CHAPTER NO. 5

ENVIRONMENTAL FACTORS AND HEALTH
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ENVIRONMENTAL FACTORS AND HUMAN HEALTH

In the previous chapters, the physical and the socio-economic factors of the study area has been explained. From the physical factors, relief and climate (mainly rainfall) play an important part in determining the health status of the human beings. The western region of the district is hilly and it receives more rainfall during the south-west monsoon, than the central and the eastern region. This has made a direct and an indirect effect on the occurrence and the spread of many diseases. Among the social factors together with the density of population and literacy, other factors like sanitation, quality of drinking water, housing standards, pollution and food habits are necessary to be studied.

SANITATION :

The traditional function of sanitation is to remove the toxic elements from the water and to prevent water pollution. This is carried at two levels:

1) Cleanliness within a house is the responsibility of the persons living there,

2) In the rural areas, the village council (Grampanchayat) makes the arrangements to keep the village clean and to provide safe and adequate drinking water.
QUALITY OF DRINKING WATER

There is plenty of water in the world but the drinking water is becoming scarcer due to mal-sanitation. In the study area, this has been the major cause of ill-health either because of inadequacy or because of bad quality of water.

In India, a protected water supply is unusual. By protected water, it is meant that the water supply is protected from pollution at the source, e.g. to cover the wells which helps to keep the water clean. An important report, which surveys health conditions through India was published by the Government of India in 1946. It stated that only 16% of the towns in India had a protected water supply which served about 6.15% of the total population. Another such report was published in 1961, wherein the additional water supply provided during fifteen years was mentioned. The increase in population has more than offset the extra provision and that there was no improvement in the general conditions. As per the latest reports published in 1980, which state that in India, only about 6 persons out of 100 live, where there is a protected water supply.

In many rural areas, there is lack of protected water supply since the streams and wells dry up with the advent of the hot weather season.
The storage may be so acute that cattle die and peasants migrate. Thus, out of total villages in Mawal tehsil, 40% of the villages do not have supply of water. In Junnar and Ambegaon tehsils, even the villages, where the primary health centres have been established, have to face the problem of good drinking water during the hot weather season.

**IMPURITIES IN WATER**

The quality of drinking water depends upon its dissolved and suspended impurities. Dissolved impurities make the water 'hard'. It is disputable whether hardness of water affects human health. Hard water is softened for industrial purposes but for drinking water this is not done in India. In the areas where no other sources of water is available, people continue to drink water which is usually saline.

**SUSPENDED IMPURITIES**

The non-living suspended impurities make the water turbid, but they are not harmful. The living suspended impurities include pathogenic organisms. The rivers as well as wells in the villages are commonly polluted with surface washing and by the use of dirty ropes and buckets for drawing water.
There is no simple and reliable way of disinfecting a stream. The ponds are usually too large to deal with. Both these sources are not (continuous contamination) protected by wells or other obstacles so that continuous contamination takes place. But the open wells which are the only source of water in many villages, offer manageable qualities of water for disinfection and if the water is really disinfected then it would be a rational and unquestionably beneficial procedure.

As more than 70% of the people in the rural area, have to consume infected water, the water-borne infections such as dysentery, cholera, jaundice and diarrhoeas are very common.

DISPOSAL OF HOUSEHOLD AND HUMAN WASTES:

The careless disposal of household, animal or human wastes, creates dangers to human health. The household waste breeds flies and provides food for rats. The cattle dung and human faeces also provide a good medium for breeding flies. Exposed human faeces which may contain micro-organisms of disease and eggs of helminths constitute an additional danger. Such matter is generally transmitted to food by flies, or is washed into a stream by a shower of rain or is carried there by the feet of animals or human beings accidentally treading on faeces.
Pigs, dogs and cows walk through human faeces and then go and drink in a stream polluting the water with their contaminated mouths. Soils from which gross signs of faecal contamination have disappeared but in which varying numbers of faecal micro-organisms survive, is common around houses where children defecate in the open. One of the hardest survivors in the faecal remains is the roundworm egg, which readily finds its way into the mouths of children playing in such places. Hookworm is more readily acquired from the moist soils of the fields in which adults defecate and work barefoot. The village wells become contaminated, by ropes dragged along the ground and then used for drawing water, by waste water flowing back into the mouths of the well, or by polluted soil used for scrubbing kitchen utensils, which some people wash directly in a well and not outside. Once human faeces are exposed in the open, there are many environmental factors that can convey them to food or water or allow infective larvae to pierce the skin.

