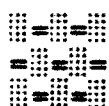
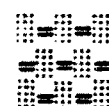


CHAPTER - IVSPATIO-TEMPORAL ANALYSIS OF DISEASES
IN CITIES

-
- 4.1 Introduction
 - 4.2 Methodology
 - 4.3 Trends of mortality pattern of diseases of Ahmednagar city
 - 4.4 Trends of mortality pattern of diseases of Kopergaon city
 - 4.5 Trends of mortality pattern of diseases of Sangamner city
 - 4.6 Trends of mortality pattern of diseases of Shrirampur city
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 - 4.8 Trends of mortality pattern of diseases of Kolhapur city
 - 4.9 Trends of mortality pattern of diseases of Baramati city
 - 4.10 Trends of mortality pattern of diseases of Pune city

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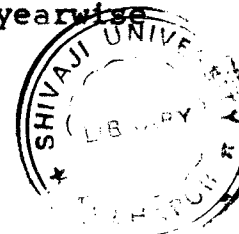
4.1 INTRODUCTION :

The spatial pattern of any disease in any region is a very complex phenomenon, because it depends on physiography of the region as well as socio-cultural conditions of the particular region. Hence, certain diseases are more common in certain specific regions. They seem to be concentrated in certain specific areas, hence the study of spatial pattern of diseases in relation to changing environmental conditions have become the important study of Medical Geography.

While considering this, the researcher has proposed to study spatio-temporal pattern of diseases in selected cities of Pune division. The researcher has collected the data about mortality of major diseases occurring in different selected cities in the Pune division. For majority of cities, the data have been collected for the period of 16 years (1972-87), but for some cities, it was not possible to collect the data from 1972, hence the same have been collected for the period of 6 years i.e. from 1982 to 1987.

4.2 METHODOLOGY :

The data for the 16 years (1972-87) and 6 years (1982-87) have been collected and are shown with the help of line graphs in Figs. 4.4 to 4.20. The total diseases selected for the study are ten (10) in numbers, whose mortality data were extracted from Annual Vital Statistics of the Maharashtra State. The yearwise



cause specific mortality rates per one lakh estimated population have been calculated and the dotted lines on each graph shows the average death rate of a particular disease to the last 6 or for 16 years i.e. (1982-87) or (1972-87).

The ten diseases selected for the study are as follows -

- 1) Cholera 2) Dysentery 3) Diarrhoea
- 4) Tuberculosis 5) Leprosy 6) Tetanus
- 7) Measle 8) Malaria 9) Cancer and
- 10) Pneumonia

An attempt is made to correlate the dependant variables wherever possible with major diseases and the major cities of the Pune division. The cities selected for the study are 17 in number and they are as follows -

- | | |
|-----------------|----------------|
| 1) Ahmednagar | 9) Islampur |
| 2) Kopergaon | 10) Miraj |
| 3) Sangamner | 11) Sangli |
| 4) Shrirampur | 12) Karad |
| 5) Ichalkaranji | 13) Phaltan |
| 6) Kolhapur | 14) Satara |
| 7) Baramati | 15) Barsi |
| 8) Pune | 16) Pandharpur |
| | 17) Solapur |

4.3 AHMEDNAGAR :

Ahmednagar, the headquarter of the district bearing the same name and a taluka headquarter known as Nagar, is a municipal town with a cantonment board. The city is located in 19° North latitude and 74° East longitude. It is situated on the bank of the Sina river about 75 miles to the northeast of Pune. It covers an area of 9.5 sq. miles. It is a railway station on the Daund-Manmad Broad Gauge route of the Central railway. The town gets protected water supply but scarcity of water is often felt.

The graph no.4.1 shows the mortality patterns of ten diseases selected for the study. In this city, the cancer and tuberculosis are the two major diseases which are constantly occurring with increasing trends with the average annual mortality rate more than 6/100,000 estimated population. T.B. ranks first and cancer ranks second in the ranking order. Pneumonia ranks third in order of importance followed by diarrhoea, tetanus, measles and cholera. The people of Ahmednagar city generally use polluted water for the drinking purpose due to which occurrence of diarrhoea is remarkable. The diseases like cholera, measles and tetanus are sporadic and of less magnitude as noticed. The death rate of which is below 1/100,000 estimated population. The deaths by dysentery, leprosy and malaria have been completely disappeared from this city. The line graph of total diseases

AHMADNAGAR CITY

CAUSE SPECIFIC DEATH RATE 1972-87

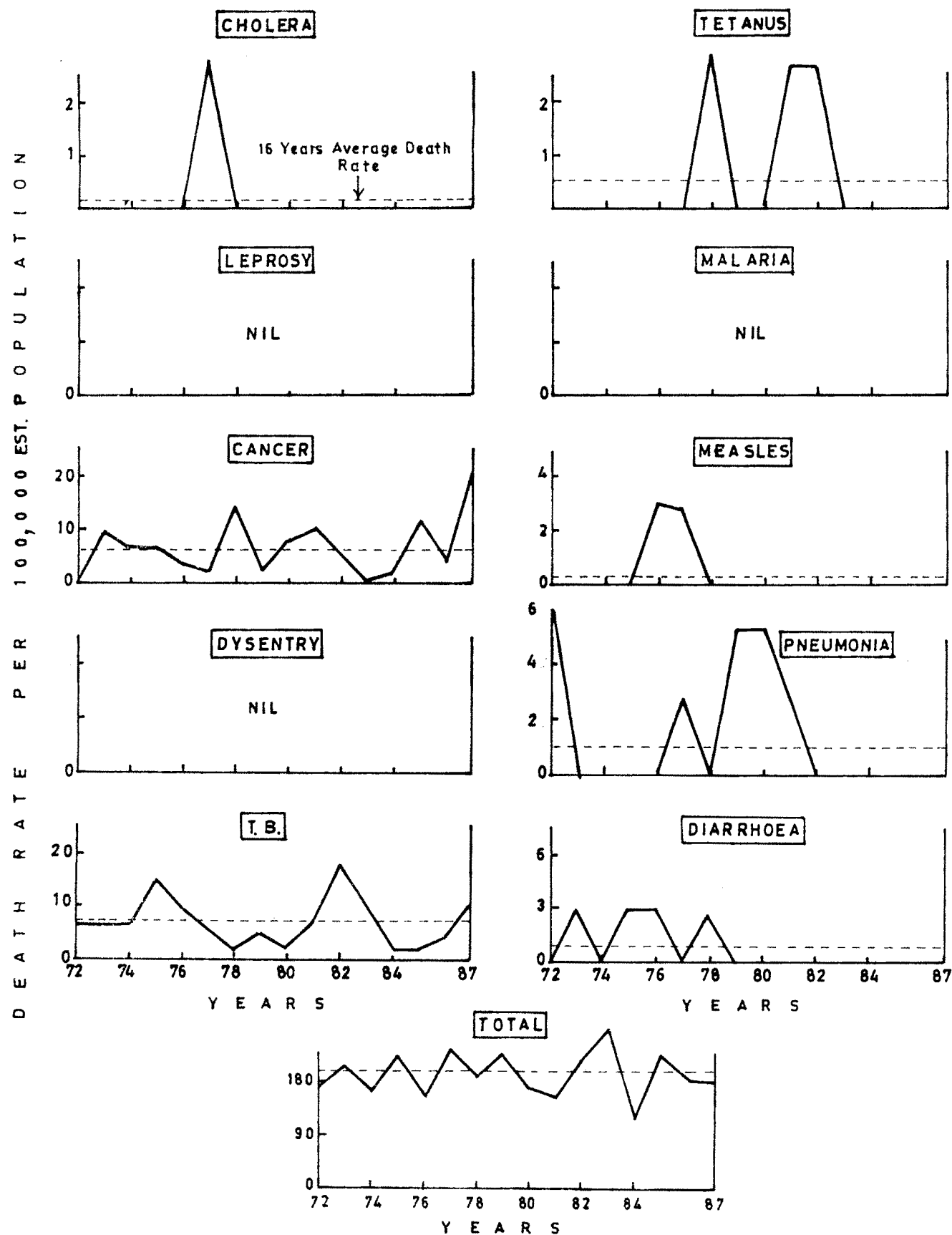


Fig.4.1

shows that the average mortality rate of the district was higher than the region average for the period of 1972 to 1987.

4.4 KOPARGAON :

Kopargaon is situated in 19°54' North latitude and 74°33' East longitude. Kopargaon is the headquarter of the taluka. The town covers an area of 6.4 sq.miles with 38,000 estimated population (1982). It is a railway station on the Daund-Manmad broad gauge route of the Central Railway. It is municipal town where the municipality was established in 1947. It is an industrial centre in the district. The town has a protected water supply. It has a post and telegraph office and government rest house in the city.

Fig.4.2 shows that tuberculosis and cancer are the major diseases of this city. Cancer ranks 1st and T.B. ranks 2nd in death list of Kopargaon city. Tetanus ranks third in order of importance followed by diarrhoea, pneumonia and dysentery. The highest death rate due to cancer was observed in 1982 in Kopargaon city (26.3). Cholera, leprosy, malaria and measles have been completely eradicated. The line graph of total diseases shows that the mortality rate was higher than the average death rate in 1982, 1983 and 1987. Pollution due to industrialization and rapid increase in urbanization might be responsible for high increase in death

KOPARGAON CITY

CAUSE SPECIFIC DEATH RATE 1982-87

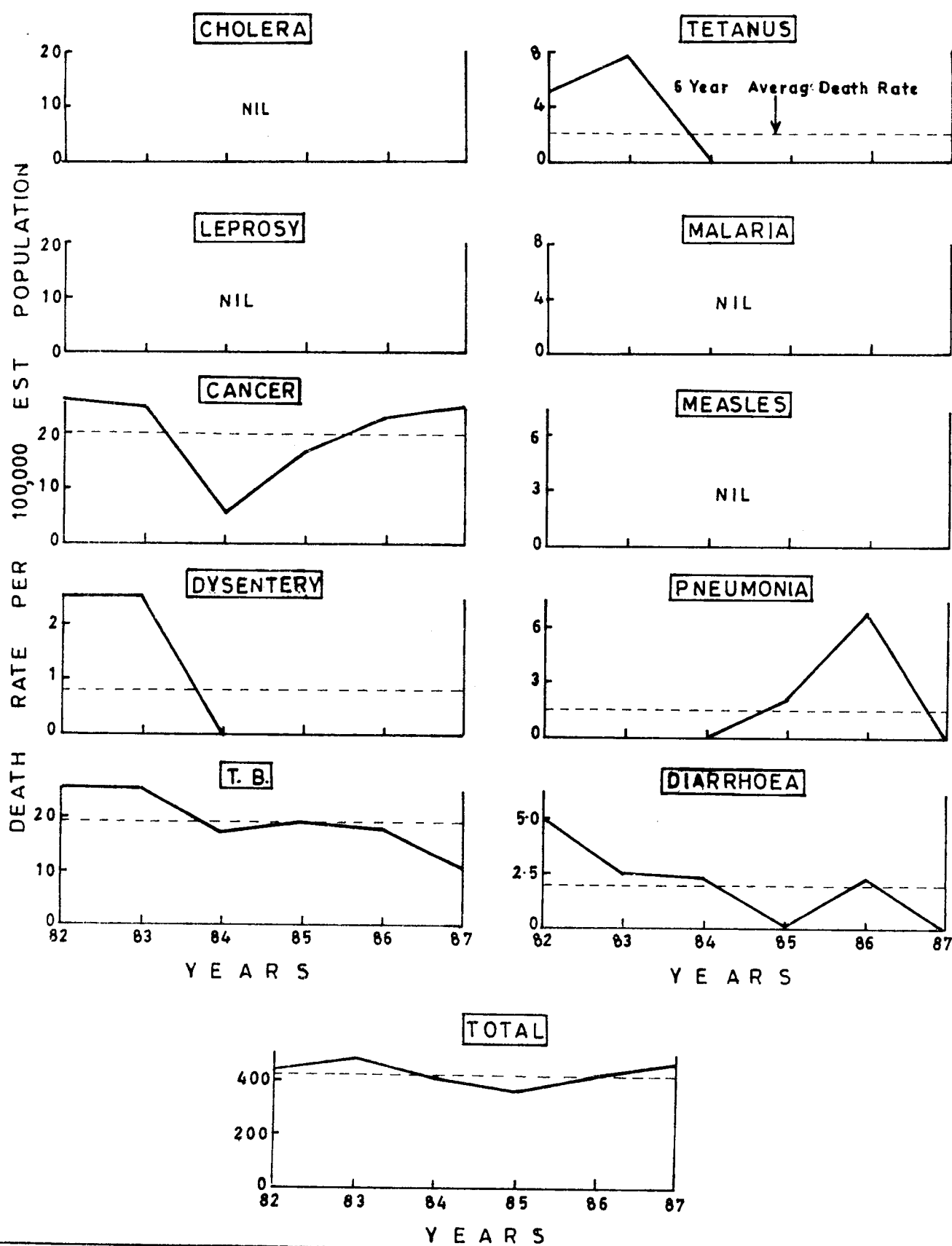


Fig.4.2

by tuberculosis, dysentery and tetanus occur upto 1984 in the Kopargaon city, and death by pneumonia have been occurred first in 1984 in this city. Death rate due to diarrhoea is decreasing very slowly.

