Ecology of Eye Flu in the Village Khajuri - A Study of Geography of Health

M.S. Ojha and A. Singh

Department of Geography, Ambah P.G. Autonomous College, Ambah (Morena) 476 111, Madhya Pradesh, India


ABSTRACT The present paper is based upon a geographical survey which was conducted during the period from September to November, 1996 in Khajuri village. In the diffusion of the disease, emphasis is placed on the impact of natural environment of the village in the form of geographical location, semi-arid tropical climate (specially bright sun-shine and dusty winds); sandy atmosphere etc. The natural environment perhaps is responsible for enhancing the rate of infection in the area. In the same way, cultural environment in the form of poor hygiene and sanitation, high population density, crowded jeeps and bullock carts, crowded fairs and festivals and low social status of the villagers created favourable conditions for eye flu diffusion. It is concluded that the more we know about the causes of infections, the more rational, will our prevention likely be; and we shall be more skillful in protecting the people against the hazards of eye flu epidemic.

INTRODUCTION

Eye flu is an acute highly communicable disease. It is a special case among the eye infections and other eye diseases. It is caused by a recently known virus. It is mainly an epidemic disease and it has the ability to travel long distances. Having certain favourable factors, the virus is able to travel by aeroplane from Delhi to Calcutta or even longer distances. In this disease the infectivity is high but mortality is nil.

The effects of viral invasion are determined principally by the virulence of the micro organism and the efficiency of the defence mechanism of the host.

In this study, we have analysed the ecological impacts on the spatial patterns of eye flu prevalences in the village Khajuri, (Tahsil Ambah) of Morena district, Madhya Pradesh.

The Study Village - The village Khajuri is located in Ambah tahsil, district Morena, Madhya Pradesh (Fig.1). Spatially, it falls in the Lower Chambal Basin. Climatically, it is situated in the semi-arid tropical zone of Central India. It is situated at 26° 42' North latitude and 78° 14' East longitude. Thus, the location of the village, being semi-dry tropical and continental, is favorable for the diffusion of the disease.

ENVIRONMENTAL FACTORS FAVOURABLE FOR THE DIFFUSION OF THE DISEASE

(a) Natural Environmental Factors

Geographical Location: Eye flu is a disease of tropical and subtropical location. Besides, the location of continental characteristics is favourable for its incidence. Thus, the location of the Lower Chambal Basin (which falls in the central India), where the village Khajuri lies, represents an ideal situation for the diffusion of the disease.

The Virus: It is a filterable organism. The infection usually spreads from one person to another directly. Man is the reservoir and carrier of the infection. The virus is discharged in the tears and is highly infectious. It spreads by droplets of tears and by articles soiled by tears through patient contact in the crowded places and by movement of population from place to place. It is mainly an epidemic virus, with the ability to travel long distances.

"To achieve success, whether in prevention of treatment, it is necessary to realize the measures which enhance the recuperative capacity of the host are no less important than those which diminish the attacking power of the virus. Although it is reasonable to assume that there is a temporary stage of Viracmia in many of the virus diseases, the causative organism is capable of growth only inside the eye so that it rapidly becomes inaccessible to the usual methods of treatment. Such localization of the virus in eyes has often occurred by the time the infection becomes manifest, and no practicable method of modifying
Fig. 1. The study village - Khajuri
the effect after the eye is affected has been de-

vised yet. The specific treatment of virus dis-

cases therefore still remains beyond our reach.

(Dunlop, 1958).

**Climate and Weather**: Generally, tropical and

subtropical semi-arid climate is suitable for the

viral growth and attack. In semi-arid climatic

areas, like the Lower Chambal Basin, the post-

monsoon weather is specially favourable for the

eye flu epidemic. The eye flu epidemic in this

village occurred during the period from Septem-

ber to November, 1996. Thus, the microclimate

(during the post-monsoon period), in the form

of temperature and humidity had a special con-

tribution in the prevalence of the disease. Be-

sides, the theory of a change of virulence in the

virus during epidemic out-break is supported,

and a possible climatic influence is suggested

through the effect of dry and hot sun-shine after

rainy season.

**Sand and Dusty Area**: The village is sur-

rounded mostly by dry and sandy area. Being

situated in the "Puthas" (Sandy heaps) of the

Chambal Basin, the village has the sandy and

dusty streets throughout the settlement.

