

# Geo-medical Study of Cholera Disease in Shekhawati Region, Rajasthan

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**Abstract:** The author has collected several News Articles from News Papers (Rajasthan Patrika, Dainik Bhaskar) which published from time to time during last few years about the crisis of Cholera disease patients in different places/ areas of Shekhawati Region - by this all, one can visualize very well the significance of the research problem from public or community health status/ environment point of view.

In comparison to the other districts of the state, in most of the areas of Shekhawati Region, a thorough distribution of Cholera Patients was observed in the public or society, respectively.

## 1. INTRODUCTION

In 1975, WHO, Geneva published a documentary report on *Surveillance of Drinking Water Quality*, and by adopting more or less all these issues - ICMR New Delhi published a volume on *Recommended Dietary Intakes for Indians* in 1981.

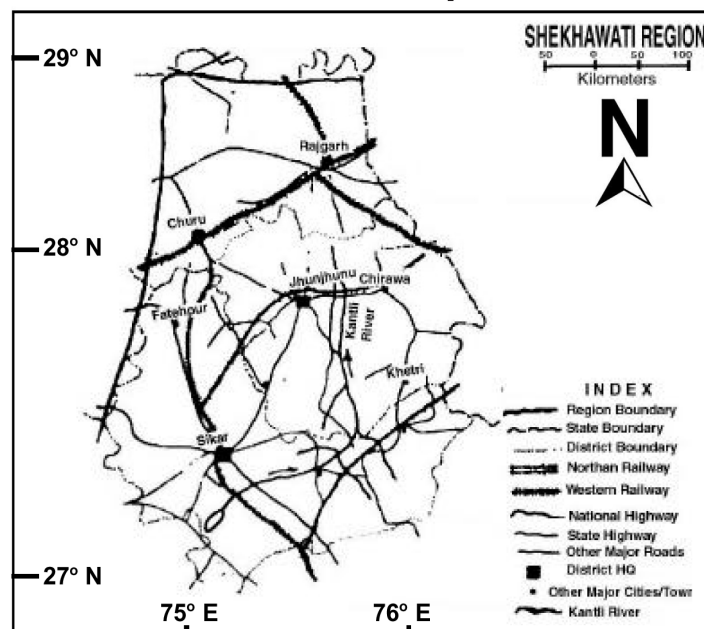
Further in this regard, besides these all above mentioned work studies, the author is including some outstanding references of the work done by some researchers and workers viz; Mishra wrote a book in 1969 on *The Medical Geography of India* in which he gave emphasis on community health environment and status of drinking water, and Rajni Raghav in 1986 on *Geogenic Aspects of Water-borne Diseases in Marusthali Region of Rajasthan*. Park in 1995 illustrated the problem of water born diseases at global level.

## 2. INTRODUCTION OF THE RESEARCH AREA

The area under study i.e. Shekhawati Region is located in the north-eastern part of Rajasthan state. The Region has

geographical extension from 27°7' to 28°53' N latitude and 75° 41' to 76°05' E longitude on the map of Rajasthan. The area under study covers three districts, namely Churu, Jhunjhunu and Sikar. Churu district covered 7 tehsils fall under Shekhawati Region (Churu, Rajgarh and Taranagar) whereas Jhunjhunu district as a whole with its six tehsils (Buhana, Chirawa, Khetri, Jhunjhunu, Nawalgarh and Udaipurwati) in which Buhana tehsil emerged out as a new tehsil on the map of Jhunjhunu district (2001), it was no existence in the year of 1991. Sikar district also covered fully with its six tehsils (Data Ramgarh, Fatehpur, Laxmangarh, Neem ka Thana, Sikar and Sri Madhopur). Thus, the Region under study has 19 tehsils in total with its total 15343 sq. km. geographical area which makes 5.6% of the state's total. At the part of district-wise contribution by area point of view in Shekhawati Region it is observed that part and portion of Churu district contributes 29%, Jhunjhunu district contributes 31% and Sikar by 40%, respectively.

## Location Map



### 3. METHODOLOGY :

Cholera disease is not mentioned separately in the available records of lists of incidences obtained from C.M.H.O. office of the each district headquarter, deptt. of health, govt. of Rajasthan. Further in this context, it is observed that the incidences of Cholera disease are covered indirectly. The study covers three years observations at the part collection of data of number of incidences of particular disease i.e. from 2010 to 2012.

Further in this context, at the part of presentation of subject matter under the above mentioned topic of study, on the basis of analytic aspect of district-wise observations of number of incidences of Cholera disease in Shekhawati Region, the paper deals three aspects obviously are as mentioned below :

1. District-wise contribution (in percentage) in total number of incidences of Cholera disease which will naturally show a comparative account of distribution of patients of Cholera disease in Shekhawati Region at the part of district-level study, These above mentioned aspects of the study are presented of incidences of Cholera disease for the area under study. One can visualize very well by going through the datas of above mentioned aspects of the study of distribution of Cholera Patients in Shekhawati Region, Rajasthan.

### 4. OBSERVATIONS :

The research paper deals of observations regarding the spatial distribution of Cholera disease incidences for the area under study.

#### 4.1. ENVIRONMENTAL CONDITION :

Cholera is an acute diarrhoeal disease caused by 'Virus Cholerae' (classical or EL Tor). It is now commonly due to the EL Tor biotype. Cases range from symptomless to severe infections. The majority of infections are mild or asymptomatic. Typical cases are characterised by the sudden onset of profuse, effortless, watery diarrhoea followed by vomiting, rapid dehydration, muscular cramps and suppression of urine. Unless there is rapid replacement of fluid and electrolytes, the case fatality may be as high as 30 to 40 percent. Vibrio transmission is readily possible in a community with poor environmental sanitation. The environmental factors in importance include contaminated water and food. Flies may carry *V. cholerae* but not vectors of proven importance.