4.5 SANGAMNER :

Sangamner city is situated on 19°34' North latitude and 74°10' East longitude at the meeting of the Mahalungi and the Pravara river. Sangamner is a municipal town and headquarter of the taluka. It lies about 50 miles to the northwest of Ahmednagar. The town has a population of 41,000. The town is supplied with tap water from a jackwell construction for the purpose.

Fig.4.3, shows that deaths due to cancer and tuberculosis rank top in the death list of the Sangamner city. Both the diseases deaths are followed by pneumonia, diarrhoea, tetanus, dysentery and leprosy. The graph indicates that deaths due to cholera, malaria and measles are not noted in the 6 years period.

4.6 SHRIRAMPUR :

Shrirampur is the headquarter of taluka in the Ahmednagar district. Shrirampur is a municipal town with a total population of 56,000 as per the census of 1981.

SANGAMNER CITY

CAUSE SPECIFIC DEATH RATE 1982-87

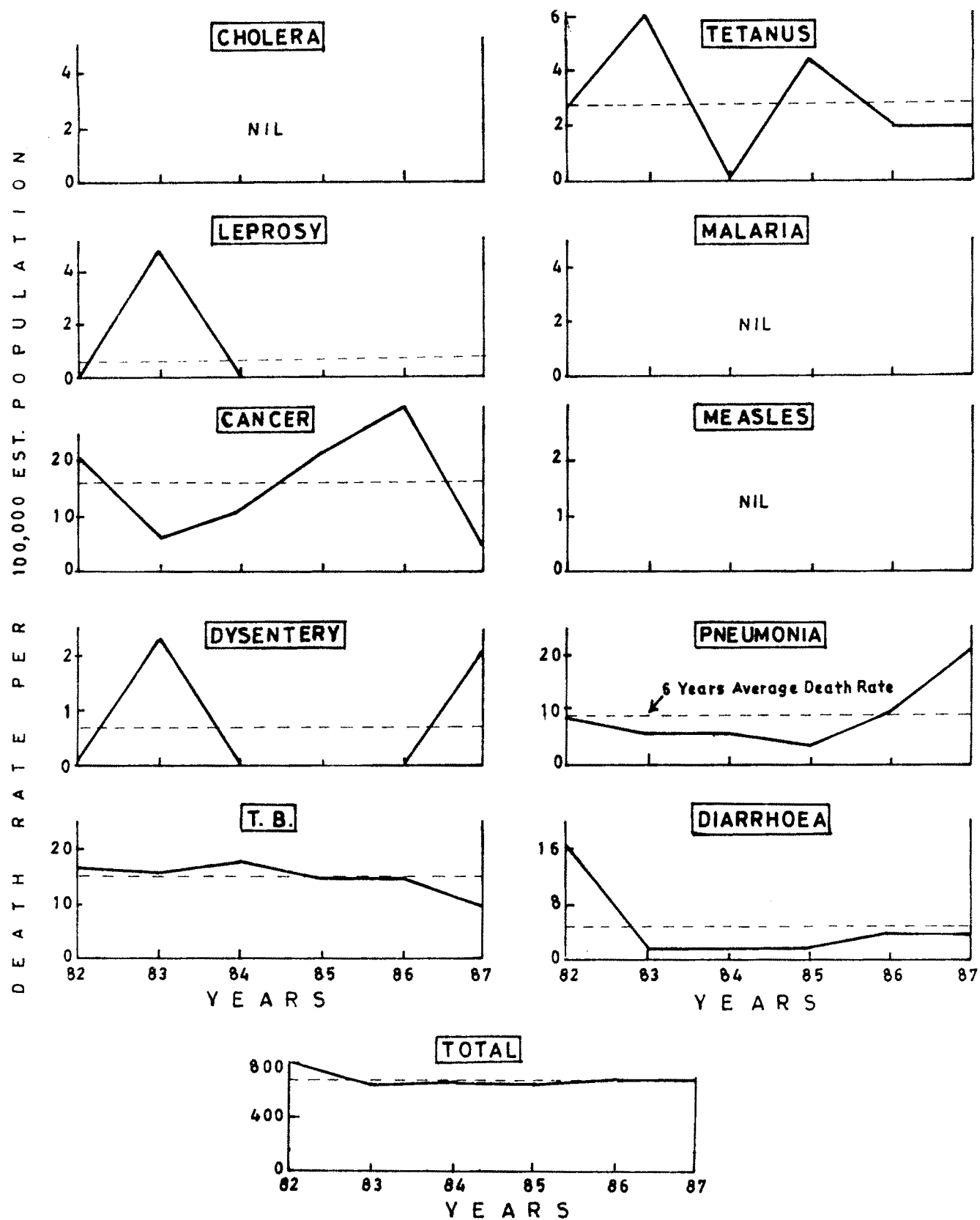


Fig. 4-3

SHRIRAMPUR CITY

CAUSE SPECIFIC DEATH RATE 1972-87

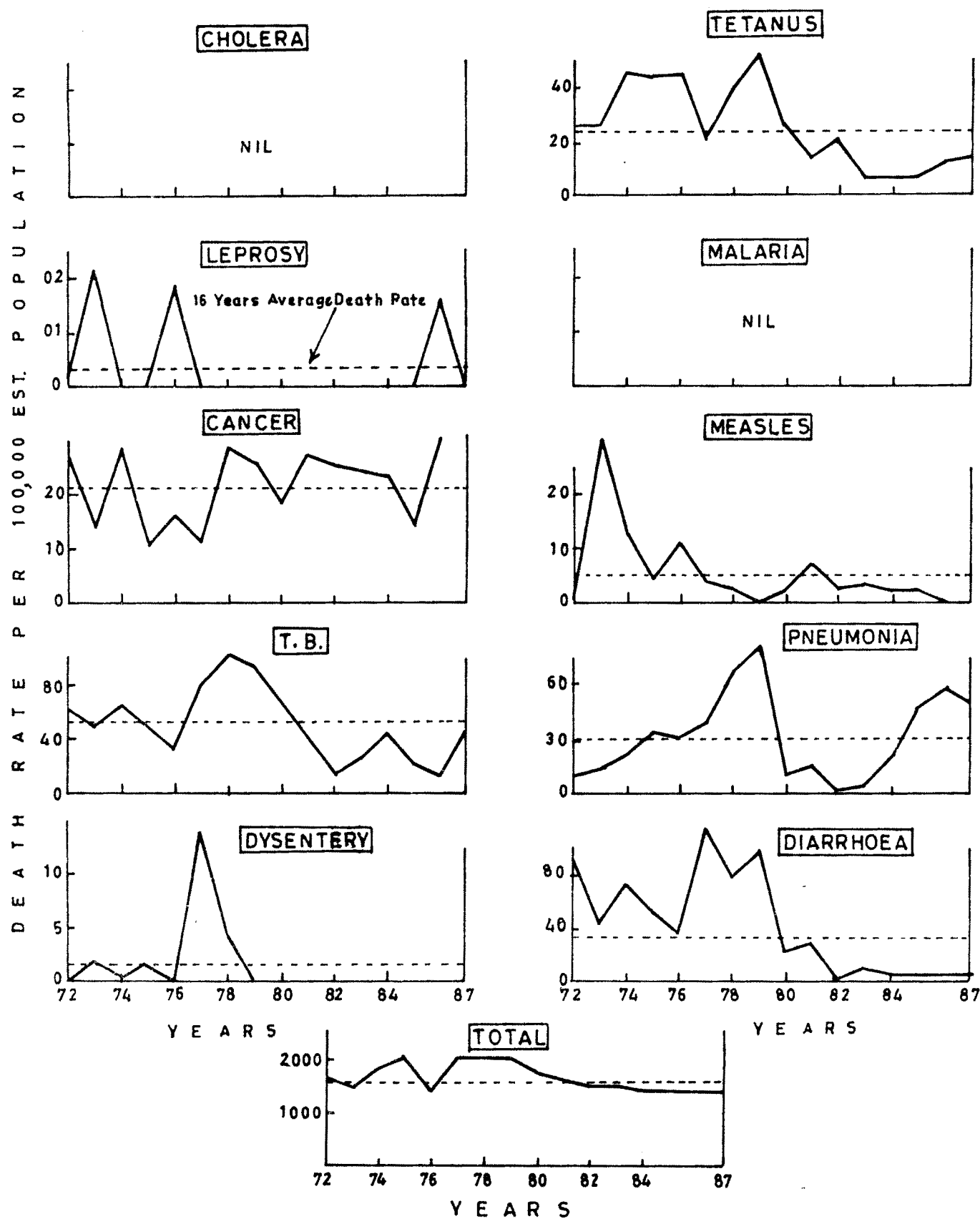


Fig.4.4

Shrirampur city covers an area of 4 sq.miles. The town has a post and telegraph office and a railway station known as Belapur. Wells form the main source of water supply and scarcity of water is often felt.

Fig.4.4 depicts that diarrhoea, pneumonia and tuberculosis are the three major diseases of the city. The highest deaths due to diarrhoea were recorded in 1977 (113.3/100,000 estimated population). Cancer, tetanus and measles are also remarkable in the Shrirampur city. The graph of total death rate of diseases show declining trend. Malaria and cholera have been eradicated completely from this city in 16 years.

4.7 ICHALKARANJI :

Ichalkaranji, (16°40' N and 74°25' E) with population of 1,36,000 (1981) is one of the important towns in Kolhapur district. It covers an area of 8.7 sq.miles. This city lies in the Panchganga valley about 18 miles East of Kolhapur city and half miles North of the river. It is six miles south-east of Hatkanangale railway station. Number of cotton mills are located in the Ichalkaranji city. Wells and water pipes form the main source of water supply and scarcity of drinking water is felt during non-rainy season.

According to Fig. 4.5, the deaths by tuberculosis, diarrhoea and pneumonia are more in number in the Ichalkaranji

ICHALKARANJI CITY CAUSE SPECIFIC DEATH RATE 1972-87

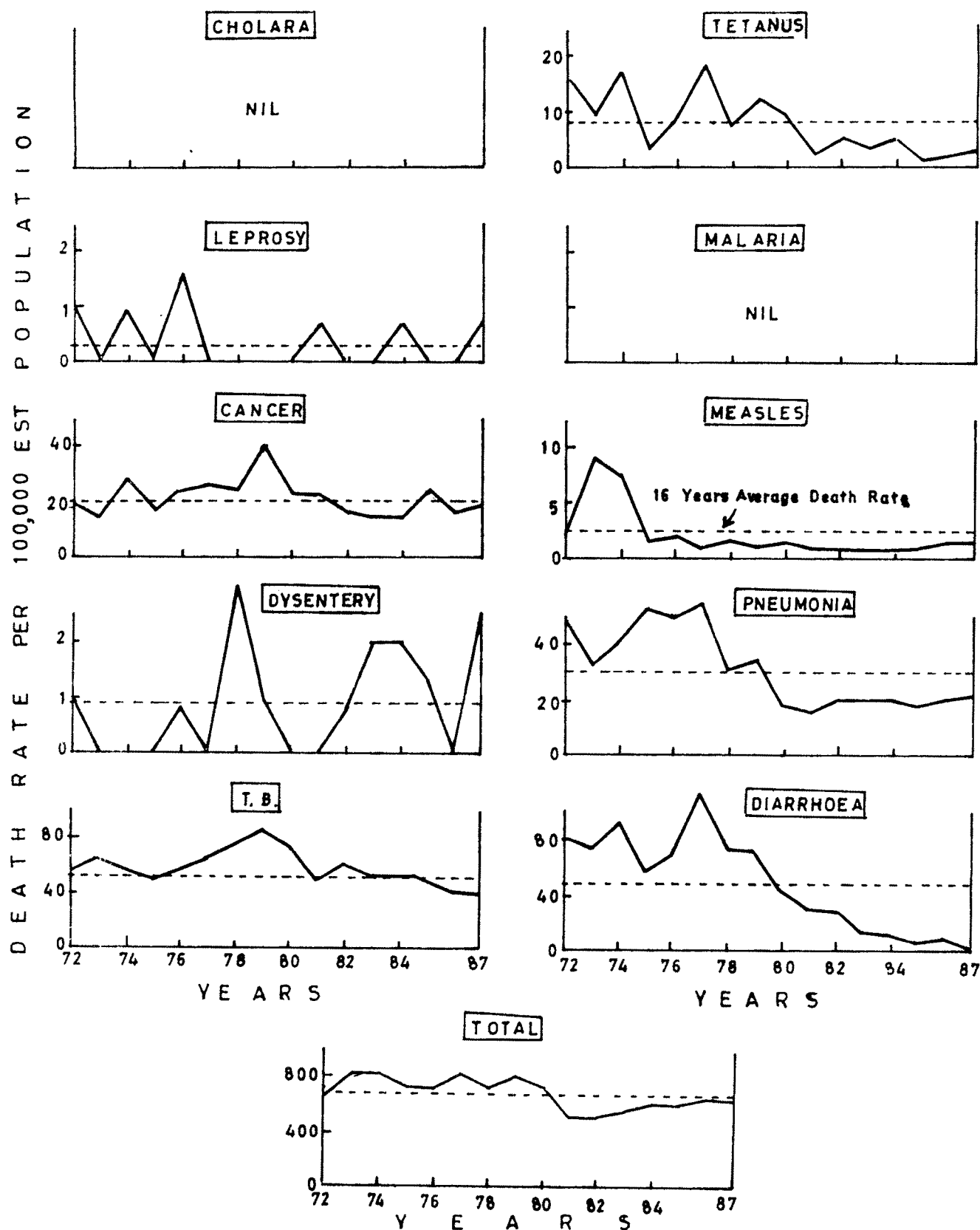


Fig.4.5

city. Cancer and tetanus are also more remarkable diseases in this city. The other diseases like leprosy, dysentery and measles are in the minor form. The line graph of total diseases shows that the mortality rate was higher than the average death rate in the period of 1972 to 1980, then the trend of death rate has slowly decreased. This might be due to improvement in medical facilities. Cholera and malaria have been completely eradicated from the city.