**(B) Cultural Environmental Factors**

**Fairs and Festivals**: Religious and cattle fairs

and festivals contributed to the spread of the dis-

case. Investigations showed that the huge gather-

ings of the people in fairs and festivals constitu-

ted notable grounds of direct virus-man interac-

tions. Hence the crowds of Deshara fes-

tival and weekly cattle fair on Thursday of

Ambah town (the town which is situated hardly

at 2 kilometer distance from the village) con-

tributed partially to the spread of the infection.

**The Patient was the Real Danger**: "It is now

realized that the patient is the real danger ............

there is little risk of infection arising from con-

amination of the walls, floors or furnishings of

the sick room except by means of the dust there

on viruses appear to lose their infecting power

very rapidly after leaving the human body"

(Dunlop, 1958). Thus the patient was directly

responsible for the spread of the disease. The

eye to eye viral infection was very common in

the village.

**Household Contact**: Eye infections caused a

good deal of sickness and loss of efficiency. The

infection spreads close household contact with

the patient or patient’s contact with the family

members. There were differences of these con-

tacts in the different communities of the village.

Thus, community or social sector is also linked

with the spread of the disease (Table 1).

**Table 1: Social sector wise incidences of eye flu in the

village Khajuri**

<table>
<thead>
<tr>
<th>Social sector</th>
<th>Total population</th>
<th>Total incidences</th>
<th>% of incidences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahore Sector</td>
<td>191</td>
<td>54</td>
<td>28.2</td>
</tr>
<tr>
<td>Rathore Sector</td>
<td>225</td>
<td>53</td>
<td>23.5</td>
</tr>
<tr>
<td>Tomar Sector</td>
<td>725</td>
<td>151</td>
<td>21.0</td>
</tr>
<tr>
<td>Jatav Sector</td>
<td>258</td>
<td>65</td>
<td>25.1</td>
</tr>
<tr>
<td>Others</td>
<td>126</td>
<td>28</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1525</strong></td>
<td><strong>351</strong></td>
<td><strong>23.0</strong></td>
</tr>
</tbody>
</table>

**High Population Density**: High population
densities and poor conditions of water supply (for
irrigation and domestic purposes), environment
and traditional society were also some of the causes
of prevalence of the disease in the village.

**Poor Hygiene and Sanitation**: Poor hygiene
and sanitation played the greatest role in the spread
of the infection. The higher incidences were found
among persons with poor personal hygiene. On the
other hand, considerable concentration was found
among the poor, illiterate, overcrowded and among those persons who had
direct contact with the deplorable sanitation of
the village.

**Primarily as a Social Disease**: Clearly, cul-
tural or social factors were also deeply woven
into the problems. The diffusion of infection
showed that it is primarily a social disease. The
higher incidences of the disease were found in
the scheduled caste of the village (Table 2).

**Table 2: Social groupwise incidences of the disease in
the village (1996)**

<table>
<thead>
<tr>
<th>Social groups</th>
<th>Total population</th>
<th>Patients</th>
<th>Percentage of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Caste</td>
<td>474</td>
<td>125</td>
<td>26.3</td>
</tr>
<tr>
<td>Backward Class</td>
<td>291</td>
<td>68</td>
<td>23.3</td>
</tr>
<tr>
<td>General Class</td>
<td>760</td>
<td>158</td>
<td>20.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1525</strong></td>
<td><strong>351</strong></td>
<td><strong>23.01</strong></td>
</tr>
</tbody>
</table>

**Impact of Patients of Minor Degrees of Illness**: Patients of minor degrees of illness were also responsible for spreading the disease. Since many people suffering from minor degree of illness, continued their work and spread the infection. Therefore, the prevalent virus was constantly present in crowded bullock-carts, fairs
and crowded streets, and the avoidance of contact was virtually impossible.

Age: The highest percentage of the diseases was in 1 to 15 years of age but less in preschool children and progressively decreased among adults with increasing age. Or the lowest percentage was found among people of and over 35 (Table 3).

Table 3: Age wise incidences of the disease in the village Khajuri (1996)

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Total population</th>
<th>Total patients</th>
<th>Percentage of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 – 15</td>
<td>800</td>
<td>200</td>
<td>24.72</td>
</tr>
<tr>
<td>16 - 35</td>
<td>501</td>
<td>106</td>
<td>21.16</td>
</tr>
<tr>
<td>Above 35</td>
<td>215</td>
<td>45</td>
<td>20.93</td>
</tr>
<tr>
<td>Total</td>
<td>1525</td>
<td>351</td>
<td>23.01</td>
</tr>
</tbody>
</table>

Sex: Generally, the percentage of disease was higher in males (23.40) than the females (22.62). But the percentage difference was not large enough to show conclusively that there was any significant difference in percentage of the disease between the sexes (Table 4).