Disposal of household and human wastes is the primary concern of grampanchayats, but in rare cases only it is done as an exception and hence, unless this grave problem is solved, many doctors of they are available will not be enough to keep the rural people healthy.
ATMOSPHERIC POLLUTION

The nature provides clean and clear atmosphere. Until the advent of modern civilization, the pollution resulting from human activities, was small and could easily be dissipated by the action of winds. With the increase of industrialization, this is no longer so. Local concentration of dust, smoke and gases such as carbon monoxide, sulphur dioxide, hydrogen sulphide, oxides of nitrogen and ammonia can be so heavy as to interfere with the penetration of sunlight, reduce visibility, deposit grims on all surfaces, and cause widespread harm by its irritant, corrosive and more subtle chemical effects.

POLLUTANTS

The types of pollutants and their concentrations vary from place to place. The nature and degree of air pollution depend on the types of industries, their numbers, the kind of fuel used for power etc. Air-pollution, some years back, was a problem of the urban and industrial cities like Bombay and Calcutta. However, due to development of the agro-based industries, such as sugar factories, oil mills and ginning mills, the rural areas too, are facing the problems of air pollution.
In Pune district, due to irrigation facilities in the central and eastern tehsils, sugarcane plantation has increased in the last ten years (area under sugarcane has increased by 61% to the net sown area) and accordingly, the sugar factories have been developed. This has been one of the causes of air pollution in those areas.

**Effects of Pollution on Human Health**

The most obvious symptoms are irritation of eyes and of the respiratory tract. In stagnant air, this leads to sootness first and then to deal the respiratory diseases, especially among the very young and the old.

**Control**

It is not feasible to eliminate air pollution completely, but it can be markedly reduced by proper measures. Legislation against the discharge of smoke and harmful gases exists, but is not properly maintained and hence, the air pollution continues. The cities have already been spoiled by ever increasing industries, attempts must be made to see that at least the villages remain clean and clear from this type of atmospheric pollution.
HOUSING AND HEALTH:

Housing is a part of the total environment of human beings. It is to a large extent responsible for the states of human health and well-being. It is, however, very difficult to demonstrate the specific cause and effect relationships between the ill-health and the housing conditions because housing embraces many facts of environment. By deductive reasoning, a strong relationship can be established between poor housing and the types of ill-health.

Poor housing conditions are very common in the rural areas with few exceptions.

HOUSE STANDARDS:

There are no fixed housing standards, as these standards vary from region to region. In the rural areas, the minimum standards have been suggested.

1) There should be at least two rooms,
2) The built up area should not exceed \( \frac{1}{3} \) rd of the total area,
3) The house should be provided with a latrine,
4) The window area should be at least 10% of the total floor area,
5) Drinking water facilities should be available within a quarter mile from the house,
6) The cattle-shed should be at least 25' away from the houses,
7) There should be adequate arrangements for the disposal of waste, water, refuse and garbage.

Housing in rural areas seldom reaches the 'approved' standards and hence, the following infections are very common among the rural population.

1) Respiratory Infections:
   Common cold, tuberculosis, influenza, diphtheria, bronchitis, measles, whooping cough etc.

2) Skin Infection:
   Scabies, Leprosy, Ringworms.

In general, high morbidity and high mortality rates are observed where the housing conditions are sub-standard.

FOOD HABITS:

Good nutrition is a basic component of good health. It is of prime importance in the attainment of normal growth, development and the maintenance of health throughout life.

In India, mainly in the rural areas, both mal-nutrition and under-nutrition has remained a common feature of rural community. The effects of mal-nutrition on the community are both direct and indirect.
The direct effects are the occurrence of frank nutritional deficiency diseases such as kwashiorkor, marasmus, anaemia, beriberi, goitre and rickets. The indirect effects are lowered vitality of the people, arrested growth, high infant mortality and high still birth rates and low expectation of life.

The food can be grouped on the basis of its predominant function, such as:

1) Energy yielding food: Such food is rich in carbohydrates and fat, e.g. cereals, sugar, roots and tubers.
2) Body building foods: Such food is rich in proteins, e.g. meat, liver, fish, milk and pulses.
3) Protective food: Such food is rich in protein, vitamins and minerals, e.g. milk, eggs, liver, green leaf, vegetables and fruits.