The deaths by tuberculosis and cancer might be due to low standard of labour population working in ginning and cotton mills. Air pollution might be responsible for high death rate of tuberculosis. People use water from wells and river where there is every possibility of contamination.

4.8 KOLHAPUR :

Kolhapur, (16°42' N. and 74°14' E.) with population 3,43,000 (1981) is the headquarter of the district. It stands about 1870' above mean sea level. Kolhapur city stands on rising ground on the south bank of the river Panchganga. Kolhapur city is great commercial, religious and educational centre.

It was the capital of the former Kolhapur state. It's importance as a commercial centre is well known. Kolhapur is a big market for jaggery (Gu¹). Kolhapur is also known as religious centre. Kolhapur is also known as 'Dakshin Kashi'.

KOLHAPUR CITY

CAUSE SPECIFIC DEATH RATE 1972-87

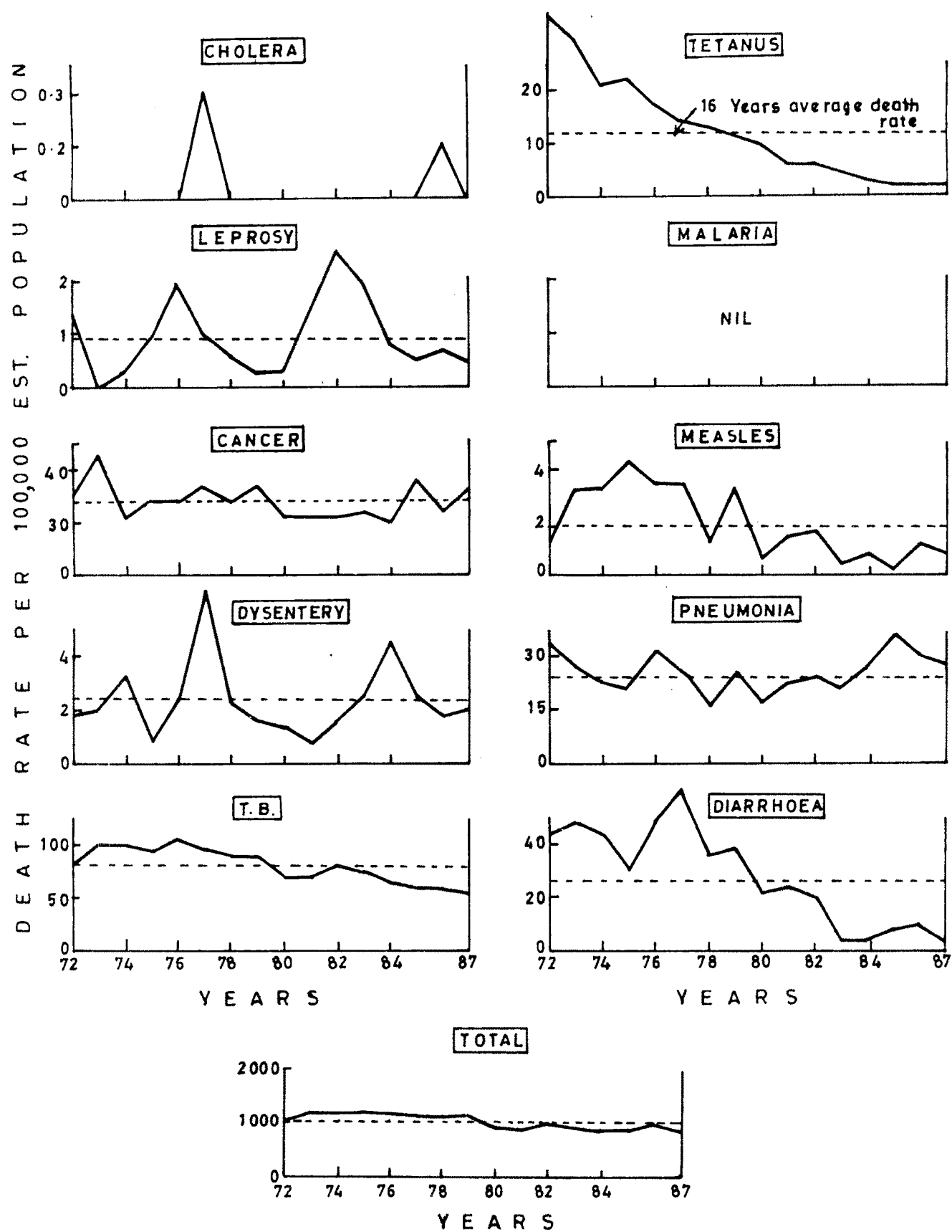


Fig 4.6

The Poona-Bangalore National Highway (N.H.4) passes through the eastern top of the Kolhapur city. Kolhapur city gets its water from two sources, Kalamba tank and the Bhogawati river.

Fig.4.6 shows that the tuberculosis, diarrhoea, pneumonia and cancer are the dominant diseases of Kolhapur city. Deaths due to cancer are increasing every year. The death rate of cancer was 25 in 1972 and it has reached upto 26/100,000 in 1987. It is followed by tetanus, dysentery, measles, leprosy and cholera. The diseases like measles, dysentery and leprosy show their less effect on the city. Cholera has recorded death rate below 0.04. Malaria has disappeared from the Kolhapur city. Pollution due to industrialization and rapid increase in urbanization might be responsible for high increases in death rates due to tuberculosis. The graph of death due to all diseases shows declining trend but the rate of its decrease is very slow.

4.9 BARAMATI :

Baramati is one of the newly developed urban centre (18°9' N. and 74°34' E.) in Pune district. It is also the headquarter of the Baramati taluka located on 1791 feet above mean sea level. It covers an area of 316 acres. It has a population of 37,000 (1981). It is connected by a narrow

BARAMATI CITY

CAUSE SPECIFIC DEATH RATE 1982-87

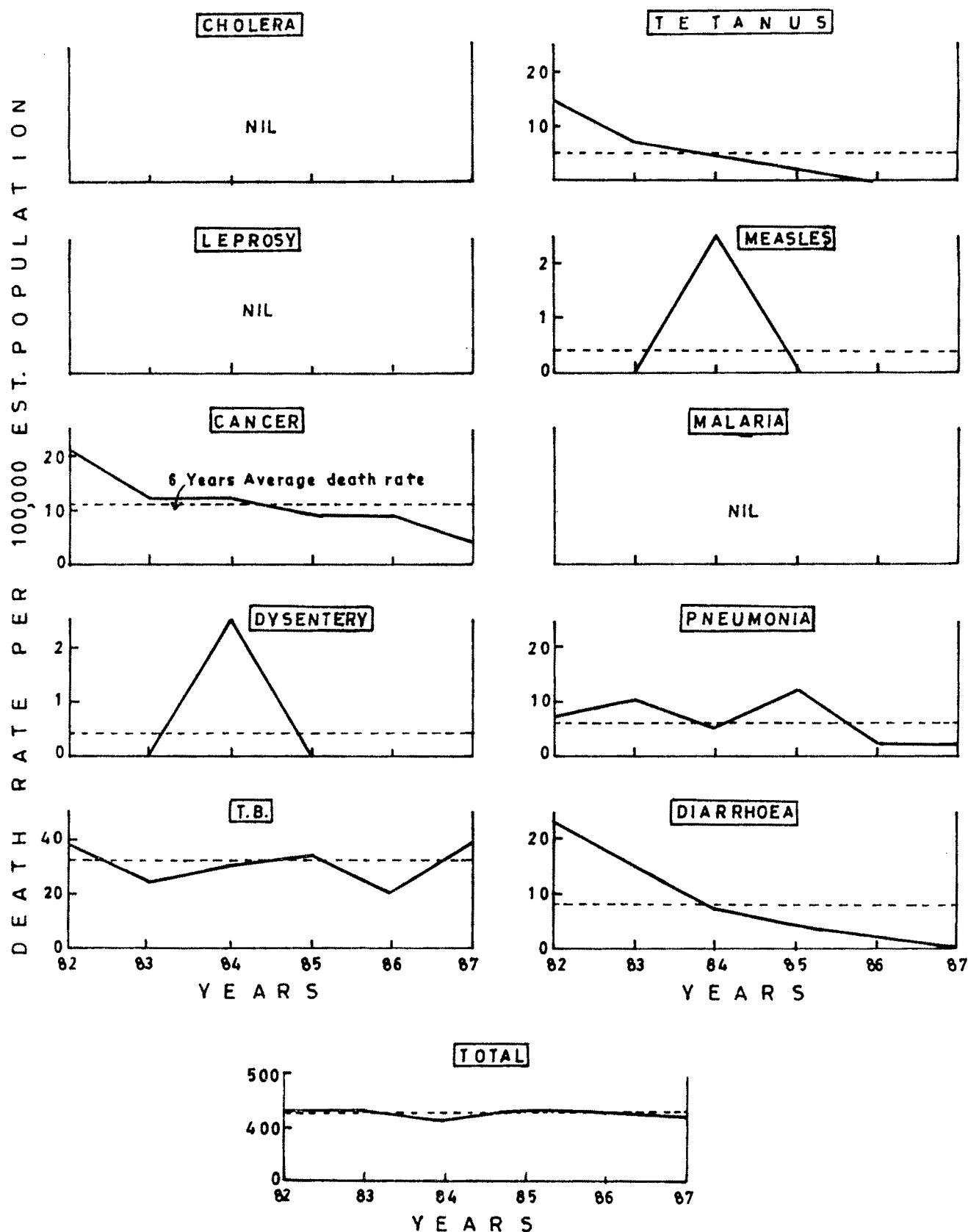


Fig.4.7

gauge railway, 28 miles long, with Daund on the main Central Railway line. The major portion of the town is provided with proper drainage which is flushed with water pumped from a well. Water supply is not through pipes line; most of it is from wells and irrigation canal that flows along the outskirts of the town.

Fig.4.7 shows that the tuberculosis is a major disease of the town whose average death rate is 31.6/100,000 estimated population. The deaths due to cancer, diarrhoea and pneumonia ranks second, third and fourth in the list as the average death rate is 11.6, 8.9 and 6.6 respectively. The diseases like dysentery (D.R.2.5) and measles (D.R.2.5) show their less effect on Baramati population. The highest death rate of tuberculosis was observed (39.5) during 1987. The number of deaths are increasing every year by T.B. since 1983. Air pollution and growth of industries might be responsible for high death rate of T.B. Deaths due to cancer show declining trend remarkably during the span of 6 years (21.0 in 1982 to 4.6 in 1987). Cholera, leprosy and malaria have been completely eradicated from the Baramati city.