Table 4: Sex wise incidences of the disease in the village Khajuri (1996)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Total population</th>
<th>Total incidences</th>
<th>Percentage of incidences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>791</td>
<td>185</td>
<td>23.40</td>
</tr>
<tr>
<td>Females</td>
<td>734</td>
<td>166</td>
<td>22.62</td>
</tr>
<tr>
<td>Total</td>
<td>1525</td>
<td>351</td>
<td>23.01</td>
</tr>
</tbody>
</table>

FACTORs FAVOURABLE FOR CONTROLLING OF INFECTION AND DISEASE

".................The concept that the patient is the centre of a series of concentric circles of infection: this is the most dense at the inner circle, and the constant endeavor must be to prevent spread outwards. The air and dust of the room form the important means whereby the outer circles become contaminated, so that all steps of reduce dust and the careless circulation of air which disturbs dust will tend to limit spread. These measures are not only of importance in preventing the infection of others; the patient himself, especially if nursed alongside other patients, may acquire secondary complications from the implantation of organisms acquired from infected dust" (Dunlop, 1958).

Thus, all steps to reduce dust will be helpful to check the disease.

Hygiene of Eyes: The nursing procedures, that require emphasis, are the hygiene of the eyes and the environment.

Isolation of Patients: Ideally, person with an infection should be isolated from the community in bed until the eyes have returned to normal.

Free Ventilation: Free ventilation and avoidance of blocked rooms, streets, etc. are advisable.

Avoidance of Crowds: On the outbreak of an epidemic of eye flu the fairs, congested places, overcrowding in bullock carts, jeeps, and overcrowding of every sort should be avoided.

Hygienic Living: The houses, roads and streets should be neat and clean and there should be no dusty and smoky environment in the village. In the house, the clothes, beddings, handkerchiefs and the room used by the patients should be completely disinfected. Such hygienic precautions may be very helpful to prevent such type of eye flu infection as appeared during September - November 1996 epidemic of the village (Table 5).

CONCLUSION

The main remedy for the ills, of an underdeveloped or backward area (like the Lower Chambal Basin area), lies in the kind of general socio-economic development in the village. In village development, priorities must be given to approach starting from particular fields, streets, houses, and particular village community ward environment. Prevalence decreased, as stability and standards of life including use of soap improved 12 per cent in Scheduled Caste, 15 per cent in Tomars, and 20 per cent in Brahmins in the village. Eye flu is an important viral infection, and this is a disease where improvement in environmental hygiene ought to bring reductions. And in the end, it is concluded that the more we know about the cause of infections, the more rational will our prevention likely to be; and we shall be more skillful in protecting the people against the hazards of eye flu epidemic.

REFERENCES

<table>
<thead>
<tr>
<th>Sector</th>
<th>Population incidences</th>
<th>1 to 15 years</th>
<th>16 to 35 years</th>
<th>More than 35 years</th>
<th>Total</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>Mahore</td>
<td>Population</td>
<td>39</td>
<td>43</td>
<td>42</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>19</td>
<td>11</td>
<td>14</td>
<td>9</td>
<td>–</td>
</tr>
<tr>
<td>Raithore</td>
<td>Population</td>
<td>50</td>
<td>62</td>
<td>42</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>18</td>
<td>14</td>
<td>06</td>
<td>9</td>
<td>04</td>
</tr>
<tr>
<td>Tomar (A)</td>
<td>Population</td>
<td>91</td>
<td>95</td>
<td>55</td>
<td>47</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>19</td>
<td>22</td>
<td>07</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Jatav</td>
<td>Population</td>
<td>58</td>
<td>51</td>
<td>55</td>
<td>43</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>16</td>
<td>12</td>
<td>08</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Tomar (B)</td>
<td>Population</td>
<td>132</td>
<td>109</td>
<td>58</td>
<td>56</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>28</td>
<td>18</td>
<td>11</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Brahmin</td>
<td>Population</td>
<td>12</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Barbar</td>
<td>Population</td>
<td>15</td>
<td>12</td>
<td>8</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Kandera</td>
<td>Population</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>3</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Balmiki</td>
<td>Population</td>
<td>9</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incidences</td>
<td>4</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

References: