

## Ecology of Typhoid Disease in Ambah Town—A Study of Geography of Health

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**ABSTRACT** For this study, a field work, to analyse the relationship between typhoid disease and ecological factors, was conducted. In the paper, it is revealed that the disease was due to the infection of *bacilli* of *salmonella* genus which are of highly mobile nature. It is shown that climate is another factor of natural environment which played an important role in the emergence of the disease. Besides, the natural ecologic factors, there are a number of social ecologic factors, which are also very strongly responsible for the out-break of the disease in the town. In the paper, emphasis is placed on the close and deep relationship of contaminated water and food with the diffusion of the disease. It is also traced out that the pressures of population and poor housing are also the remarkable contributory ecologic factors for the evolution of the disease. Finally, it is concluded that the disease is the result of the action of different ecological factors rather than the product of a single etiologic agent.

### INTRODUCTION

In this research paper, an attempt is made to analyse the ecology of typhoid disease in Ambah town. The geography or ecological study of the disease is based upon a sample survey of 1117 households of Ambah town. The studied households covered about half of the total population of the town (of the year 1990) (Table 1).

The disease is caused by the, infection of *Bacillus typhosus* or *Salmonella typhi*. This is acute infectious and highly communicable fever of long duration. it affects especially the middle age group of the population. It is more prevalent in the males, than in females and have got an incubation period of 10–14 days.

The annual occurrence, in Ambah town of two or more outbreaks of typhoid indicates that the risk of contamination of water and food supplies, with the entire group of organisms, is very high.

### STUDY TOWN

The geographical location of Ambah town falls in the lower Chambal Basin (District

Morena, Madhya Pradesh). Spatially, it is lying in the tropical semi-dry zone of Central India. Mathematically, it is situated from 26° 32' N latitudes and from 78° 12' to 78° 15' E longitudes. Geomedically, the location and the environmental landscape of the town is not conducive to healthful living. The total population of the town is 27224 (1990).

### THE ECOLOGY OR GEOGRAPHY OF TYPHOID DISEASE

#### 1. Geographical Location

It is a town of tropical belt. The area and especially the town of lower latitudes are the ideal localities for diffusion of typhoid disease.

#### 2. Climate

The tropical monsoon climate is more favourable for its annual or endemic and epidemic outbreaks. It is common in warm weather and maximum from July to October.

Table 1 : Sample surveyed households (August, 1989-July, 1990)

| Ward No. | Total Population | House holds | Male patients | Male patients per cent of the total population | Female patients | Female patients per cent of the total population | Total patients | Total Patients per cent of the total population |
|----------|------------------|-------------|---------------|------------------------------------------------|-----------------|--------------------------------------------------|----------------|-------------------------------------------------|
| 03       | 3082             | 214         | 111           | 3.60                                           | 83              | 2.69                                             | 194            | 6.29                                            |
| 04       | 4705             | 443         | 127           | 2.69                                           | 109             | 2.31                                             | 236            | 5.01                                            |
| 06       | 5698             | 460         | 296           | 5.14                                           | 193             | 3.38                                             | 489            | 8.56                                            |
| Total    | 13485            | 1117        | 534           | 3.95                                           | 385             | 2.85                                             | 919            | 6.81                                            |

### 3. *Bacillus*

Typhoid fever is caused by *Bacillus typhosus*. Typhoid bacilli are found in blood during first fourteen days and in urine and faeces of the patient after fourteen days. "The bacilli get in to the blood stream, build up colonies in various organs which give rise to toxic substances in quantities, causing blood poisoning and death unless there is a rapid build up of antibodies". (Stamp, 1964).

### 4. *Carriers of Bacilli*

Typhoid carriers are one of the important causes of the spread of the disease, of which the faecal carriers are more common than the urinary ones. Carriers are more common among persons over 40 years of age especially females. In this concern, the words of T. Anderson are worth recalling "Although, the faecal carrier is more commonly encountered, the urinary carrier, is potentially more dangerous".

### 5. *Faecal, Urine and Sewage Disposal*

It is a small town, wherein effective disposal of sewage is still commonly the source of localized out-breaks of the disease. As it is pointed out by T. Anderson "In country districts, however, defective cesspools, flooding or ineffective disposal of sewage are still commonly the source of localized outbreaks."

### 6. *House Fly, Rats, and Mice Vehicles of Contamination*

Due to the in efficient sanitary precautions the risk of contamination of water and food supplies is very high. This is all due to the increasing population and impact of house fly, rats and mice.

### 7. *Contaminated Water*

The major problem of the town is of unsafe water. Because the water is commonly contaminated by chronic carriers, missed carriers, house fly, rats, mice etc. About 40 per cent case of typhoid fever in Ambah town are caused due to the contaminated water.

### 8. *Contaminated Food*

Contamination of food is also a major problem in the town. Milk or milk products, prepared meats, uncooked vegetables, fruits and shellfish constitute the usual vehicles of infection . . . . .milk, and particularly icecream, is now replacing water as the vehicle of infection, especially of para typhoid fever, and here the towns are in as much danger as the countryside (Anderson, 1958). Hence about 35 per cent cases of typhoid fever are caused due to the supply of contamination of food.

### 9. *Poor Environmental Landscape*

In Ambah town, the overall environmental or geographical landscape is not good. Lack of

provision for an environment conducive to health full living, such as un hygienic house, overcrowding, low standard of sanitation, primitive methods of collection, removal and disposal of refuse, excreta, unsafe water supplies, breeding of flies, rats and mice, is prevailing every where. This type of poor landscape is responsible for localized outbreaks of the typhoid fever.

#### 10. Poor Medical Facilities

In Ambah town, there is a lack of availability of health protection to all members of the community irrespective of their ability to pay for it. This will be clear from the table of the strength of qualified health personnels in Ambah town in 1990 (Table 2).

Table 2 : Health personnel-population ratio (October, 1990)

|                 |        |
|-----------------|--------|
| Doctors         | 1:5440 |
| Nurses          | 1:6086 |
| Health Visitors | 1:4537 |
| Midwives        | 1:4537 |

#### PREVENTION AND CONTROL MEASURES OF THE DISEASE

On the basis of the field and laboratory studies, the following suggestions are made to have an overall successful prevention and control of the disease:

(1) To improve sanitation and hygiene in the town. (2) Facility of safe drinking water in the town (3) Clean food laws must strictly be

followed (4) Milk and particularly icecream must thoroughly be checked (5) Immunization is essential in the town (6) Stress on the early diagnosis of the infected cases in the town (7) And finally awareness of the public by leaflets, posters, film strips and overhead projector slides.

#### CONCLUSION

It is established that the unsuspected ambulant case, the missed case, the temporary carriers and the chronic carriers play a very important part in the dissemination of typhoid fever.

It is concluded that water, milk and milk-products, prepared meats, uncooked vegetables and fruits constitute the usual vehicles of infection.

In the end, it is concluded that the control of typhoid fever is essential and it embraces such factors as an efficient system of sewage disposal, a safe water and food supply and improvement of medical facilities.

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