4.10 PUNE :

Pune town, the headquarter of the district bearing the same name stands in latitude 18°30' N. and longitude

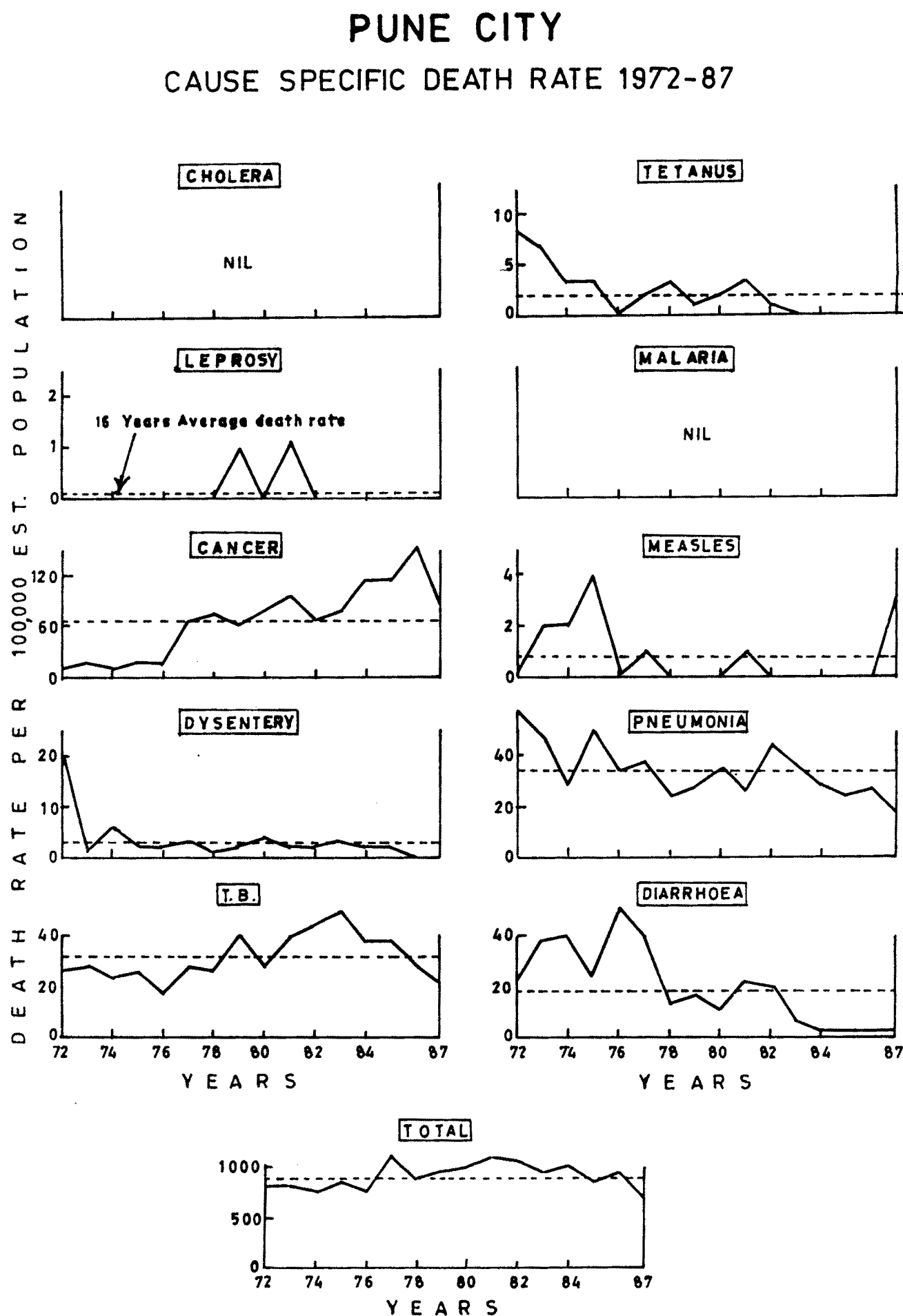


Fig.4-8

73°53' E. at an elevation of 1850' above M.S.L. Pune city is situated in a slight hollow on the right bank of the Mutha river, bounded on the West by the Mutha, on the North by the joint Mula and Mutha.

Pune is known as the 'The Queen of the Deccan' on account of its old historical association. Pune is one of the largest industrial cities of the Pune division. Water is obtained from Khadakvasala dam. It is a railway junction. It is called as an industrial city of Maharashtra state. It is one of the leading industrial and commercial towns of the Maharashtra.

Fig.4.8 reveals that cancer, pneumonia and T.B. are the leading diseases as the death rates are higher than other diseases. Highest death rate by cancer was recorded in 1986 (161.1/100,000 est. population). The highest death rate recorded by pneumonia was in 1972 (56.2). Deaths due to diarrhoea dysentery and tetanus are also remarkable. Tetanus and diarrhoea are decreasing every year. The number of deaths are increasing every year by cancer since 1976. Malaria and cholera are completely eradicated from the Pune city.

The mortality trends of Pune city shows that the death rate due to all diseases remain constant for the span of 16 years. Another important feature is that the diseases of cancer, tuberculosis and pneumonia are more in

number and they are of increasing tendency. It might be because of heavy industrialization, urbanization and air and water pollution due to heavy industrialisation and urbanisation.

4.11 ISLAMPUR :

Islampur, is one of the newly developed urban centre (17°2' N. and 70°20' E.) of Sangli district. Islampur city is the headquarter of the Walwa taluka. The population of Islampur city is 33,000 per 1981 census. Islampur is daily growing its importance as a commercial centre. There are roads connecting to it with Karad, Sangli, Kolhapur and many of the important market centres. Pune-Bangalore Highway (N.H.4) passes about 3 kms away from the city. Takari is the nearest railway station.

Fig.4.9 shows that the cancer is major disease of the city whose average death rate is 18/100,000 estimated population, and shows the slowly decreasing tendency. The deaths by tuberculosis which rank 2nd in the list shows that the average death rate was 10/100,000 est. population. The deaths by diarrhoea ranks third in the city, shows the average death rate of 3.7/100,000 est. population. Highest death rate by cancer was recorded in 1985 (27.7/100,000) est. population. The deaths by cholera, leprosy, dysentery, tetanus, malaria, measles and pneumonia have not been noticed within 6 years.

ISLAMPUR CITY

CAUSE SPECIFIC DEATH RATE 1982-87

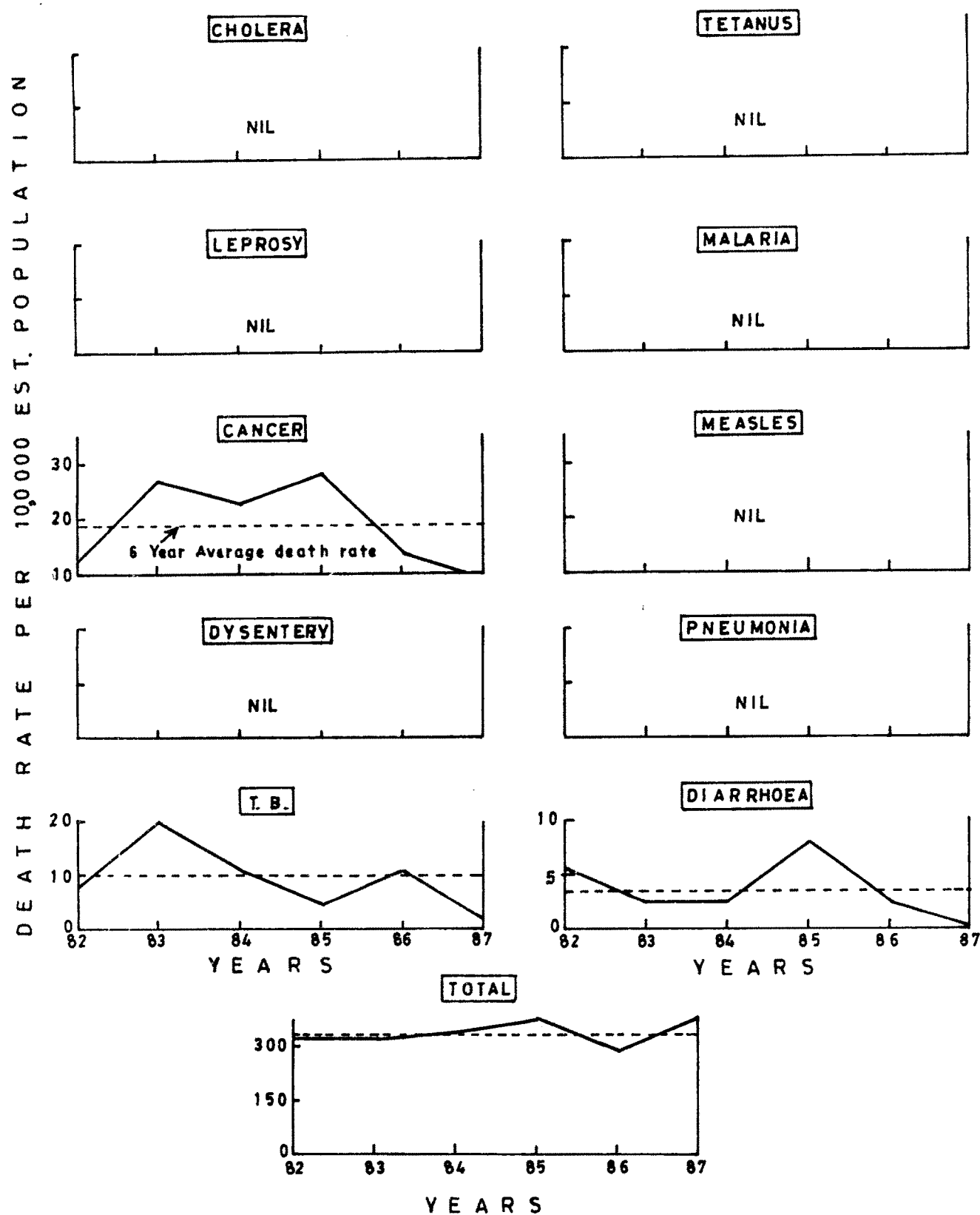


Fig.4-9

4.12 MIRAJ :

Miraj, (16°45' N. and 74°35' E.) population 1,07,000 (1981) headquarter of taluka, which is situated 9.65 kms North of Sangli. It is one of the oldest cities in Sangli district. Miraj's ground-fort figures as one of the most important of the historical relics. It is lying out of the Krishna valley.

Miraj is a large trading town dealing chiefly in grains. There is a sub-market yard. Industrial area has also been developed in Miraj. Miraj town is centrally situated in respect of the means of transport and communication. It is an important junction on the Pune-Bangalore route of the south-central railway. From Miraj trains run to Pandharpur as also a shuttle service to Sangli. Now Miraj city is famous for medical services.

The graph No.4.10 shows the yearwise distribution of major diseases for a span of 16 years. Pneumonia, T.B. and cancer have higher mortality rates i.e. 108.0, 67.6 and 45.5/100,000 est. population respectively. It is followed by diarrhoea, tetanus, dysentery, leprosy and measles. Deaths due to cancer are increasing every year. The death rate of cancer was 17 in 1972 and it has reached upto 74/100,000 est. population in 1987. Trends of mortality rates of tetanus, dysentery and diarrhoea shows the decline. It is very surprising to note that death rate due to pneumonia

MIRAJ CITY

CAUSE SPECIFIC DEATH RATE 1972-87

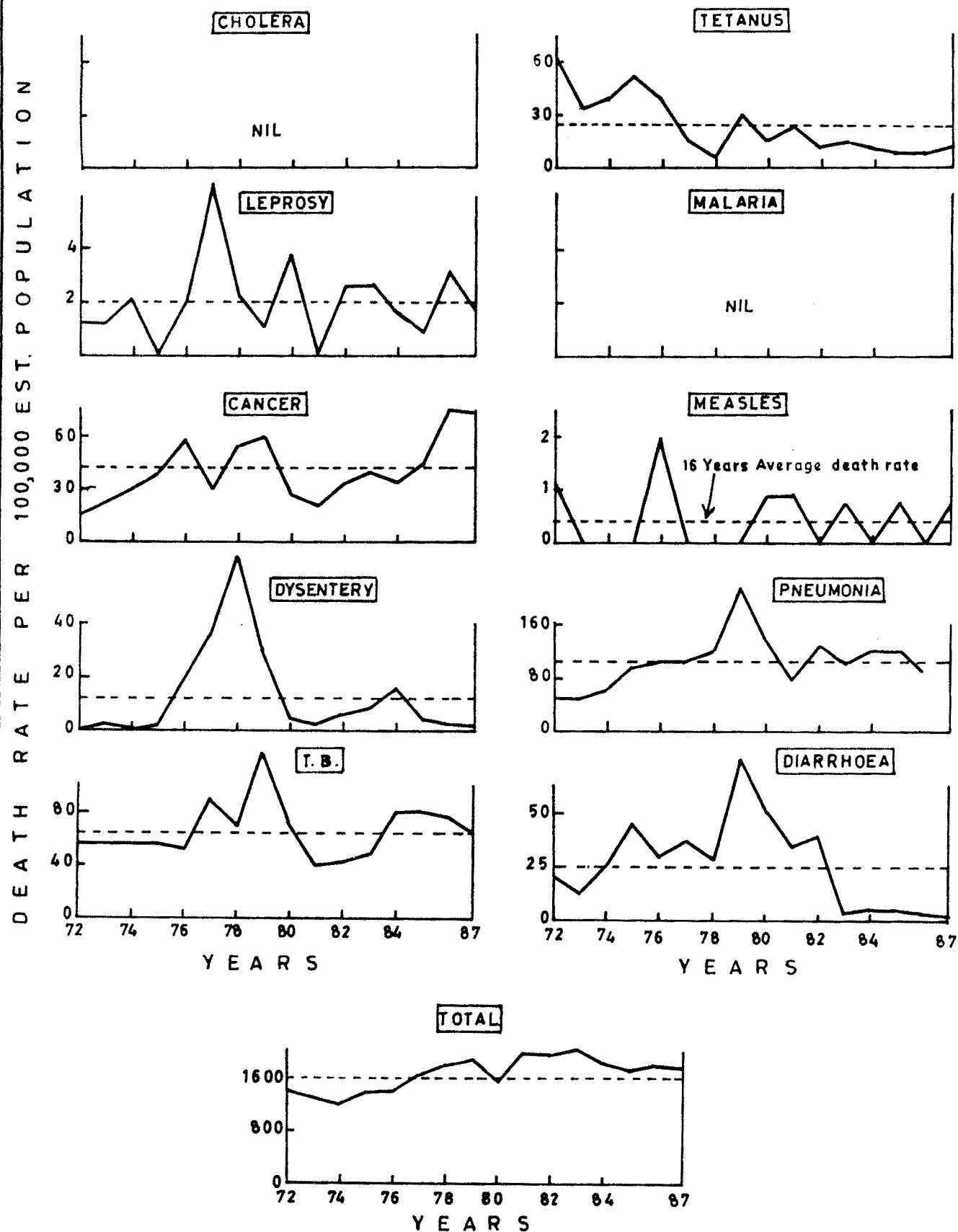


Fig.4-10

in 1979 was very high (218.6/100,000 est. population). This might be due to air pollution caused by heavy industrialisation and urbanisation. The diseases like leprosy and measles show their less effect on the city. Cholera and Malaria have been completely eradicated from the Miraj city. Overall general death rate shows increasing trend from 1980.

