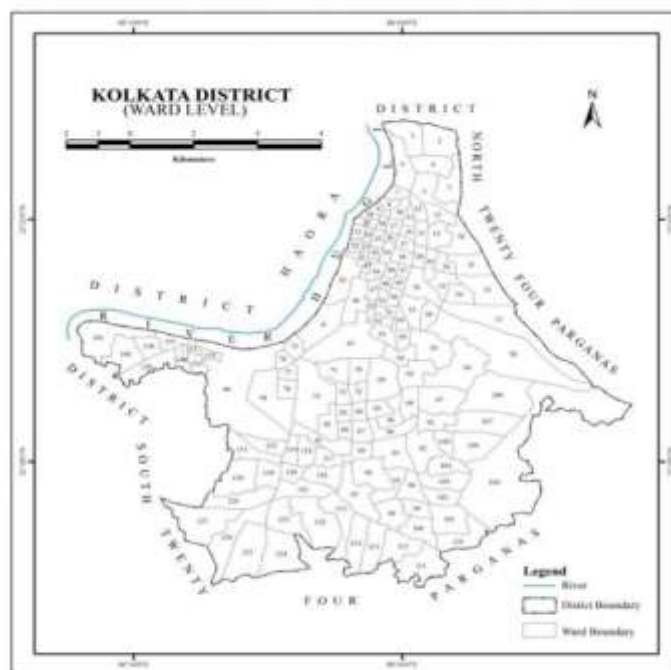


Figure 1. Location of the study area.

The study area where the field work has been carried out is Kolkata district. Kolkata is the capital of the state of West Bengal, located on the east Bank of the Hooghly river. The Kolkata municipal corporation has a total area of 187.33 sq.km. with a geographical extension of 22° 27'N and 22° 39'N latitude and 88°14'E to 88°26'E longitude. The territorial jurisdiction of Kolkata consist of 7 blocks, having 144 municipal wards that are grouped under 15 borrows. Spatially the city can be divided into North, East, Central and South Kolkata. The district of Howrah lies to the north west, North 24 parganas on the northern and south eastern side and south 24 parganas on the south-eastern and South Western side. Kolkata has a tropical wet and dry climate which is very much influenced by the sea, bay of Bengal. The city of Kolkata has been dubbed as one of the most unplanned and polluted cities in the country of India.

III. AIMS AND OBJECTIVES OF THE STUDY

The study has been initiated to fulfill the following objectives :

1. To find out the environmental conditions responsible for the human diseases.
2. To bring out the relationship between geographical factors of any area on human immunity.
3. To analyze the distribution of selected communicable and noncommunicable diseases in our study area.

IV. METHODOLOGY

The research work shall consolidate information from a variety of sources ranging from primary to secondary.

Primary data sources: primary data will be collected through a range of methods which includes :

- A) Sample surveys
- B) Questionnaire surveys
- C) Personal medicines and advice from the experts.
- D) Observations

Field investigation for ground truth verification was conducted inside the government and non government hospitals pathology labs along with the slum and non slum households too.

Secondary data sources: data obtained from secondary sources pertains to diseases, demographic, education infrastructure, civic infrastructure, economic infrastructure and health infrastructure available collected from various departments like health department, government of West Bengal and Kolkata municipal corporation (KMC). A number of articles from various journals, reports of World health organization (WHO), different types of health Geography related books, newspapers, internet and through intensive library work has also been consulted for the purpose.

Sampling procedure: the data sets generated and collected will tabulate and analyzed using appropriate methodologies and techniques to accomplish the objectives taken for the study.

V. COMMUNICABLE AND NON- COMMUNICABLE DISEASES IN KOLKATA MUNICIPAL CORPORATION

As the overall quality of the city environment has been degraded so fast, we are facing a very real threat of unstoppable urban degradation. There are many environmental issues , i.e. air pollution, water pollution, hot and humid climate ,garbage, soil degradation, expansion of city, unplanned industrial growth, lack of resources, due to overpopulation, poor drainage and transport conditions are all challenges for the city. These problems are affecting the quality of life of the citizens of Kolkata. In addition, these are the causes of various diseases throughout the city.