The diet surveys indicate that the average number of calories consumed by an Indian are 2324 with standard deviation of 624. The average amount of protein consumption is 62.3 gms, with a standard deviation of 23.4. 86% of this is derived from cereals and pulses and hence, it has less biological value (Source: Indian Council of Medical Research (1966), Dietary Allowance for Indians, Vol. No. 60).

The diet is very poor in respect of protective foods. Hence, the diseases associated with malnutrition are often observed in the rural areas. In this study area, the western hilly regions have very high proportion of deficiency diseases.
To study the impact of the environmental factors mentioned in this chapter, 24 villages (one village from each P.H.C.) has been selected. This selection of villages has been made on the basis of two factors.

1) The distance from the nearest P.H.C. and
2) Population. These villages have been selected which are within the range of 5 to 10 Kms. and upto 1000 population. (Table No. 5.1, Map No. 5.1).

1) DHUMBHAWADI

This village is located in Otur P.H.C. area in Junnar tehsil. With the total geographical area of 280 hectares, its population is 938. (1981 Census.) There are 160 houses and except four, all the houses are very small and made up of mud and grass roofs. There are two wells, one for the backward class and one for the advance class. Both the wells are unlined and they are non-perinial. During summer season, (April and May) the drinking water is provided by tankers. (By Zilla Parishad). They pour the water in the well directly without chlorination. The sanitation is well below the normal standards. There are no latrines and the waste water is allowed to flow freely in the gaonthan.

This village is 4 Kms. away from the Otur P.H.C. It has been joined by a kaccha road. During monsoon, this road becomes all muddy and non-usable. Due to shortage of water in the months of April and May, dysentery cases are maximum.
SKETCHES OF THE SAMPLE VILLAGES.

1. Dhumbhawadi.

2. Gunjalwadi.

3. Wanewadi.

4. Dhodmal.

5. Ranmal.


7. Tiphanwadi

8. Shegaon
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Village</th>
<th>Name of P.H.C.</th>
<th>Population (1981)</th>
<th>No. of House-holes</th>
<th>Source of Drinking Water</th>
<th>Average No. of Patients per day</th>
<th>Distance from P.H.C. Road</th>
<th>Type of Common Diseases in the Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dhumbhawadi</td>
<td>Otur</td>
<td>939</td>
<td>160</td>
<td>Well</td>
<td>2</td>
<td>Less than 5 Kms.</td>
<td>Kochha Road</td>
</tr>
<tr>
<td>2</td>
<td>Gunjalwadi</td>
<td>Nereyanaon</td>
<td>970</td>
<td>381</td>
<td>Well</td>
<td>8</td>
<td></td>
<td>&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Wanewedi</td>
<td>Apatale</td>
<td>313</td>
<td>54</td>
<td>Well</td>
<td>2</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>4</td>
<td>Dhodmal</td>
<td>Ghodegeon</td>
<td>869</td>
<td>142</td>
<td>Well/River</td>
<td>3</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>5</td>
<td>Ranmal</td>
<td>Dhamani</td>
<td>653</td>
<td>122</td>
<td>Well/River</td>
<td>4</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>6</td>
<td>Mahalunge</td>
<td>Dimbe</td>
<td>313</td>
<td>54</td>
<td>Well</td>
<td>5</td>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>7</td>
<td>Tiphanwadi</td>
<td>Weda</td>
<td>280</td>
<td>48</td>
<td>Well/River</td>
<td>2</td>
<td>5 Kms. to 10 Kms.</td>
<td>Pekka Road</td>
</tr>
<tr>
<td>8</td>
<td>Shegaon</td>
<td>Chekan</td>
<td>561</td>
<td>84</td>
<td>River</td>
<td>2</td>
<td>&quot;</td>
<td>&quot;</td>
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<tr>
<td>10</td>
<td>Nirgudi</td>
<td>Dehu</td>
<td>460</td>
<td>37</td>
<td>River</td>
<td>8</td>
<td>&quot;</td>
<td>&quot;</td>
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<tr>
<td>12. Bhavadi</td>
<td>Waghodi</td>
<td>887</td>
<td>140</td>
<td>Well</td>
<td>12</td>
<td>&quot;</td>
<td>&quot;</td>
<td>T.B., Leprosy, Dysentery.</td>
</tr>
<tr>
<td>13. Sangise</td>
<td>Khadakala</td>
<td>576</td>
<td>95</td>
<td>Well</td>
<td>6</td>
<td>&quot;</td>
<td>Kachha Road.</td>
<td>Dysentery, Malaria.</td>
</tr>
<tr>
<td>14. Darawadi</td>
<td>Paud</td>
<td>737</td>
<td>245</td>
<td>Well/River</td>
<td>4</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Dysentery, Malaria.</td>
</tr>
<tr>
<td>15. Bhabwadi</td>
<td>Bhor</td>
<td>505</td>
<td>57</td>
<td>Tank/Well</td>
<td>3</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Diptheria, Malaria.</td>
</tr>
<tr>
<td>17. Jachakwadi</td>
<td>Mingeon-Ketki</td>
<td>592</td>
<td>113</td>
<td>Well</td>
<td>5</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Dysentery, T.B.</td>
</tr>
<tr>
<td>20. Vanjawadi</td>
<td>Velhe</td>
<td>40</td>
<td>10</td>
<td>Well/River</td>
<td>2</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Dysentery, Malaria, Diptheria.</td>
</tr>
<tr>
<td>22. Mangerwadi</td>
<td>Panader</td>
<td>973</td>
<td>143</td>
<td>Well</td>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>T.B., Malaria, Leprosy.</td>
</tr>
<tr>
<td>23. Shigadwadi</td>
<td>Kendur</td>
<td>339</td>
<td>49</td>
<td>Well</td>
<td>4</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Dysentery, T.B.</td>
</tr>
<tr>
<td>24. Shindoli</td>
<td>Shehara</td>
<td>681</td>
<td>93</td>
<td>Well/River</td>
<td>5</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Dysentery, T.B.</td>
</tr>
</tbody>
</table>
Measles is another common disease. Though this village is very near to the P.H.C., very few people take the advantage of this health facilities. This is mainly because most of them do not believe in the modern medicine and secondly, during the monsoon season, those who wish to treat themselves in P.H.C. cannot go, due to bad roads. Home treatment is very common among the tribal people.