4.13 SANGLI :

Sangli is the headquarter of the district. It lies on the left bank of the Krishna river. It is situated at a distance of 48.28 kms East of Kolhapur. It is a railway junction on the Poona-Bangalor route of the S.C.R.

The town which occupies 28.4 sq.kms area consists of the old and the new town. Sangli is a very big trading centre and is considered to be the second largest market in agriculture produce in Maharashtra. It is also famous as a turmeric market. Sangli town has the most modern systems of water supply employing scientific methods of purification. Industrial area is well developed along the Sangli city.

Graph 4.11 shows that the death rates of almost all diseases are of decreasing nature every year. The mortality

SANGLI CITY

CAUSE SPECIFIC DEATH RATE 1972-87

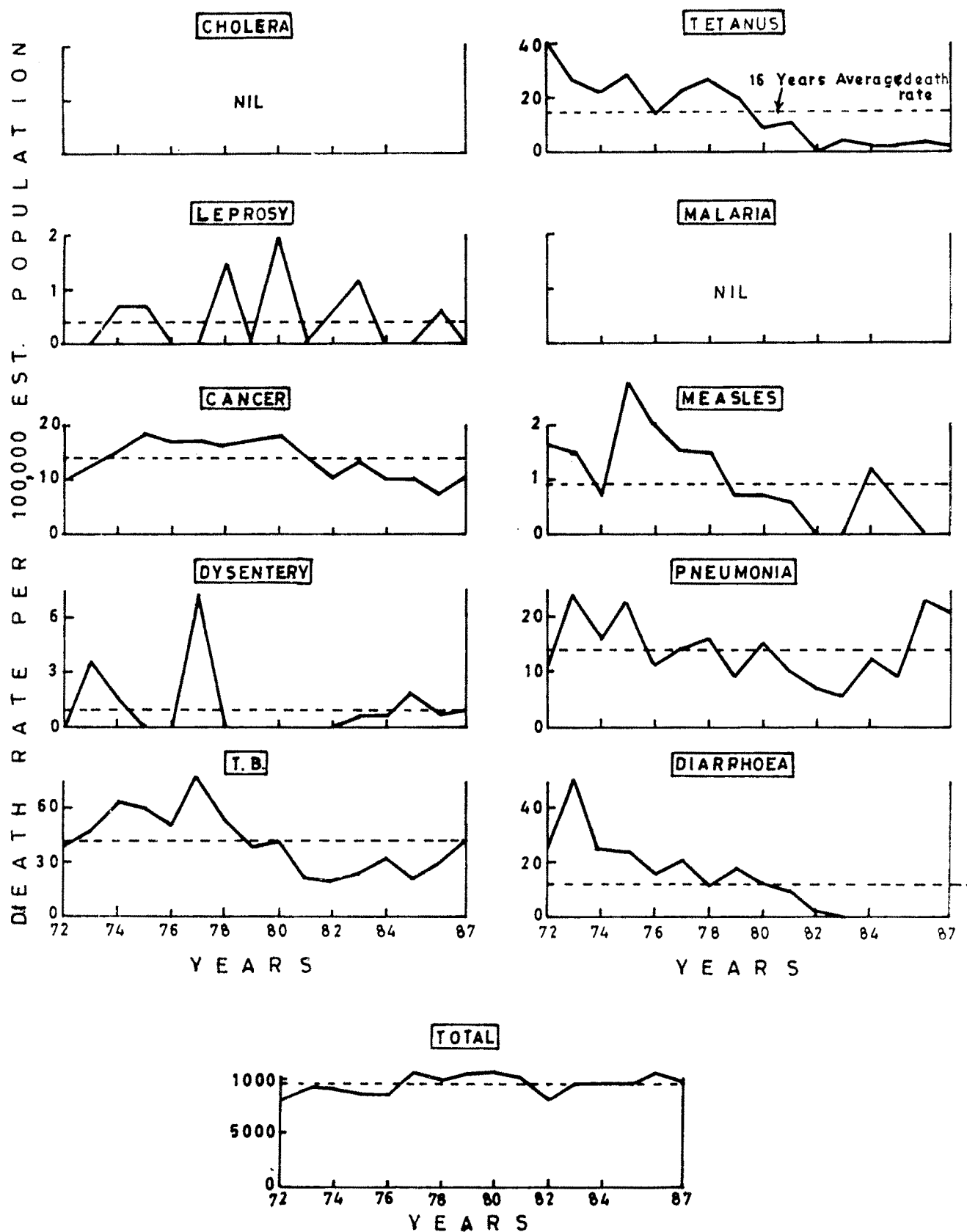


Fig.4.11

rate of tuberculosis is very high amongst all other diseases in the Sangli city (43.2/100,000 est. population). It ranks first in the list of diseases. The highest death rate recorded by tuberculosis was in 1977 (79.2). It is followed by tetanus, pneumonia, cancer and diarrhoea whose average death rates were (15.1), (14.6), (14.0) and (13.8) respectively. The diseases like leprosy, dysentery and measles show their less effect on Sangli district. The special study should be made for finding out the reasons for high incidences of T.B. mortality in the Sangli city. The diseases like cholera and malaria have been not proliferated in this city during the span of 16 years.

4.14 KARAD :

Karad (17°15' N. and 74°10' E.) is the headquarter of Karad taluka. It is situated at the confluence of Krishna and the Koyana rivers. It is located 49 kms South of Satara. Karad is very old town of the Satara district. The town covers an area of about one sq.kms.

Karad has a large export trade of groundnuts, gur and turmeric. Karad town depends for its water supply on Government Water Works with filtration arrangements. Water is taken up from the Koyana river. Some factories and industries are well developed in the Karad city. Railway station is about 3 to 4 kms away from the city. It is

KARAD CITY

CAUSE SPECIFIC DEATH RATE 1972-87

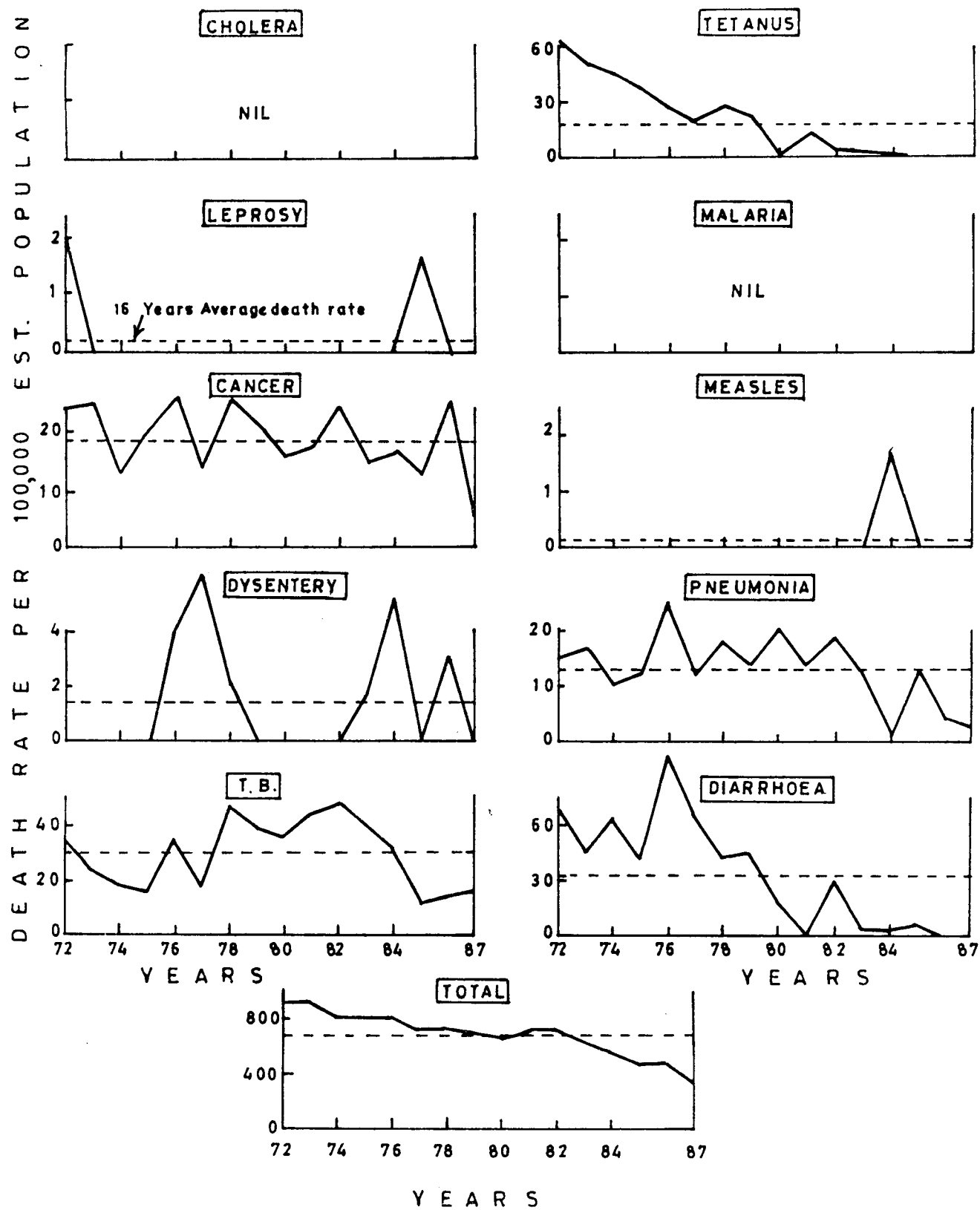


Fig. 4-12

connected on line of Kolhapur-Bombay railway. The population of Karad was 55,000 in 1981.

Fig.4.12 shows that diarrhoea, T.B., tetanus and cancer are the major diseases of the Karad city. The average death rate of pneumonia ranks first (35.4/100,000 estimated population) in the list of diseases. It is the second town observed in Pune division where the mortality rate of diarrhoea is also very high amongst all other diseases (35.4/100,000 est. population). Highest death rate by diarrhoea was recorded as 114/100,000 est. population, and is followed by tuberculosis, tetanus and cancer. Trend of mortality rates of tetanus, pneumonia and diarrhoea show the decreasing order. Diarrhoea and tetanus are major diseases because of contaminated drinking water and also by high degree of industrialisation in the Karad city. Leprosy and measles are minor diseases whose death rates are below 0.2. Cholera and Malaria seem to be completely eradicated from Karad city. The overall death rate has decreased gradually during the span of 16 years.

4.15 PHALTAN :

Phaltan is one of the major towns in Satara district. Phaltan, (17°55' N. and 74°25' E.) is the headquarter of Phaltan taluka. The population of Phaltan city was 34,000 in 1981. Lonand is the nearest railway station for this city. The Phaltan city covers an area of $4 \frac{1}{2}$ sq. miles.