These are the diseases that are commonly seen among the citizens of Kolkata.

1. Communicable diseases:

- a) Vector borne diseases: dengue, malaria, chikungunya.
- b) Other infectious diseases including tuberculosis, respiratory infection, gastroenteritis, Cholera, diarrhea, metapneumo virus etc.
- c) Vaccine preventable diseases: diphtheria, tetanus, polio, measles, rubella etc.

2. Non- communicable diseases:

Diabetes, hypertension, cardiovascular diseases, COPD (chronic obstructive pulmonary disease) depression, cancer , anemia, obesity, asthma, goiter, thyroid disorders etc.

The uncontrolled and unhealthy lifestyle of the citizen is mostly responsible for the cause of these non-communicable (NCDs) diseases. In some cases genetic defects, heredity and hormonal imbalance are responsible for these diseases. These non-communicable diseases are responsible for pre mature death of people between 30 and 69. Over 85% of these premature deaths are in low and middle income families. This is also the opinion of the experts that the rise of these diseases has been driven by 5 major risk factors - tobacco use, physical inactivity, the harmful use of alcohol, unhealthy diets and air pollution. These risk factors also exacerbate mental health issues, that may originate from an early age, but most cases go undetected and untreated - suicide is the second leading cause of death among 15 - 19 years old. Thus NCDs impose a significant burden on health and development in the Kolkata metropolitan. Reducing the major risk factors for tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol - is the focus of WHO's work to prevent deaths from NCDs.

Below I have described some of the communicable diseases of the city of Kolkata.

Dengue: also known as break bone fever and yellow fever, it is an acute infectious disease that is transmitted by mosquito of *Aedes aegypti* variety but there are other varieties. There are 4 serotypes of the virus referred to as DV-1, DV-2, DV-3 and DV-4 . A mosquito becomes infected only if it bites the patient during the first 3 days

of illness. After biting, the mosquito incubates the virus for 8 to 12 days before it becomes a carrier of the disease. During the incubation period the virus penetrates all tissues particularly the lining of smallest blood vessels. The toxic by-products of the virus produce the symptoms of the disease. It starts with sudden onset of fever with acute chill, excruciating pain in the joints, behind the eyes and elsewhere in the body. The fever may rise event to 50° and last for a week or so. The temperatures come down temporarily, after profuse sweating, loose stools and at times bleeding from the lips and nose. After some days the fever returns and the patients get exhausted. His white blood corpuscles and platelets decrease in numbers. After 3 - 4 days, rashes spread all over the body, and after few days it disappear, and the patient slowly returns to normalcy in a few months.

The city of Kolkata suffers every year from severe outbreak of the disease, specially during the monsoon and post-monsoon season (September and October). During 2005 -2007 the percentage of confirmed cases to total outbreak was highest in Kolkata (63.76%). During the period 2009 -2012 the number of incidences of the disease has been highest in 2010. The percentage share of Kolkata to total cases of dengue fever in the state was 63.66% in 2009 which declined to 49.08% in 2012. During the rainy season the streets of Kolkata become waterlogged, thus facilitating the outbreak of the infectious disease dengue accompanied by chikungunya. The disease spreads from the Aedes mosquito which multiplies mostly in clear water.

Apparently, the best way to control the disease is to kill the mosquito before it bites or to cover oneself with proper clothing, to sleep with mosquito nets on, and fix wire or nylon mesh in windows and doors to ward this vector off human body. The other alternative is to eradicate the mosquito by spraying DDT and environment friendly insecticides around human habitation to destroy the breeding places of the vectors.

Malaria: malaria is a protozoal disease. It is another vector borne disease like dengue. The female Anopheles mosquito that transmits the parasites of genus plasmodium to humans. The malarial parasite has 4 distinct species—P. Vivax, P. Falciparum, P. Malariae and P. Ovale. Plasmodium vivax is the most widespread malarial infection in the world and in India also. It is benign infection and rarely reduces serious complications or death. Relapse of the infection due to persistence of infective forms (hypnozoites) in liver tissues which periodically invade blood stream producing clinical malaria. In highly endemic areas, two or more species of parasites may infect individuals at the same time giving rise to what is referred to as mixed infection. In India, 4 -8% of infections are of this category. Depending on severity, malaria can be divided into two classes:

- 1) Benign: it is relatively mild, generally caused by P. Vivax, is seldom fatal and its chances of complications are few, and
- 2) Malignant: it is severe, is caused by P. falsiparum(rarely by P. Vivax), has a rapid downhill course, and is marked by poor prognosis.

Mosquitoes need stagnant water to breed, human or animal blood to feed, and a moist and warm climate to live. India's climate and similarly Kolkata's climate is favorable to the transmission of malaria. With that the incidences of malaria are related with the socio- economic conditions of the city dwellers. It is a seasonal disease and most common in rainy season (July – November) , when the relative humidity exceeds 60% is the most favorable period. Further, stagnant, accumulated water everywhere in the city offer good conditions for breeding. The extensive urban slums in the city of Kolkata which are located in the low- lying areas are the breeding grounds for mosquitoes. Kolkata is Steel considered the most malaria prone district of West Bengal. It was found that all the wards were high-risk in boroughs 4 and 5. Among 141 wards of KMC, 67 (48%) wards were found to be high risk of malaria. The most worrying thing is the immunity of the mosquitoes have acquired against insecticides like DDT. The only way to get rid of this disease is to control the birth of mosquitoes and to protect yourself from mosquito bites. And of course increase our own resistance. However, malaria situation of Kolkata has improved considerably in last decade under the supervision of the officials of the KMC.

Cholera and diarrhea: Cholera is a bacterial disease causing severe diarrhea and dehydration, usually spread in contaminated food or water. Cholera is fatal if not treated right away. There was substantial burden of Cholera in Kolkata, including crowding, young age and lower educational level. It is identified risk factors associated with endemic Cholera in the study area, showing that the greatest burden is in young children. Cholera is an endemic due to exposure of *Vibrio Cholerae* strains in Kolkata with seasonal outbreaks. The state of West Bengal in India located in the gangetic delta is considered by some experts as the "homeland of Cholera". Environmental and socio-economic factors ensure the persistence of the disease. At the time of peak monsoon, When water level raises upward, the saucer shaped Kolkata normally receive excessive amount of water from the various water bodies surrounding. Continuous diagonal subsurface flow of water with huge amount of clay, silt and minerals has generated voids and tunnels in the subsurface condition which are prominent in the either side of river Ganga and bag-jola canal. When the polluted water flow down word according to gradient, they normally carry huge amount of coliform bacteria which cause of many water borne diseases spreading from the wells and tube wells in the various parts of the city. In Kolkata, specially the crowded slum areas are mainly affected by this disease. Cholera outbreaks occur every year in between dry (March-April) and rainy

(September- October) seasons, due to the lack of basic sanitization services and clean water. Improvements in living conditions could potentially prevent and ameliorate the effects not only of Cholera but of diarrheal diseases in general. In addition, proper diagnosis, treatment of mild conditions, transport to hospital rapidly and mass vaccination could be a potentially useful tool to prevent seasonal Cholera in the area.

Tuberculosis or T.B. : IT is a potentially serious infectious bacterial disease that mainly affects the lungs in human beings or animals whose tissues have been invaded by mycobacterium tuberculosis or *mycobacteriumleprae*. The agents that cause the disease of 3 types: *Human, Bovine* and *Avian*. The human type is generally found in lung tuberculosis and it enters the tissues through inhalation by an infected person's coughs or sneezes. The Bovine type is found in lymph nodes, bones and intestines through milk, meat or contact with infected cattle. Avian infection in human beings is not very common. Tuberculosis of the lung is perhaps the most serious and fast spreading disease with symptoms like cough (sometimes blood- tinged), weight loss, night sweats and fever. It is especially in large cities, malnutrition, overcrowding and poverty (MOP) syndrome is the main cause of disease. Lack of awareness resulting in the rise of T.B. cases in the city of Kolkata. In fact it has one of the highest numbers of undiagnosed and unreported T.B. cases which adds to the risk of transmission. So need to the crucial early check-up of the problem. If one had a cough for more than two weeks, he need to get advice from doctors. Tuberculosis is curable and preventable.

Respiratory infection: according to a 2017 report by the centre of science and environment, the city of Kolkata ranks fourth in the list pollution related deaths in India. With rising pollution, the number of people needing hospitalization for respiratory illness during winter. In the latest report published by the "Lung care foundation", it has been revealed that the number of patients hospitalized for respiratory ailments went up from 22 % in 2016 to 33% in 2017. According to health experts, the rising air quality index(AQI) level and change of season is causing respiratory tract infection, viral pneumonia, COPD and asthma in patients across all ages. Cases of lung infections are certainly on the rise in the City. The air quality index(AQI) recorded at Victoria memorial, the heart of the city, is 244 which is alarming. Apart from outdoor pollution, indoor pollution is also on the rise. However people are susceptible to chronic bronchitis, Asthma and COPD due to high pollution levels, as the respiratory air tract gets the disturbed. Since Diwali, the AQI had dipped steeply in Kolkata, crossing the 300 mark, specially during the morning hours. While the limit recommended by WHO is 101-200. In winter when air pollution is at its worst because of temperature inversion. But now, rapid urbanization- construction projects, including metro, industrialization and polluting vehicles is adding to the problem and turning the AQI bad. The pulmonologist cited studies that have found metro construction is responsible for increasing particulate matter with toxic metal, 45% higher than the standard level. Another point is that the city of Kolkata is a rapidly expanding which has led to an increase in material waste in Kolkata's latest dumping ground in *Dhapa* area, causing harm to people staying and working in surrounding areas. The burning of garbage poses a health threat, as setting materials like plastic or thermocol turns the air toxic. The process of segregated waste collection if introduced in Kolkata, along with more sustainable methods of disposing garbage, will help reduce the air pollution levels in Dhapa and surrounding area.

Human Metapneumo virus : Recently Kolkata is facing the origin of a new type of virus. Human Metapneumo virus, which is activated by a sudden temperature drop, say experts. Like other seasonal viruses, this one too spreads through cough and sneeze droplets. It seems, is the most prevalent this time. The typical symptoms are high fever, body ache, respiratory trouble and fatigue. It affects all age groups, but children and the elderly are more vulnerable. Those suffering from cardiac ailments or high blood sugar could have very severe symptoms due to their low immunity. Public places like buses, trains, auditorium and classrooms are ideal locations for the spread of the virus. So hand hygiene and use of tissues is very important. It is better not to touch any surface area by hand. With symptoms similar to that of dengue, physicians have often been left confused. So doctors are definitely recommending blood tests. But unlike dengue, Metapneumo virus is always accompanied by a respiratory infection. Asthma and COPD patients, those suffering from chest infection and children are more vulnerable. However, like most other seasonal viruses, Metapneumo too can be countered with just *paracetamol* and symptomatic treatment. Antibiotics are not recommended unless there is an accompanying bacterial infection. Seasonal viruses usually recede with time and rest. It's good to remember that, treatment of viral diseases should be different from that of dengue.