2) GUJAJWADI:

This village is located in Wajerengan P.H.C. in Junnar tal. It has 304 hectares of geographical area and 970 population. There are 381 houses. It is a compact village and has been divided into two parts on the western side, the backwards live and on the eastern side, the forwards live. All the 187 houses in the backward settlement are very small in size and they are on the lower side of the village. So, all the water flows towards their houses. Except three houses in the forward settlement, all the rest are in same bad condition as in the backward settlement. There is one community well and two private wells. Though, it is called as community well, the backwards are not allowed to fetch water from that well. They have to use water from the private well, which is located in their area, but this well is perennial and when both the other too dry during summer, all the villagers use water from the well located in the lower class people.
This village is located within 2 Kms. of the P.H.C. though it is joined by a kachha road, more people take the advantage of the P.H.C. (This has been observed from the O.P.D. records of the P.H.C.) This is mainly because the community health guide (C.H.G.) is very active and through him only, people have understood the importance of early reporting. Chlorination is carried out in all the months except during the summer months, when the wells do not have much water. This is the period, when the dysentery cases increase. Immunization programme is not very successful in this village, so the measles cases are observed.

3) \textit{winevidi} : Th 9453.

This village is 3 Kms. away from Apatale P.H.C. in Junnar tehsil. With 164 hectares of geographical area, the population of this village is 313. This village has 54 houses. Like in other villages, this village too has two separate settlements. The backwards have 20 huts and 34 houses are of the forwards. This village is located on the slopes of western ghats facing east. This village does not have any gutter system, so the waste water, animal waste, (human waste too) is spread on the road. There is one community well. It is a lined well. All people fetch water from this well. It is a non-perennial well, so they have to consume water from the other source during the summer season.
There is a small spring, which has developed a pond. This is at a distance of 1.5 Kms. from the village. So, they use that water during summer only. So, except the summer season, they get chlorinated water. Due to bad sanitation and uncleanliness, dysentery is a very common disease. The reporting of cases is very less. Immunization programme is not accepted fully by the people, so measles is another disease of this village.

