Vol 3 Issue 8 Sept 2013

ISSN No : 2230-7850

Monthly Multidisciplinary Research Journal

Indian Streams Research Journal

Welcome to ISRJ

RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial Board readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net

Indian Streams Research Journal
Volume-3, Issue-8, Sept-2013
ISSN 2230-7850

Available online at www.isrj.net

Spatio - Temporal Distribution Of Cancer Mortality In Marathwada Region (M.S., India)

Lokhande T. N. And Kale V. P.

Associate Professor and Head,Department of Geography K.B.P.College, Pandharpur. Dist- Solapur (M.S.)
Asst. Professor in Geography Vitthalrao Shinde Arts College, Tembhurni. Dist- Solapur (M.S.)

Abstract: Cancer is one of the most important causes of death in the world and also in India. Excluding a few diseases like AIDS, most of the major killers of the world as well as India are on the decline. Cancer is, however, on the rise. India is now the highest Cancer burden country in the world.

The data regarding Cancer has been collected from vital statistics published by government of Maharashtra. The present study attempts to evaluate the Spatio-temporal analysis of cancer mortality in Marathwada region of Maharashtra state. The objective of this research paper is to study the distributional pattern both spatially and temporally, The researcher proposes to analyze the available data at various stages is being calculated using various statistical methods. The distributional pattern of Cancer is to be investigated at district level. The data collected for 35 years period has been analyzed by Choropleth methods, Standard Mortality Rate (S. M. R.)and simple ranking technique is used for understanding comparison and distributional pattern. A class interval for distribution is decided by percentile method.

The study reveals that various physical and cultural factors of the environment associated with the occurrence of the Cancer in the study region. Moreover, various factors such as smoking and chewing of tobacco and betel pan, consumption of alcohol, malnutrition, poor post natal care and poor maternity services, poor genital hygiene, early consummation of marriage, multiple pregnancies, and contact with multiple sexual partners, dietary factors, life styles, occupational exposure, vitamin deficiency, water and air pollution, sunlight, radiation, pesticides and medications. Lack of application of screening techniques, adequate treatment facilities and lack of public awareness about cancer are some of the causes responsible for cancer mortality in the study region.

Keywords: Cancer mortality, physical and Socio-cultural factors, Tobacco, genital hygiene, screening, Medical Facilities.

INTRODUCTION:

Cancer is one of the most important causes of death in the world and also in India. Excluding a few diseases like AIDS, most of the major killers of the world as well as India are on the decline. Cancer is, however, on the rise. “At the beginning of this century, Cancer was the sixth cause of death in industrialized countries, today, it is second leading cause of death” (Park and Park, 2011,). The science of cancer is better known today but how to prevent the disease is only partly within the realm of science. “On the global level, all human population is susceptible to the disease but the cancers of different site are more common than in others” (Agnihotri R.C.1995)

Some recent studies reveal that genetic factors are significant only in a few types of cancers such as the breast and prostate cancer. Whereas, all other cancers linked to environmental factors such as chemical pollution of air, water, and food, diet, infection, smoking of beedi and cigarette and chewing of tobacco, drinking of tea, coffee, and alcohol.

According to Misra R.P. (2007) “Causal factors for cancer are basically three: geographical, occupational and cultural (lifestyle), which in real terms mean bad environment, bad habits, bad working conditions and in some cases bad luck (heredity)”.

“The total cancer burden is highest in effluent societies, mainly due to a high incidence of tumour associated with smoking and western lifestyle, i.e., cancer of the lung, colorectum, breast and prostate. In India the most common site of cancer in men are respiratory tract cancers and cancers of cervix is the most common in women” (Park and Park, 2011).

There are as many cancers as organs and tissues within the human body. In different places found different types of cancer. In India, there are three types of cancer e.g., Oral cavity, and of lung and cervix, which form more than half of the cancer burden.

“Cancer may be regarded as a group of diseases characterized by an i) abnormal growth of cells ii) ability to invade adjacent tissues and even distant organs, and iii) the eventual death of the affected patient if the tumour has

progressed beyond that stage when it can be successfully removed" (Park and Park,2011).

"Cancer cells are endowed with tremendous growth energy; they lack growth restraint, which characterizes normal cells. Faults in the controls of the cell division are what cause cancer. Instead of dying, the mutated cells keep on dividing and eventually forming a tumour. Cancer may invade normal and adjacent tissues by direct or contiguous growth or it may infiltrate within the blood or lymph vessels in which cell are broken off and carried to distant organs" (Misra, R.P, 2007).

Now cancer is one of the most important causes of death in the modern world. Cancer is not just one disease, but a large group of almost one hundred diseases. Two main characteristics of the cancer are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. It the spread is not controlled, destroy healthy tissues and endanger life. Cause death. Cancer occurs in most species of animals and in many kinds of plants and in human being.

"It is estimated that there are approximately 2-2.5 million cases of cancer in India at any given point of time, with around 7-9 lakh new cases being detected each year. Nearly half of these causes die each year" (Park and Park, 2011)

STUDY REGION:

The researcher has specific purpose to select the Marathwada region. As medical geography is concerned with an analysis of the study of areal distribution of diseases and its relationship to the existing environmental, the physic-socio-cultural factors are the main (major) aspects, which serve to explain diseases and other conditions of health.

The area under study comprises of eight (8) districts of Marathwada region namely Aurangabad, Beed, Jalna, Nanded, Osmanabad, Latur, Parbhani and Hingoli (Hingoli district separated from Parbhani at May 1999). The midyear rural population (2005) of these eight districts is 11651300, which is 19.89% of the total rural population of Maharashtra and urban population is 431290, which is only 9.51% of the total urban population of Maharashtra. The total population of these eight districts is 15964000, which is 16.68% of the total population of Maharashtra. The study region includes 2 corporations and 51 municipalities.

This study region is heterogeneous in nature, in case of Physiography climate, soils, vegetation, drainage patterns, rainfall, occupation, social factors, sex ratio, urbanization, industrialization etc. The latitudinal and longitudinal extent of the area is 170 351 North to 200 401 North and 740 401 East to780 15' East respectively.

Marathwada region is located in the (south) central part of Maharashtra state and it covers 64813-km2 area (21.04 percent). The environmental factors of this region may cause the larger morbidity and mortality of certain infectious and parasitic diseases.

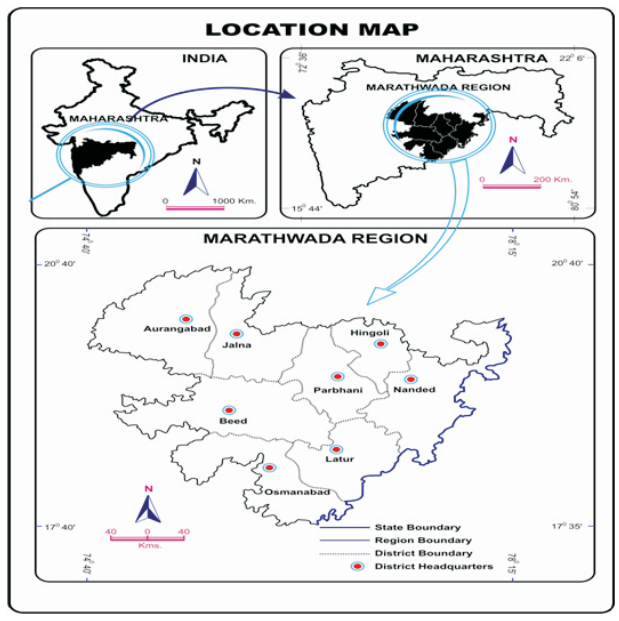
OBJECTIVE:

I.To study the distributional pattern of Cancer both spatially and temporally in the study region

METHODOLOGY:

The researcher proposes to analyze the available data at various stages is being calculated by using various statistical methods The distributional pattern of Cancer is to be investigated at district level. The data collected for 35 years period, has been analyzed by choropleth methods, Standard Mortality Rate (S. M. R.) and, ranking technique is used for understanding comparison and distributional pattern of Cancer Mortality. The data regarding deaths by Cancer has been collected from vital statistical report published by government of Maharashtra.

Class intervals for distribution is decided by percentile method. The various graphical and distributional methods are used for showing distribution.



SPATIO-TEMPORAL DISTRIBUTION:

In the study region, Cancer is a very important disease, which is responsible for the death. The table 1 shows the total death rate by cancer in the study region and figure 2 shows the spatial distribution of the death rate. The regional average death rate is 5.37 per lakh population and state average is 12.77. "More than two-third of cancer patients are already in an advanced and incurable stage at the time of diagnosis" (Park and Park, 2011).

Table 1
MARATHWADA REGION
SHOWING S.M.R. AND RANKING OF AVERAGE DEATH RATES BY CANCER

Sr. No.	District Name		1971 To 1975	1976 To 1980	1981 To 1985	1986 To 1990	1991 To 1995	1996 To 2000	2001 To 2005	1971 To 2005
1	Aurangabad	Death rate	3.27	4.62	6.77	10.44	7.33	4.08	7.04	6.22
		S.M.R.	107	118	136	152	122	79	94	113
		Rank	II	I	I	I	II	VII	IV	II
2	Jalna	Death rate	3.27	4.62	4.00	5.31	4.89	4.37	5.07	4.50
		S.M.R.	107	118	80	77	81	85	68	82
		Rank	II	I	VII	VII	VI	VI	VII	VII
3	Beed	Death rate	3.15	4.01	5.54	6.99	6.64	4.66	7.54	5.49
		S.M.R.	103	103	110	102	110	90	101	101
		Rank	III	III	II	III	III	IV	III	IV
4	Nanded	Death rate	2.32	3.70	4.83	8.38	7.62	6.86	6.76	4.65
		S.M.R.	76	95	97	81	82	86	91	84
		Rank	V	IV	V	VI	V	V	V	VI
5	Osmanabad	Death rate	3.41	3.14	4.84	8.38	7.62	6.86	10.23	6.35
		S.M.R.	111	80	97	122	127	133	137	115
		Rank	I	V	IV	II	I	I	I	I
6	Latur	Death rate	3.41	3.14	4.01	5.63	6.04	6.66	9.03	5.51
		S.M.R.	111	88	81	82	100	129	121	100
		Rank	I	V	VI	V	IV	II	II	III
7	Parbhani	Death rate	3.13	4.03	4.85	5.86	4.69	5.14	6.66	4.91
		S.M.R.	102	103	98	85	78	99	89	89
		Rank	IV	II	III	IV	VII	III	VI	V
	Study Region	Death rate	3.13	3.91	4.96	6.88	6.02	5.17	7.48	5.37
		S.M.R.	100	100	100	100	100	100	100	100
	Maharashtra State	Death rate	13.36	13.88	14.50	14.15	13.07	11.22	9.23	12.77

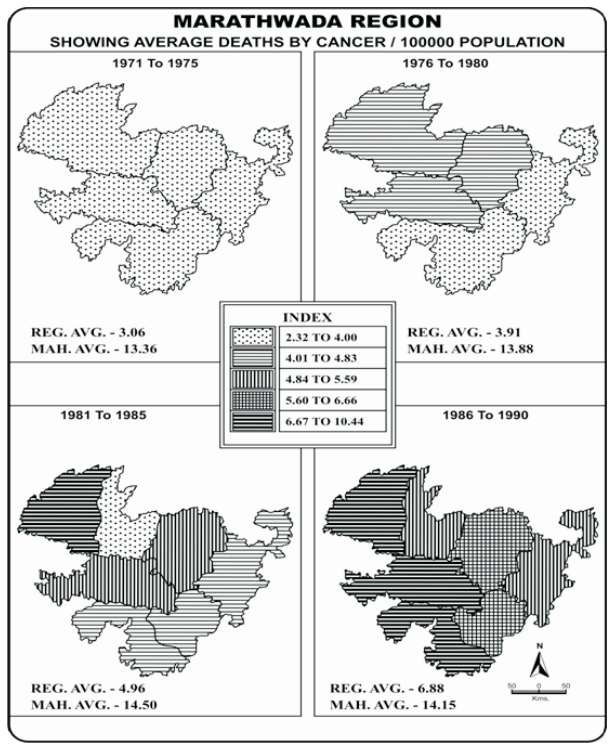
Source: Computed by Authors based on Annual Vital statistics Report published by Govt. of Maharashtra from 1971 to 2005.
* Jalna and Latur were separated from Aurangabad and Osmanabad in 1982 and 1983 respectively.

"In India, some 40 per cent of adults smoke beedis or cigarettes. Half of them may die of tobacco related disease" (Misra,R.P., 2007).

Osmanabad and Aurangabad have high mortality rate, which is above 5.60 per lakh population. The highest mortality rate is observed in Osmanabad (6.35) and Aurangabad (6.22) districts. Beed and Parbhani districts has observed moderate mortality rate of cancer, which is between 4.84 to 5.59 per lakh population. Southern and North Western part of study region has higher mortality rate. The districts of eastern and Northern part of a study region have low mortality rate. They are Jalna and Nanded. The mortality rate of these districts is between 4.11 to 4.83 per lakh population.

In all the districts of the study region, the trend of mortality rate is increased up to 1990. But it is decreased between 1991 to 2000 due to the various Cancer controlling programmes launched by the Govt. of India. Again, from 2001, the trend of mortality rate is increasing. It is due to increasing trend of urbanization and industrialization, and it is associated with modern conditions of life.

In the study region, various socio-cultural factors are responsible for the cancer mortality rate. These are smoking and chewing of tobacco and betel pan, consumption of alcohol, malnutrition, poor post natal care and poor maternity services, poor genital hygiene, early consummation of marriage, multiple pregnancies, and contact with multiple sexual partners, dietary factors, life styles, occupational exposure, vitamin deficiency, water and air pollution, sunlight, radiation, pesticides and medications. Lack of application of screening techniques, adequate treatment facilities and lack of public awareness about cancer are some of the causes responsible for cancer mortality.