Gastroenteritis : Gastroenteritis, also called stomach flu is an intestinal infection marked by diarrhea, cramps, nausea, vomiting and low-grade fever. It is typically spread by contact with an infected person or through contaminated food or water. It can be also spread by touching a contaminated surface (blanket or door knob). Many people in Kolkata suffer from this disease, specially in crowded area and where there are lack of sanitation. But hopefully it is not a serious disease. It can be self-diagnosable and self healing by fluid replacement and oral rehydration therapy. Avoiding contaminated food and water and washing hands frequently

can be often help prevent infection. Rest and rehydration are the mainstays of treatment. Antibiotics and dietary supplement are required in some cases.

VI. CONCLUSION

In real life, we cannot expect everyone to follow all the lows of healthy living. To get success, people do break the rules of the game and subject their body to various kinds of stresses and strains. Further, we are living in an in-equitous society in terms of income, wealth distribution and life supporting resources at all territorial levels. Some people will always remain at the socio-economic margin unable to lead a healthy life. The third factor is degradation and environmental pollution which can affect on people of all the economic levels. The immediate task is to develop vaccines and medicines that can kill the germs attacking human body. This, of course, is not the final and lasting solution. Unless we tackle the primary cause of ill-health, while at the same time tackle the secondary and tertiary causes appearing as a diseases, we cannot build a healthy society. The geographical sciences have a role to play in advancing understanding of spatial variations in the spread of disease, access to care, and the treatment and prevention of illness. A major initiative to build upon and expand work in the geographical sciences on health matters would benefit efforts to combat disease and promote human well- being.

REFERENCES

Books :

- [1]. geography of health- R.P. Mishra, 2007, concept publishing company, New Delhi.
- [2]. Calcutta, the city revealed -Geoffrey Moorhouse , Publisher: Penguin books limited.
- [3]. urban health in the third world –S.B. Nangia and A.P.H. Publishing Corporation (2002).
- [4]. publications (Kolkata purashree) by Kolkata municipal corporation.
- [5]. Sharma R.S., Sharma G.K., Dhillion G.P.S.- malaria parity gums and their transmission dynamics.
- [6]. Medical geography in India and Pakistan –A.T.A. Learmonth, vol. 127 No. 1 (March 1961), published by the Royal Geographical Society.

Journals and printed sources :

- [7]. WHO, World health statistics (2000 -2020) and WHO regional health report (South and South-East Asia).
- [8]. Water environment pollution and its impact on human diseases in India – Rakhecha P.R.(vol.-4), international journal of hydrology.
- [9]. State of environment report, West Bengal 2016 by West Bengal pollution control board.
- [10]. Air pollution and human health in Kolkata, India – A case study by Md. Senaul Haque and R.B. Singh, climate 2017.
- [11]. Hati A.K. - Studies on dengue and dengue hemorrhagic fever (DHF) in West Bengal states, India.
- [12]. The geographical distribution of some of the diseases of India by J.W.D. Megaw and J.C. Gupta. June 1927, the Indian medical gazette.
- [13]. Government of India New Delhi ministry of health and family welfare (mohfw.gov.in)
- [14]. Graham moon(2019) presenting health and medical geography: people, places and change - the geographical journal, early view, 22 July,2019.
- [15]. Md. Askari and krishnendu Gupta (2017)“Conceptualizing medical geography” transactions, vol.38, no.1, 2016.
- [16]. Mark Rosenberg 2015 health geography II: “Dividing health geography” sage journals volume : 40.
- [17]. Pashupati Nepal (2009) “Evolution of medical geography: An overview” the geographical journal of Nepal.

From electronic media :

- [18]. www.wbhealth.gov.in
- [19]. www.kmcgov.in
- [20]. www.who.org
- [21]. www.icmr.nic.in
- [22]. mohfw.gov.in

DIPANWITA DAS. “Diseases Human Confront On The Basis Of His Geographical Location - A Case Study on Kolkata Metropolitan.” *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 26(10), 2021, pp. 20-25.