4) **DHODMAL**

This village is 4 Kms. away from Ghodegaon P.H.C. in Ambegaon tehsil. The total geographical area of this village is 640 hectares and its population is 869. This village has 142 houses. 100 houses are of the forward class people and remaining are of the backward class. The average house standard of the forward class is better. The sanitation is totally absent. The houses are well built but there are no latrines. This village receives drinking water from three wells. (All of them non-perinial) and from the river Jhod (A tributary of the river Bhima). During rainy season, this village is covered with many small and big ponds along the river which provide the best breeding grounds for the mosquitoes. Malaria is a common disease of this village. In the summer season, people are forced to consume the water from the river, which is not chlorinated so next to malaria, dysentery is another important disease of this
village. The reporting of cases to the P.H.C. is very less.

5) **RANMAL** :

With the 735 hectares of total geographical area and 655 population, this village is located in Dhameni P.H.C. area in Ambegaon tehsil. It is 4 Kms. away from the P.H.C. It has 122 houses. 22 houses are of the backward class and 100 of the forward class. The gaothan is located near the river Ghod. It is on the high ground. It does not have sanitation. The waste water is spread on the roads, this causes malaria. The people consume water from the river (mainly during summer) and from a well. (It has only one well). There is a shortage of drinking water during summer, when the river too has very little quantity of water. Non-chlorination is the main reason of dysentery in this village.

6) **MAHALJUNGE** :

This village is located in Dimbe P.H.C. area in Ambegaon tehsil. It is 5 Kms. away from this P.H.C. It has been joined by a kachha road to the P.H.C. village. The population of this village is 313 with only 66 hectares of the geographical area. It is very compact village located on the slopes of the western ghats. This village has 50% tribal people. They live away from the main gaothan, on the higher ground.
They never mix with the village people. There are two wells in the village, both the wells are shallow and are unlined. The water has a bad test and a bad smell. Due to bad sanitation, malaria is the important disease, which is followed by dysentery. The average reporting from this village to the P.H.C. is five. They are mainly from the main gaon than, tribal people do not report to the P.H.C.

7) **TIPHANWADI**

This village is located in Wada P.H.C. area of Khed tehsil. It is on the hill slope. It is a compact village with 187 hectares of geographical area and 280 population. There are only 46 houses. This village too has a tribal population. Those tribal people have 20 huts on the hill which is on the western side of the village. 28 houses are in the gaon than. It is located near the river Shima. (A tributary of the river Bhima) This village is 6 Kms. away from the P.H.C., but it has a pakke road, joining the P.H.C. Though, this village is on the high ground. Malaria is a common disease. It has one well but people consume water from the river only. (It is a deep well and it is non-perinjal). So, dysentery is another common disease of this village.
8) SHENHAN

This village is located in Chakan P.H.C. area of Khed tehsil. It has 274 hectares area and 561 population. It is 7 Kms. away from the P.H.C. The total number of houses are 84. Out of which, 50 houses are of the advance class and 34 houses are of the backward class. It is on the south bank of this river. People consume water from the river because the only well this village has, a salty water and it is not potable.

The general sanitation is very bad, which causes malarious conditions. Diphtheria cases have been reported from this village in the P.H.C. Immunization programme is not fully accepted by the people. From the family surveys, it has been observed that people do not go for the 2nd and the 3rd dose of D.P.T. (Diphtheria, Polio and Titanus). So, the 1st dose too is a waste. This is mainly because of the reaction (may be in the form of fever or rash) of these cases.

9) WANJIPE

It is located in Dehane P.H.C. of Khed tehsil. It has 207 population and the total geographical area is 218 hectares. It is located in the western hilly parts of the tehsil, near the source of river, Bhima. It is a tribal village. All the 38 houses are huts. They are constructed in a compact form, around the well.
They consume water from the river Bhima as well as from this well. Chlorination is not done in the summer season. (the tribal people do not allow the C.H.C. to put the bleaching powder in the well). The total reporting from this village is less and it is mainly for two diseases - malaria and leprosy. It is difficult to explain the occurrence of leprosy in this area. This is the only P.H.C. in the western parts, where the leprosy cases are reported.

10) **NIRGUDI**

This village is located in Dehu P.H.C. area of Haveli tehsil. It is a small village with 460 population and 447 hectares of geographical area. There are 84 houses. This is a non-tribal village and there are only 10 houses of backward class people. They live in a separate place in the east of the main gaon than. This village is located on the river Indrayani. River Indrayani is the main source of drinking water. It is 4 Kms. from the P.H.C. The people are well aware of the P.H.C. facility. So, the daily reporting from this village is between 8 and 10. It has a pakka road upto Dehu (P.H.C.Village.) At least, 10% of the villagers work in the nearby industries. This could be one of the important cause of T.B. cases from this village. It is a flat topography and the water of river Indrayani spreads in the village during the floods. (July and August).
This cases malarious conditions. In this village, even
the leprosy cases are reported. During the dry season,
(April and May) some dysentery cases too are reported.