Numerous social factors have also been responsible for the endemicity of cholera in India. These comprise certain human habits favouring water and soil pollution, low standards of personal hygiene, lack of education and poor quality of life. Transmission occurs from man to man via (a) Faecally Contaminated Water- Uncontrolled water sources such as wells, lakes, ponds, streams and rivers pose a great threat, Contaminated Food and Drinks, Ingestion of contaminated food and drinks has been associated with outbreaks of cholera. Bottle-feeding could be a significant risk factor for infants.

Fruits and vegetables washed with contaminated water can be a source of infection. After preparation, cooked food may be contaminated through contaminated hands and files. There is growing opinion that EL cholera may in some instances be transmitted through a complex interaction of contaminated food, water and environment rather than through public drinking water supplies Direct Contact- In developing countries, a considerable proportion of cases may result from

secondary transmission, i.e. person to person transmission through contaminated fingers while carelessly handling excreta and vomit of patients and contaminated linen and fomites. Cholera is both epidemic and endemic disease.

The epidemicity and endemicity of a disease will depend on the characteristics of the agent, and those of the system (environment.) Characteristics of the agent which influence its distribution include its ability to survive in a given environment, its virulence, the average number of organisms required to cause infection, etc. Characteristics of the system which affect the distribution of the agent include the number of susceptibles, and the opportunities it provides for transmission of the infection.

Global experience has shown that the introduction of cholera into any country cannot be prevented, but cholera can create a problem only in areas where sanitation is defective. Agent the organism that causes cholera is labelled as *V. cholerae* O-group-1 or *Vibrio cholerae* 01.

The term "epidemic strain" has also been used for these vibrios. Vibrios that are biochemically similar to the epidemic strains (*V. cholerae* 01) but do not agglutinate in *V. cholerae* 01 antiserum have been referred to in the past as non-agglutinating (NAG) vibrios or as non-cholera vibrios (NCY). These are now included in the species *V. cholerae* and are referred to as non-O Group-1 *V. cholerae* (non-epidemic strains).

It is now recognized that the NCV/NAG vibrios include some species that are pathogenic for humans (e.g. *Vibrio parahaemolyticus*) which have caused outbreaks of cholera-like diarrhoea.

Age and sex : cholera affects all ages and both sexes. In endemic areas, attack rate is highest in childrens Gastric Acidity- An effective barrier. The vibrio is destroyed in an acidity of pH 5 or lower. Conditions that reduce gastric acidity may influence individual susceptibility Population Mobility- Movement of population (e.g. pilgrimages, marriages, fairs and festivals) results in increased risk of exposure to infection. In this jet age. cases and carriers can easily transfer infection to other countries.

Economic Status -The incidence of cholera tends to be the highest in the lower socio-economic groups, and this is attributable mainly to poor hygiene. Immunity -Natural infection confers quite effective immunity. It appears that immunity to *V. cholerae* is mediated mainly by the local intestinal immune system.

World Cholera is by no means a disease of the 18<sup>th</sup> Century. The seventh pandemic which began in 1961 has several exciting features, First, the pandemic is exclusively caused by the Ogawa and Inaba Serotypes of the EL Tor biotype of *V. Cholerae* 01, although isolated cases due to the classical biotype are still reported now and again in India and Bangladesh the pandemic erupted from a new focus - not Nengal, the classical home of Cholera, but Sulawesi in Indonesia, the organism has a much wider spectrum of disease - produces many more mild cases and a much greater carrier rate and survives better in adverse conditions.

The 7<sup>th</sup> pandemic is continuing to spread. Today it has involved more than 92 countries in Asia, Africa and Europe. In most of the countries invaded, it has become endemic with

periodic exacerbations. Global experience during the past 20 years of the current pandemic has shown that Cholera can get introduced into any country, but can create a problem only in areas where other acute enteric infections are endemic, i.e. where sanitation is defective.

India - Since the introduction of Cholera EL Tor biotype in 1964, the geographic distribution of cholera in India has considerably changed. West Bengal has lost its reputation as the "home" of Cholera. Many of the States which never had cholera or were free from it for a long time got infected and became endemic foci of EL Tor infection. Andaman and Nicobar were infected for the first time in 1966 and the desert areas of Rajasthan in 1969.

In several of the recently invaded areas, the disease is seen persisting as a smouldering infection. The classical severe epidemics with high mortality are now uncommon. Explosive outbreaks, particularly following large fairs and festivals are also now rare. Currently, the larger endemic foci of Cholera are found in Maharashtra, Tamil Nadu, Karnataka, Delhi and Kerala. The bacteriology of Cholera also presents a changed picture. Although rare and isolated cases due to classical biotype do still occur such as those reported from India in 1978 and 1979 for reasons that are not known, there has been no large scale epidemic of classical Cholera since 1964.

#### **4.2. SPATIAL DISTRIBUTION :**

Cholera is an important water born disease in the tropical - zone of the world but for the area under study it shows 40 frequency of occurrence during the course of last three years period. Cholera diseases contributes 0.05 percent at the part of outdoor patients and 0.2 percent in indoor patients out of the total incidences in the group of water diseases but if we compare with respect to all type of communicable diseases of Rajasthan total then we may observe that Cholera shows negligible contribution in this aspect:

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