PHALTAN CITY CAUSE SPECIFIC DEATH RATE 1982-87

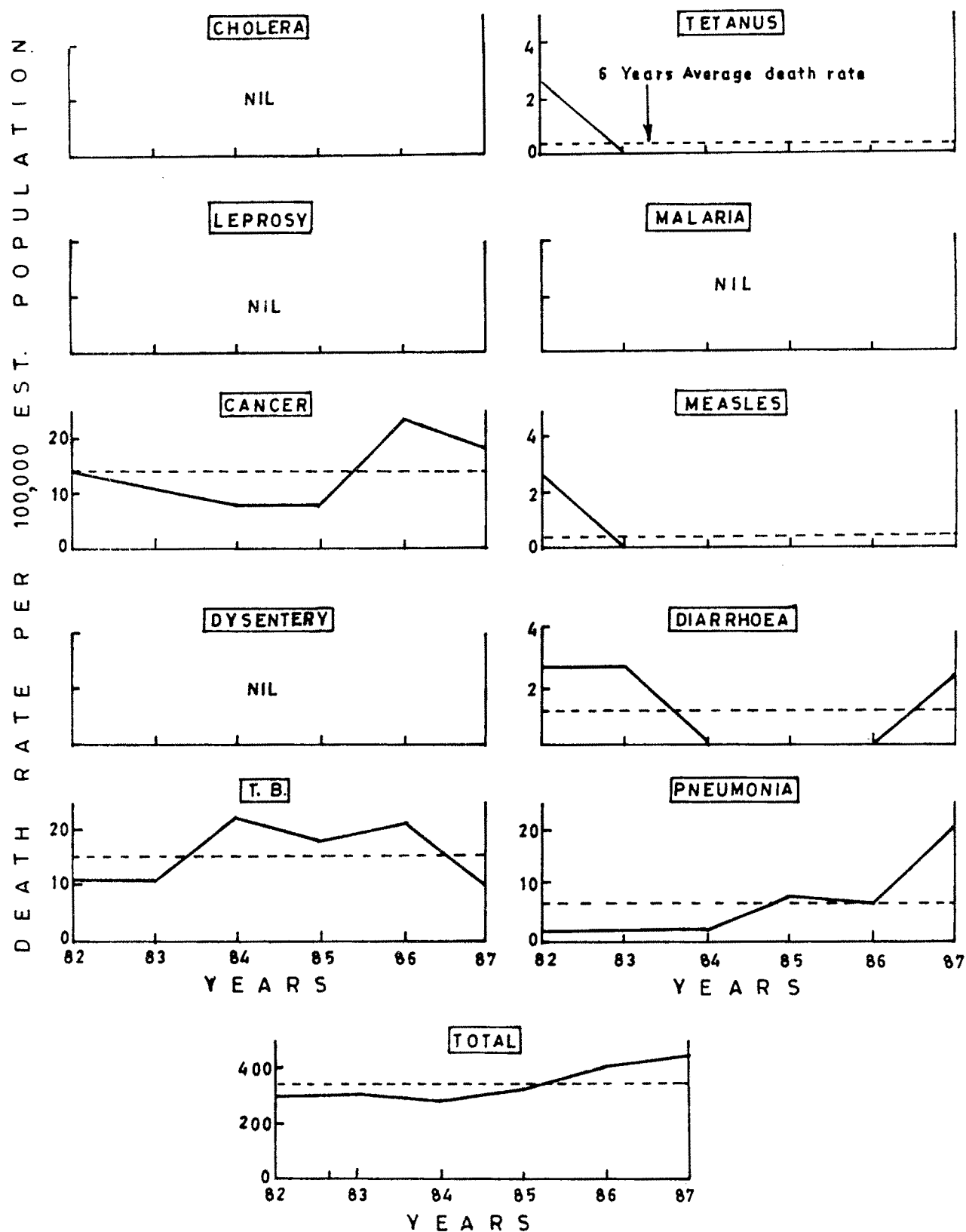


Fig.4-13

Drinking water is brought through the Nira Right Bank canal and supplied to the town through pipelines. Phaltan city is one of the developing urban centres of Satara district. The population of this city is also increasing every year.

Graph No.4.13 shows the yearwise distribution of ten diseases for a span of 6 years. From the graph, it reveals that pneumonia, cancer and tuberculosis are the three major diseases of the city. The highest deaths were due to T.B., which were recorded in 1984 (22.2/100,000 est. population). The number of deaths are increasing every year by pneumonia. Trend of cancer mortality rate is also increasing from 1985. The other diseases namely tetanus, measles and diarrhoea are very minor in intensity. The graph of death rate of all diseases shows increasing trend from 1984. Malaria, leprosy, dysentery and cholera show no deaths since 1982.

4.16 SATARA :

Satara town, the headquarter of the district bearing the same name stands in latitude 17°40' North and longitude 73°50' East, at an elevation of 2320 feet above mean sea level. The population of Satara city was 81,000 in 1981. Satara is about 96 kms from the coast, 112 kms South of Pune city. Satara town is bounded on the North by the Pune-Satara

SATARA CITY CAUSE SPECIFIC DEATH RATE 1972-87

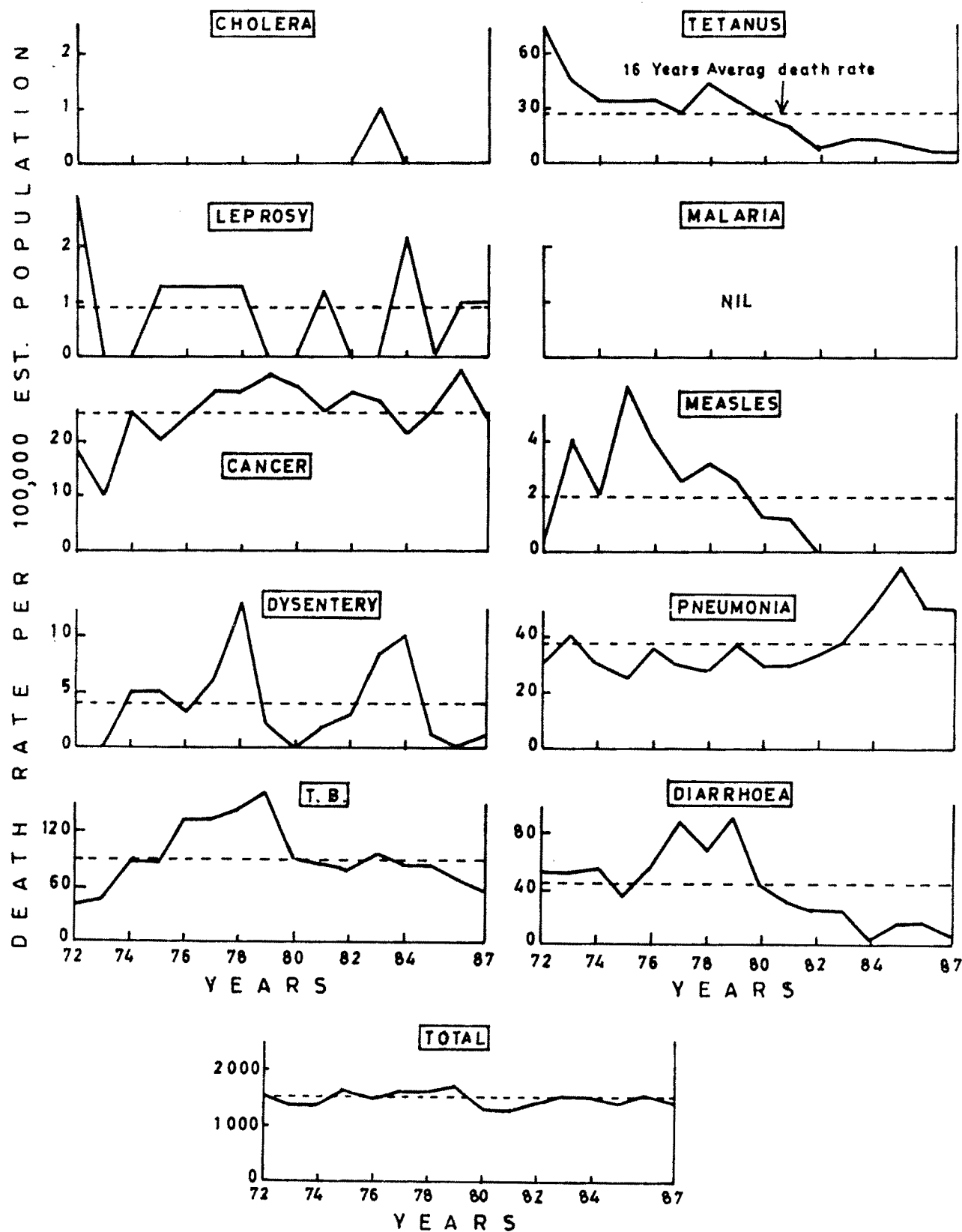


Fig. 4.14

road and on the East by an offshoot of the fort hill. Town is situated at the base of the fort.

Satara city was famous as the historical place. The climate of Satara is one of the best in Western India. It's situation on a hill slope gives Satara excellent natural facilities for drainage. The slope is generally from SW to NE. For the water supply of the city, the Kas tank was constructed by the municipality in 1886. Now the drinking water is supplied to the city through the pipelines. The area of Satara city is expanding every year.

According to Fig.4.14, the deaths by tuberculosis, diarrhoea and pneumonia were more in number in the city. It can be observed that Satara is the only city which ranks highest in some diseases throughout the Pune division. The average death rate of T.B. is highest amongst all other diseases (92.7/100,000 est. population), followed by diarrhoea (42.7), pneumonia (38.4) and cancer (25.7). Cancer and pneumonia show increasing tendency in deaths, and while tetanus, measles, diarrhoea and T.B. are of decreasing tendency. Cholera has occurred once in the 16 years i.e. in 1983 (1.1/100,000 est. population). Leprosy, measles and dysentery are of less magnitude as their death rate were always below 5.0. Highest death rate of T.B. was observed in 1979 (161.5/100,000). Malaria is the only

disease which has been eradicated from Satara city. The overall death rate shows decreasing tendency since 1979.

4.17 BARSI :

Barsi, situated in 18°31' N. latidue and 75°41' E. longitude to the north-west of Solapur district. Barsi is a municipal town and a headquarter of the taluka. It is railway station on the Latur-Kurduwadi narrow gauze section of the South Central Railway. It has population of 73,000 as per 1981 census. The town is a commercial centre of grains and jowar. The wells and tank form the main sources of water supply. A weekly market which is also a cattle market is held at Barshi on every Saturday.

The Graph No.4.15 shows the mortality pattern of some diseases for Barsi city. Tuberculosis and Cancer are the two major diseases whose average death rates are very high. Tuberculosis ranks first and cancer ranks second with average annual death rate of 50 and 25/100,000 est. population respectively. Diarrhoea, tetanus and pneumonia are also notable diseases of the city. The death rate of leprosy, dysentery and measles was very low i.e. less than 8/100,000 est. population. Diseases like malaria and cholera did not show a single death. In general, the trend of mortality of all diseases shows the declining tendency.

BARSHI CITY

CAUSE SPECIFIC DEATH RATE 1972-87

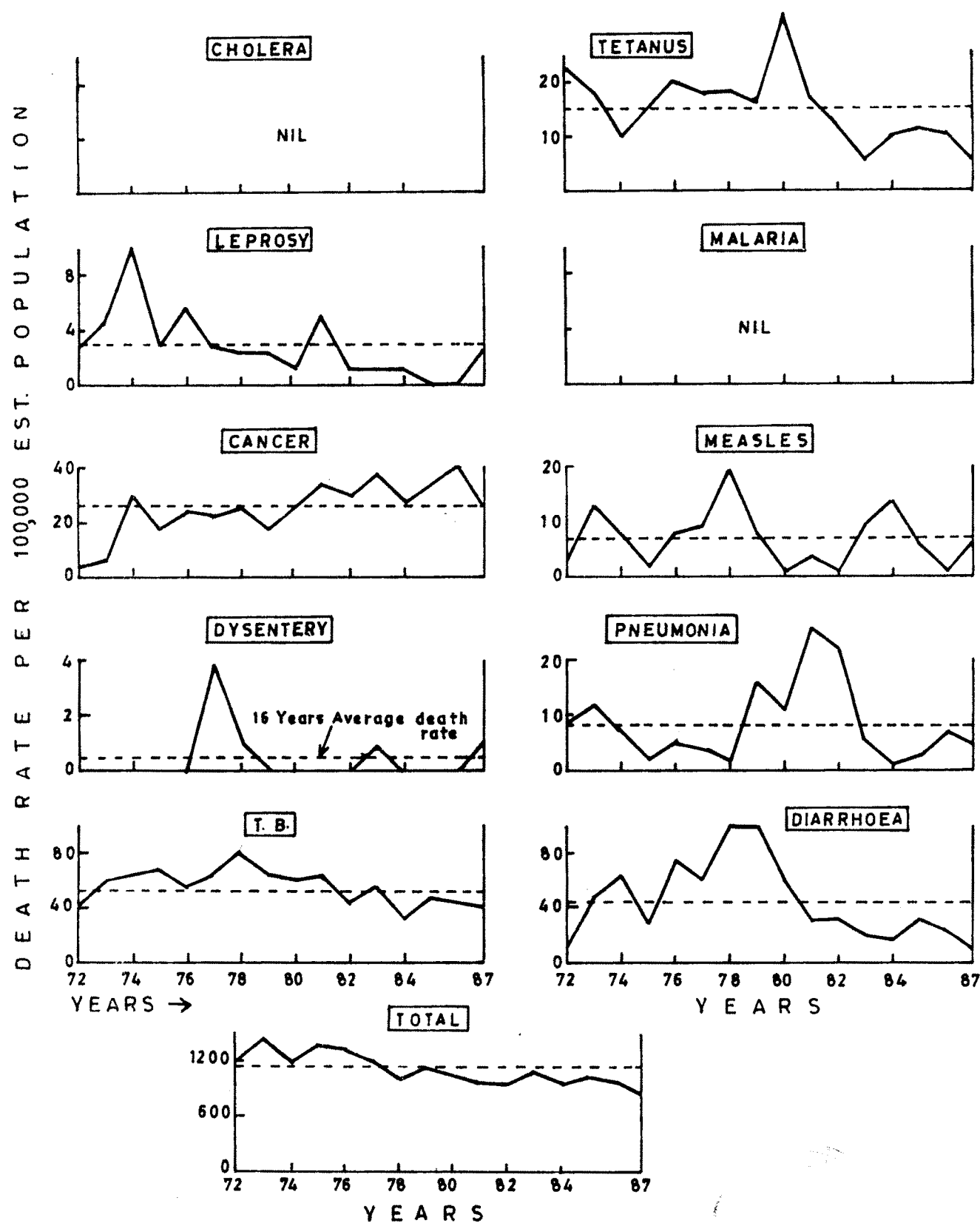


Fig.4.15

4.18 PANDHARPUR :

The city of "Pandhari Vithoba" is located on 17°40' N. lat. and 75°23' E. long. Nearly 40 miles to the West of Solapur. It is one of the most famous places of pilgrimage not only in the State of Maharashtra but also in India. It ranks first amongst the fair centres of the state with an aggregate congregation of 4 to 5 lakhs of people. It is headquarter of taluka. The town with an area of 4.7 sq. miles lies along the right bank of the Bhima on trap overlaid with poor black soil. The Bhima river is also known here as "Chandrabhaga" due to the particular shape of the river bed. It has 65,000 population as per 1981 census.