11) **Nandgaon**

This village is located in Khadakwasla P.H.C. area
of Haveli tehsil. The total population of this village
is 963 and the total geographical area is 433 hectares.
It has 180 houses. Like in other villages, these houses
are divided into two groups. The main gaonathan has
160 houses and 20 houses are constructed on the eastern
side. It is located on river Mutha. It is 2 Kms. away
from the P.H.C. It has a pakhke road upto Khadakwasla.
The reporting in the P.H.C. from this village is more
(between 10 and 15 daily). This village receive water
from the river only. It is a plain region and it is
near Khadakwasla lake. These conditions helps to have
fast spread of mosquitoes, so occurrence of malaria is
very common. From the chronic diseases - T.B. and
leprosy cases are reported. Immunization programme
has been well accepted by this village.

12) **Bhavadi**

This village is located in Wagholi P.H.C. area of
Haveli tehsil. The total population of this village is
887 and there are 140 houses. This village is located
in the eastern side of the tehsil. It is located on a
plain ground and it is well spread.
There are 60 backward class houses and 60 advanced class houses. Compared with the villages in the western taluka, the houses are well constructed, but sanitation is still very bad. Waste water and household waste is a common feature of the roads in the village. There are five wells. Out of which, one is a community well, the others are private. Chlorination is properly done by the C.H.I.C. So, the dysentery cases are very few. Malaria is one of the major causes of ill-health in this village. T.B. and leprosy patients are reported from this village in the O.P.D. records of the Khedakwala P.H.C.

13) SANSIDE 

This village is located in Khedakwala P.H.C. area of Mawal tehsil. It has 576 population and the total geographical area is 331 hectares. There are 95 houses. This village is located on the foot hills of the western ghats. All the houses are very small in size and are made up of mud and grass roofs. The sanitation is very bad. The road which joins this village and the P.H.C. is a kachra road and during the monsoons, it is not usable. There are three wells, out of which, only one well is perennial. There is an acute shortage of water during the months of April and May. Dysentery is a very common disease of this village. Malaria cases are frequently reported from this village in the P.H.C. The daily reporting is between 4 and 8.
14) **DARAWADI**

This village is located in Paud P.H.C. of Mulshi tehsil. It is located on a small tributary of river Mutha. It has 737 population. The total geographical area is 332 hectares. The total number of houses are 245.

The villagers consume water from the small tributary and from wells. (There are two wells in the village) It is a compact village, located in the southern part of the tehsil. The quality of drinking water is very bad. Chlorination is not done properly, so, the dysentery cases are maximum. Due to bad sanitation conditions, malaria is another common disease of this village. During the monsoon, due to heavy rainfall, this village becomes almost isolated from the other parts of the tehsil. It is joined by a kachha road and though it is just 4 Kms. away from the P.H.C., the reporting is very less.

15) **BHAUBWADI**

This village is located in Bhor P.H.C. area of Bhor tehsil. It has 350 population and there are 57 houses. This village is located in the western part of the tehsil, near the Bhor tank. It receives water from tank as well as from two wells. It is 4 Kms. away from the P.H.C.
It has a kachha road, which joins the P.H.C. village and Bhabwadi. It is a compact village and it has two separate settlements, one for the backwards and another for the advance class. The sanitation is very poor. Many ponds are developed after the monsoons in the gaonthan, which lead to mosquitoes. Malaria is the common disease of this village. Immunization programme has not been accepted fully by this village, so the diphtheria cases are reported in the P.H.C.

16) **AHMOLI** :

It is located in Saswad P.H.C. of Purandhar tehsil. Its population is 591 and it has 118 houses. The main gaonthan has 100 houses and the 18 houses are constructed in the western direction of the gaonthan. There is no proper sanitation, so malaria is a common disease. There are two wells. The chlorination is well carried, so, the dysentery cases are very few. Due to non-immunization, diphtheria cases are reported in the P.H.C. On an average 6 to 8 people visit P.H.C. from this village. The road joining this village to the P.H.C. is kachha road, but as this region receive less rainfall during monsoon, it is usable during monsoon season even.