Pandharpur is a railway station on the Latur-Kurduwadi-Miraj narrow gauge line of the South Central Railway. Vithoba temple, the chief temple in Pandharpur is entered through six gates. It is famous throughout India.

Fig.4.16 depicts that dysentery, tuberculosis and pneumonia are the major diseases found in the Pandharpur city. It can be observed that Pandharpur is the only city which ranks highest in dysentery deaths throughout pune division. Pandharpur had a mild attack of cholera in 1977. Cancer and diarrhoea are also remarkable diseases in the Pandharpur city but their trend of mortality has been

PANDHRPUR CITY

CAUSE SPECIFIC DEATH RATE 1972-87

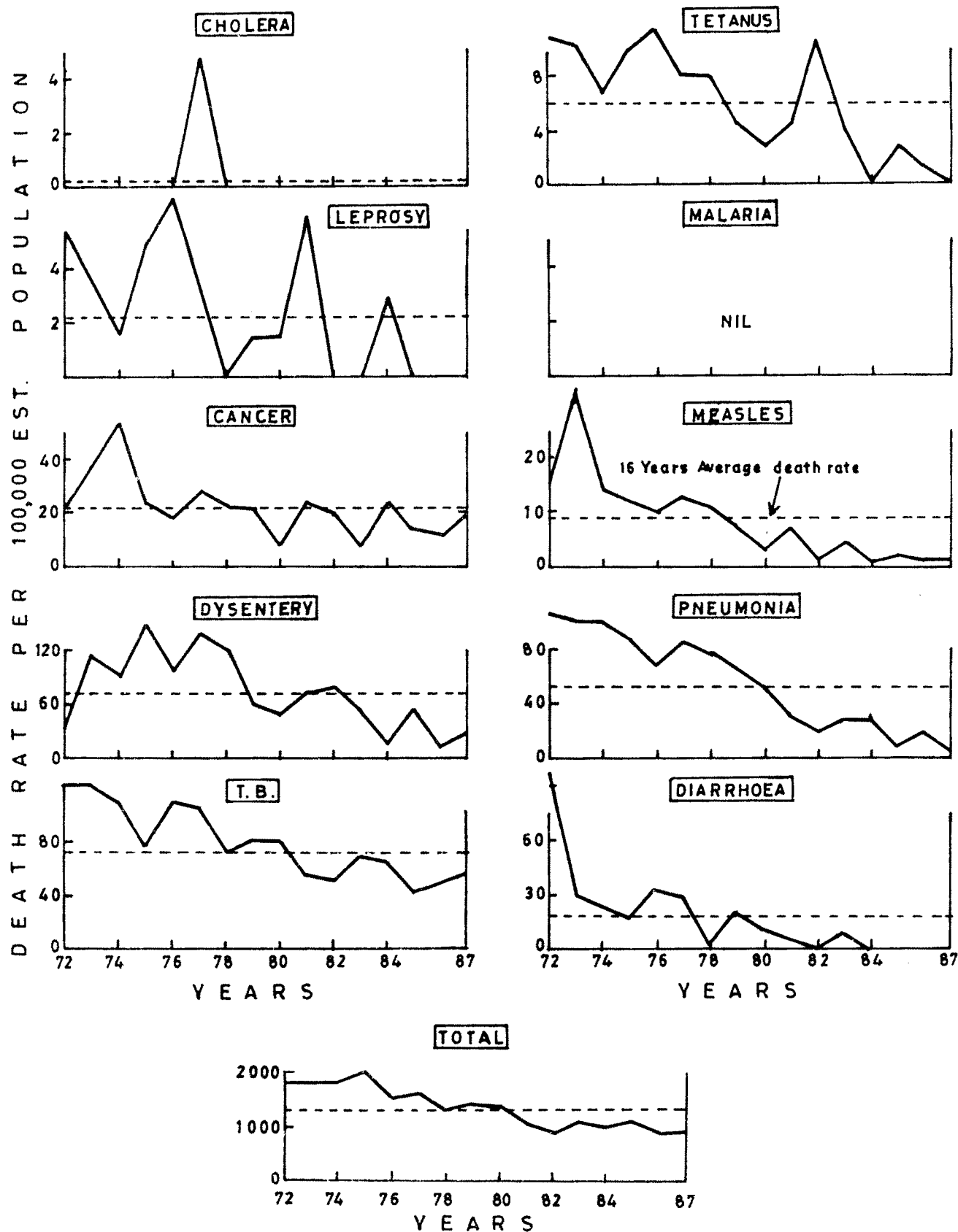


Fig.4-16

declined in the recent years. The ranking list shows that the diseases particularly cholera, leprosy, tetanus and measles have less mortality rates (less than 10/100,000 est. population).

People of Pandharpur use contaminated water for drinking purposes from Bhima river. This might be the main cause of high mortality due to dysentery and pneumonia. Malaria has been eradicated completely from the Pandharpur city. The overall death rate has gradually decreased during the span of 16 years period.

4.19 SOLAPUR :

Solapur city is situated on 17°40' N. and 75°46' E. The city is spreaded over an area of 8.6 sq.miles, having population of 5,15,000 (1981). Solapur city is the head-quarter of the district. It is the railway station on the broad gauge line of the south Central Railway.

The city lies about 1800 feet above mean sea level. The city stands in the centre of a large plain, the nearest hill called Daival Malik. Shidheshwar Mandir is famous in the district. The Solapur city is famous for Solapury Chaddar in Maharashtra.

The Graph No.4.17 shows that the death rates of some diseases are decreasing every year. Tuberculosis, pneumonia

SOLAPUR CITY

CAUSE SPECIFIC DEATH RATE 1972-87

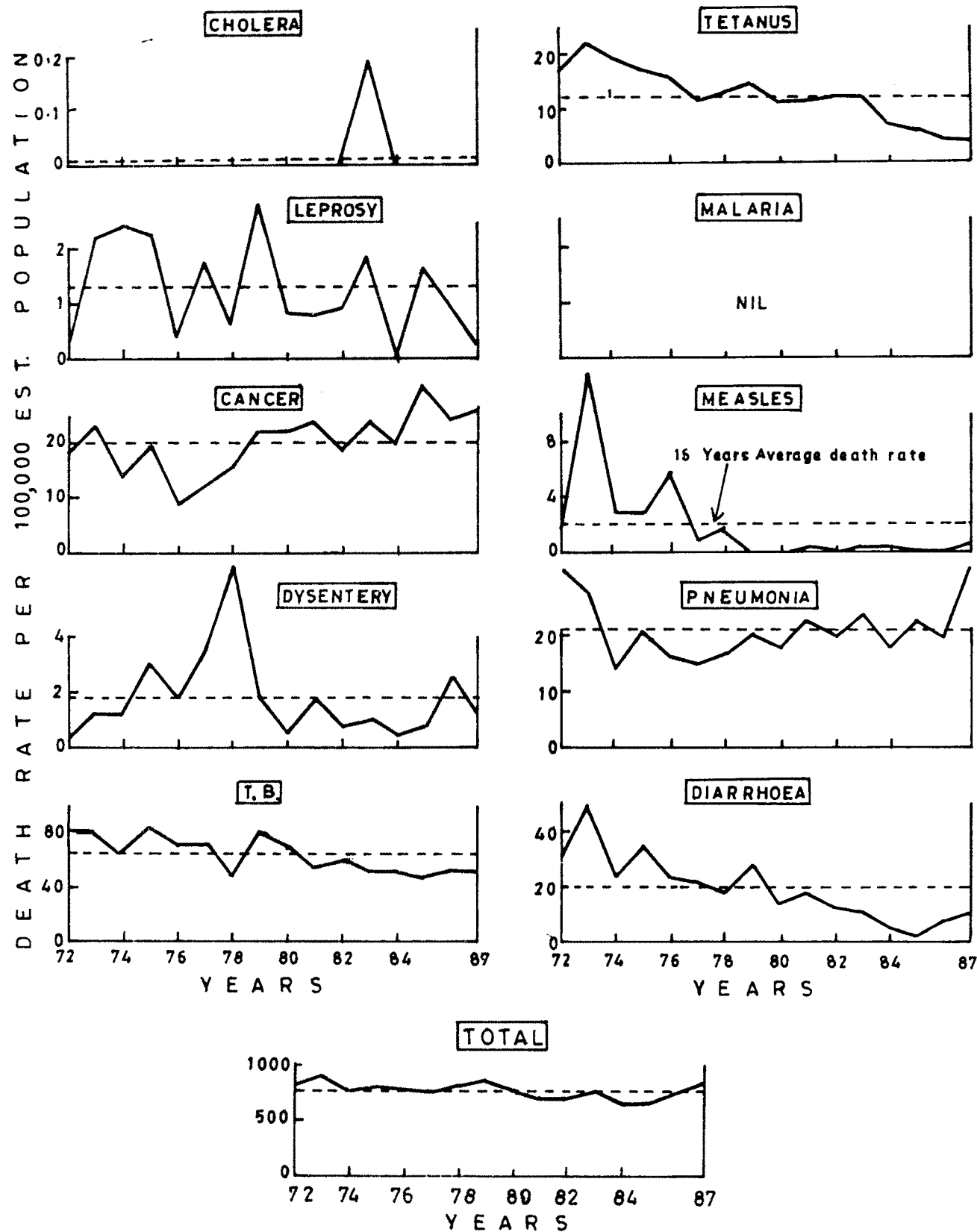


Fig.4-17

and cancer are the major diseases of Solapur city. The deaths are increasing every year by cancer and pneumonia. It is followed by diarrhoea, tetanus, measles and dysentery. The diseases like cholera, leprosy, dysentery and measles show their less effect on the city. Cholera has recorded the death rate below 0.2. Malaria has been eradicated completely from the city. Highest mortality rate was due to tuberculosis and was recorded in 1975 (84/100,000 estimated population).

Highest death rate due to pneumonia and cancer might be because of high concentration of labour population which is mainly working in ginning and spinning cotton mills located in the city.

4.20 RANKING OF DISEASES :

The study of ranking of diseases may provide an idea of relative dominance of different diseases in order of importance. The ranking technique used here are based on mortality rates calculated for particular diseases in particular year and for particular city.

The data has taken into consideration for the period of 16 years (1972-87) and also for 6 years (1982-87) for same cities. For example (Fig.4.18) in 1972 in Ichalkaranji city, the number of deaths due to diarrhoea were highest amongst all,

hence this disease has given the first rank in 1972, while number of deaths of dysentery during the same year were lowest amongst all, hence for dysentery, the last rank was allotted i.e. VIIIth. Accordingly, for each disease year-wise ranks were calculated and are shown in Fig.4.18 to 4.20.

Table 4.1 shows diseasewise ranking of cities for the period (1972-87) and Fig.4.2 indicates citywise ranking of different diseases for the period of 16 years (1972-87). Total ten (10) diseases were considered for the study.

Generally, it is observed that in almost all cities death rates by tuberculosis, cancer, pneumonia and tetanus were of higher orders during 16 years (1972-87) period. T.B. ranked first in Ahmednagar, Barsi, Kolhapur and Solapur cities. While cancer disease was dominant during 6 year's period in Islampur, Phaltan and Sangamner cities. Diarrhoea has also created serious problem which rank first or second in the cities like Karad and Shrirampur of first rank and in Satara, Ichalkaranji and Kolhapur (2nd rank). Pneumonia disease was also major which ranked first in the cities like Pandharpur, Pune and ranked 2nd in the cities like Ahmednagar and Solapur cities. As per the data of 1972 to 1987, ranking order show the following groups of diseases with varying intensity.