17) **JACHAKWADI** :

It is in Nimgaon-Ketki P.H.C. area of Incapur tehsil. It has a flat area and it receives less rainfall. (It is located in the Drought Prone Region of Pune District.)
It has 592 population and there are 113 houses. All the houses are made up of stones and mud and they have flat roofs. There is only one well which dries in summer. The backwater of Ujani Dam is 3 Kms. away from this village. So, in the summer season, people consume water from the dam. This unchlorinated water causes dysentery among the villagers. About 5 persons visit the P.H.C. daily. P.H.C. is 3 Kms. away from this village. It has a kachha road.

18) NANDADEVI :

It is located in Rawangaon P.H.C. of Daund tehsil. This village is located in the Drought Prone Region of Pune district. It is on the eastern side of the tehsil. It is 4 Kms. away from the P.H.C. The total population of this village is 660 and it has 107 houses. As this region receives less rainfall (less than 50 cm. per year). The houses have flat roof and stone and mud is used for the construction of walls and roofs. There are 4 wells in the village but there is a shortage of water during the summer season. This is the period, when maximum cases of dysentery are reported in the P.H.C. from this village. From the chronic diseases, T.B. is an important disease.

19) TAMANWADI :

It is located inYawat P.H.C. of Daund tehsil. It is on the western side of the tehsil. It is 3 Kms. from the P.H.C. It has a kachha road.
This village is located in the central plain region of the district. It is in the Drought Prone Region. So, it receives less rainfall. (less than 50 cms. per year)
The total population of this village is 490 and it has 95 houses. The houses are well constructed and there is good sanitation system for the waste water flow. There is only one well. It can supply water throughout the year. The chlorination well carried. T.B. and leprosy are the two diseases reported from this village.

20) **VANGEWADI** :

It is located in Velhe P.H.C. area of Velhe tehsil. This is located in the western hilly region of the district. It situated near the river Gujawani (a tributary of river Nira). This village receives more than 250 cms. of rainfall per year. The total population of this village is only 44 and it has only 10 houses, all of them are very small huts. There is no proper sanitation. There is only one shallow well. The water is not potable. People consume water from the river. The common diseases are dysentery, malaria and diphtheria. The reporting from this village is very less, though it is just 3 Kms. from the P.H.C. It is one of the problem villages in the district.

21) **KUTHALWADI** :

It is located in Supa P.H.C. area of Baramati tehsil. It is located in the central plain region and it receives about 100 cms. of rainfall every year.
The total population of this village is 821 and there are 191 houses. This village has three wells, and proper chlorination is done. The houses are having better construction and proper sanitation has been developed. It is 4 Kms. away from the P.H.C. It has a pekka road to join the P.H.C. Average O.P.D. from this village is 5. The main diseases are T.B. and leprosy.

22) MAHAGARWADI:

It is located in Panadare P.H.C. area of Baramati tehsil. It is located at the central plain region of the district. This village is located in the southern side of the tehsil near the Nira left bank canal. It has 973 population and the total houses are 148. It is well spread village along the canal. The canal water is used for irrigation. Many ponds are developed in the village due to over irrigation, which has caused the malarious conditions. T.B. and leprosy are the other important diseases which are reported from this village. Dysentery is uncommon because all the three wells are well-chlorinated and they do not consume water from the canal.

23) SHIGUWADI:

It is located in Kendur P.H.C. area of Shirur tehsil. It has a rough topography and it receives 100 cms. rainfall per year.
This village has 339 population and it has 49 houses. In this village, it seems that there is no planning for the construction of these houses. The geonthen is very compact. Sanitation is very poor. There is only one well. There is always a shortage of drinking water during the months of April and May. There is a pakka road, joining the P.H.C. to this village but the reporting is less, (average 2 to 4). Dysentery and T.B. are the main causes of ill-health in this village.

24) SHINDOLI :

This village is located in Khavara P.n.C. area of Shirur tensil. It is located on the northern side of the tensil, near the river Bhima. The total population of this village is 681 and there are 93 houses. These houses are made up of stones and mud with grass roofs. There are two wells. People consume water from the river Bhima, when these two wells dry during summer season. So, dysentery is a common disease of this village. Few T.B. cases are reported. It is 4 Kms. away from the P.H.C. and there is a pakka road, joining the P.H.C.

On an average, 5 persons are reported daily to the P.H.C.

In the next chapter, the impact of the environmental factors on the spatial distribution of diseases in the district has been explained.