MAJOR CAUSES MORTALITY IN ORDER OF IMPORTANCE IN PUNE DIVISION

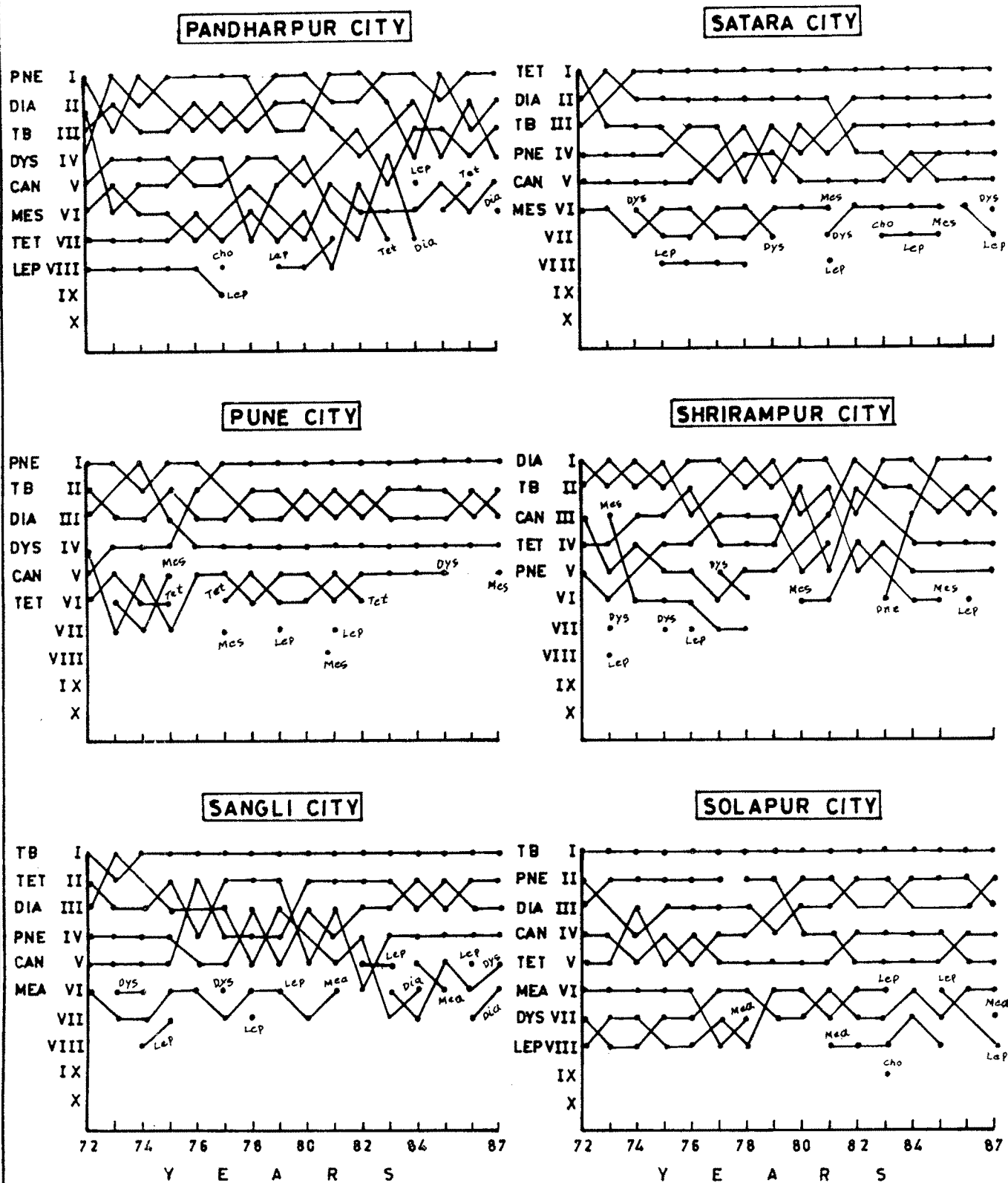


Fig. 4-19

MAJOR CAUSES OF MORTALITY IN ORDER OF IMPORTANCE IN PUNE DIVISION

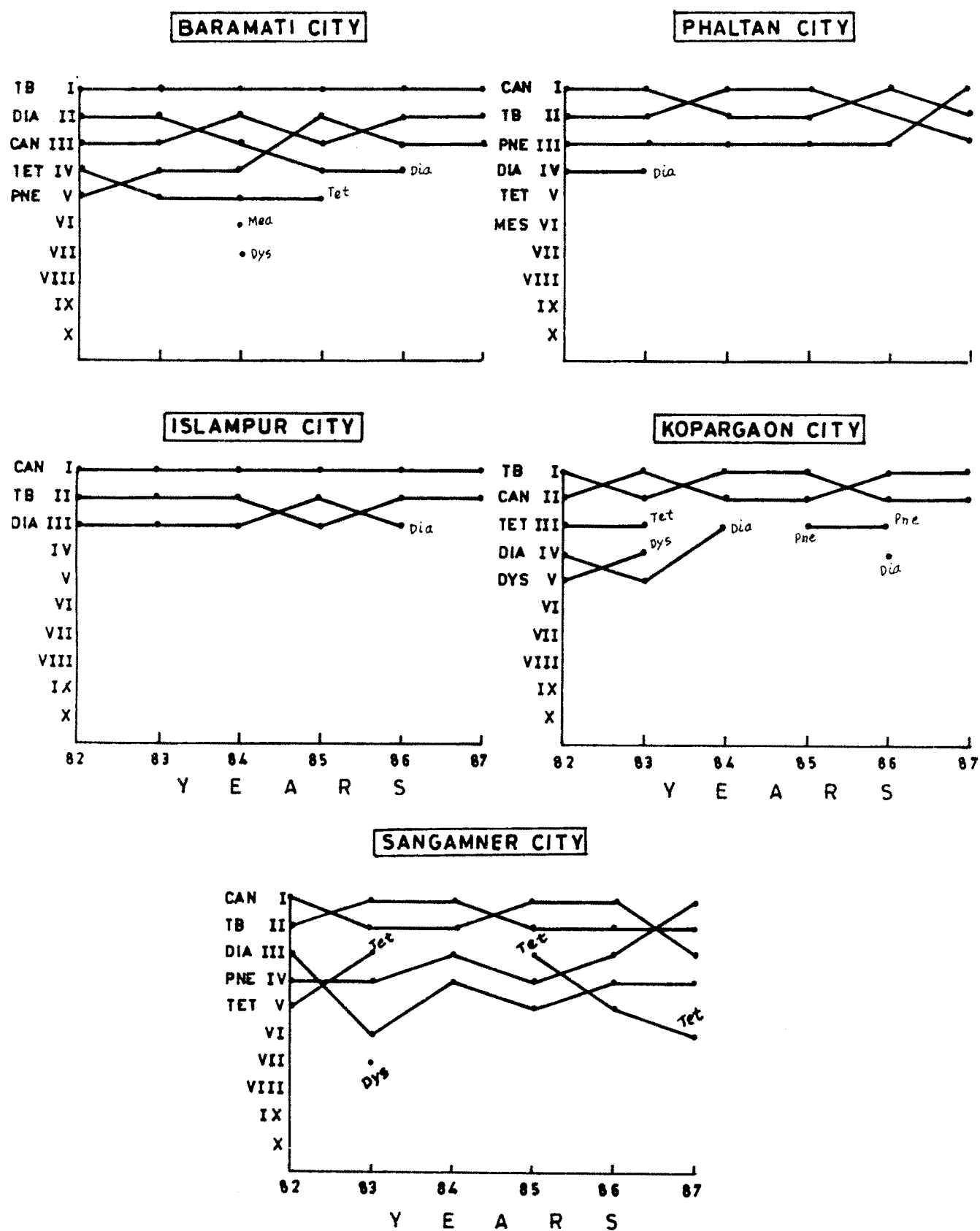


Fig. 4-20

- 1) Diseases of high ranking order
 - i) Tuberculosis
 - ii) Cancer
 - iii) Diarrhoea
 - iv) Pneumonia
- 2) Diseases of moderate ranking order
 - v) Tetanus
 - vi) Leprosy
 - vii) Dysentery
- 3) Diseases of low ranking order
 - viii) Malaria
 - ix) Cholera
 - x) Measle

Table 4.2 shows the picture of citywise ranking of different diseases. Almost all cities are badly suffering by tuberculosis, diarrhoea, cancer and pneumonia. Satara is the only city where deaths due to tuberculosis are more in number amongst all other diseases. Waterborne diseases are showing their less impact on the cities than the respiratory diseases like T.B. and Pneumonia.

Table 4.1 shows disease wise ranking of cities. Pandharpur ranks first and taken highest toll amongst the 17 cities of Pune division by cholera, dysentery and measles. Satara ranks first amongst all cities in tuberculosis and tetanus deaths. While deaths due to

Ranking of a City	Malaria	Cancer	Pneumonia	Total Deaths
I	I	Pune	Miraj	Miraj
II	I	Miraj	Pandharpur	Shrirampur
III	5	Barsi	Satara	Satara
IV	4	Satara	Pune	Pandharpur
V	31	Kolhapur	Ichalkaranji	Barsi
VI		Pandharpur	Shrirampur	Kolhapur
VII		Shrirampur	Kolhapur	Sangli
VIII		Ichalkaranji	Solapur	Pune
IX		Kopargaon	Sangli	Solapur
X		Solapur	Karad	Karad
XI		Karad	Sangamner	Sangamner
XII		Islampur	Barsi	Ichalkaranji
XIII		Sangamner	Phaltan	Baramati
XIV		Sangli	Baramati	Kopargaon
XV		Phaltan	Kopargaon	Phaltan
XVI		Baramati	Ahmednagar	Islampur
XVII		Ahmednagar		Ahmednagar

tate, Pune.

TABLE 4.2 : Pune Division - Citywise ranking of different diseases

Cause specific death rate/100,000 pop. (1972-87).

Town	Cholera	Dysentery	Diarrhoea	Tuber- culosis	Leprosy	Tetanus	Measle	Malaria	Cancer	Pneumonia
Ahmednagar	VII		IV	I		V	VI		II	III
Sangmner		VI	IV	II	VII	V			I	III
Shrirampur		VII	I	II	VIII	V	VI		IV	III
Ichalkaranji		VII	II	I	VIII	V	VI		IV	III
Kolhapur	IX	VI	II	I	VIII	V	VII		IV	III
Baramati			III	I		V	VI		II	IV
Pune		V	IV	III	VIII	VI	VII		I	II
Islampur			III	II					I	
Miraj		VI	IV	II	VII	V	VIII		III	I
Sangli		VI	V	I	VIII	II	VII		IV	III
Karad		VI	I	II	VII	III	VIII		IV	V
Phaltan			IV	I		VI	V		II	III
Satara	X	VI	II	I	VIII	IV	VII		V	III
Warsi		VIII	III	I	VII	IV	VI		II	V
Wagharpur	IX	I	V	II	VIII	VII	VI		IV	III
Karapur	IX	VII	IV	I	VIII	V	VI		IV	II
Lonar		VI	IV	II		III			I	V

SOURCE : Compiled by Author, based on Vital Statistics Maharashtra State, Pune.

pneumonia occurred more in the Miraj city. Cancer death rate was highest in pune city. Deaths due to diarrhoea and leprosy were occurred more in the Ichalkaranji and Barsi city respectively. With considering total deaths occurred in seventeen cities of pune division, following three groups can be classified.

(1) Cities of High Ranking Order (Ist to VIth)

- i) Miraj ii) Shrirampur iii) Satara iv) Pandharpur
- v) Barsi vi) Kolhapur

(2) Cities of Moderate Ranking Order (From VIIth to XIIth)

- vii) Sangli viii) Pune ix) Solapur x) Karad
- xi) Sangamner and xii) Ichalkaranji

(3) Cities of Low Ranking Order (From XIIIth to XVIth)

- xiii) Baramati xiv) Kopergaon xv) Phaltan xvi) Islampur
- xvii) Ahmednagar

The cities like Ahmednagar, Islampur, Baramati and Kopergaon are most safer cities of pune division where deaths due to all diseases were observed very less. In future more attention is to be paid to improve the medical facilities in the cities like Miraj, Shrirampur, Satara, Pandharpur, Barsi and Kolhapur.

4.21 CONCLUSION :

The study of the spatio-temporal pattern of diseases in pune division reveals the positive co-relation between physico-socio-cultural factors and spatial distribution of the diseases. It is observed that the prevalence of Tuberculosis, cancer and diarrhoea diseases are more in many of the cities. The cities with agricultural activities, urbanisation and industrial growth are suffering mainly from tuberculosis, pneumonia, tetanus and diarrhoea. These cities are Pandharpur, Miraj, Pune, Satara and Ichalkaranji. Leprosy is creating a serious problem in the cities like Barsi, Pandharpur, Miraj and Solapur. Tetanus is a notable disease of Satara city. Cholera and dysentery are major diseases of Pandharpur city.

Deaths due to dysentery, cholera, malaria and measles are of less magnitude in the cities like Baramati and Islampur. Malaria, the only disease has been eradicated completely throughout the cities of Pune division. Deaths due to cholera occur in some cities like Pandharpur, Ahmednagar, Satara, Kolhapur and Solapur. The cities which are located in the lowland and in the rivers basins where pollution of water is observed are Pandharpur, Miraj, Ichalkaranji, Pune and Karad where higher occurrences of waterborne diseases like diarrhoea and dysentery are found. The unsafe and contaminated water is mainly responsible for the spread of waterborne diseases in the cities.

Eventhough, the occurance of disease tendency is decreasing in the case of dysentery and diarrhoea, the occurances of respiratory diseases namely Tuberculosis and pneumonia are increasing rapidly in the cities. This might be due to higher speed of urbanisation and industrialisation. This should be checked at its minimum level.

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