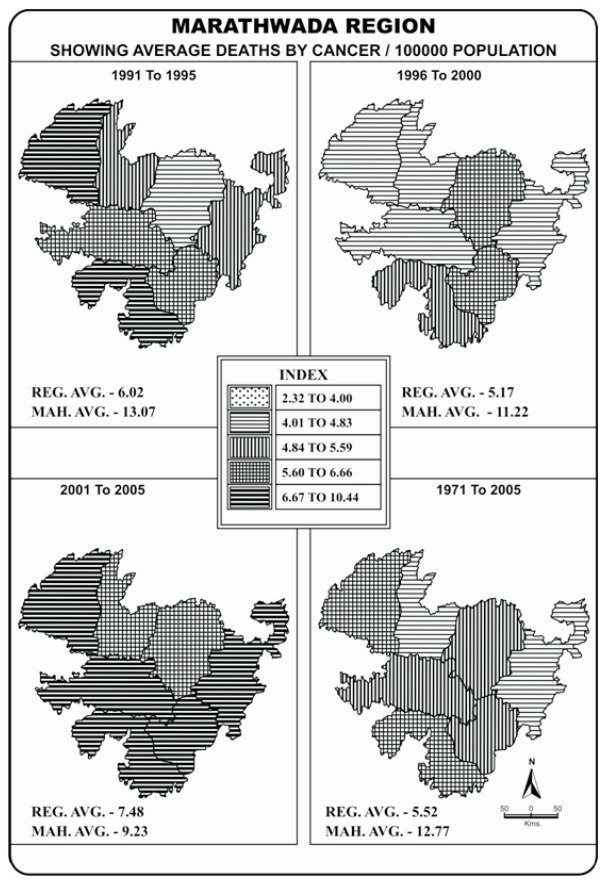


Fig.2

At the beginning, there was a shortage of medical facilities, and so that mortality rate was increasing. But after 1986 new medical facilities are established. So the death rate has decreased. All districts in the study region observed same trend as observed in the study region. During the year 1971 to 1975, the average death rate in the region was 3.06 per lakh population, which is increased up to the 7.48 per lakh population in the year 2001-2005. In this period, the state average was decreased from 13.36 to 9.23 per lakh population. The researcher has found that Latur district has continuous increasing trend of mortality rate by Cancer.

Prominent Area:

The figure 2 shows the distribution of the cancer in the study region from 1971 to 2005. The distribution of death rate is uneven in the study region. Some districts which has continuous high mortality rates can be marked as prominent area of cancer. The southern and northwestern part of the region can be marked as prominent area. The districts of this area Osmanabad, Aurangabad and Latur can be marked as prominent area also. These districts have always-higher mortality rate from beginning.

Standard Mortality Rate:

The standard mortality rates are calculated for the disease cancer. The table 1 shows the S. M. R. in the study region. Three districts has S. M. R. above the regional average. The highest S. M. R. is observed in the districts. Osmanabad (115). After that Latur and Aurangabad had higher S. M. R. These three districts have prominent area. Other districts has S. M. R. below the regional average. The lowest S. M. R. is observed in the district Jalna (82).

Ranking of Disease:

The ranking shows the dominance of the disease in the study region. Higher-ranking districts have favorable condition for disease and lower ranking districts have unfavorable conditions. The table 1 shows the ranking of the disease. The districts Osmanabad have first rank. The district Latur has second and Aurangabad has third ranks in the study region. These three districts are prominent districts of cancer. The lowest rank is found in the Nanded and Jalna district.

CONCLUSION AND SUGGESTIONS:

This research paper shows the important findings of district wise Spatio-temporal distribution of cancer in Marathwada region. The whole analysis is based on death rates, correlation factors, standard mortality rate and simple ranking techniques. Cancer is the second major cause of death in the study region. The regional average death rate of cancer is 5.37 per lakh population but the state average is 12.77. It means that other districts in the state have high mortality rate of cancer.

It is found that the mortality rate of Osmanabad, Aurangabad, Latur and Beed districts is high which is above 5.37 per lakh population. The mortality rate of the study region is increased from 3.13 per lakh population during the years 1971 – 1975 to 7.48 per lakh population during the years 2001 - 2005. “The real cause of human cancer is still unknown but recent researches have shown that the disease bears some association with physical and cultural environment” (Stamp, L.D., 1964). In the study region, disease cancer is associated with number of physical and socio-cultural environment. These factors contribute in th0e occurrence of the disease Cancer.

In the study region, various socio-cultural factors are responsible for the cancer mortality rate. These are smoking and chewing of tobacco and betel pan, consumption of alcohol, malnutrition, poor post natal care and poor maternity services, poor genital hygiene, early consummation of marriage, multiple pregnancies, and contact with multiple sexual partners, dietary factors, life styles, occupational exposure, vitamin deficiency, water and air pollution, sunlight, radiation, pesticides and medications. Lack of application of screening techniques, adequate treatment facilities and lack of public awareness about cancer are some of the causes responsible for cancer mortality.

In the study region, situation of cancer is highly disturbing particularly because it is possible for man to control the spread of this disease by changing his life style. People should consume copious amount of fresh fruits, vegetables, preferably raw or boiled, and whole grains particularly in sprouted form, nuts and seeds. Wheat grass juice, tulsi, neem, lime, pudina and some other herbs retard the growth of cancer (Misra,R.P.,2007)

In future, in the study region there is need and necessity of appropriate strategies including creating public awareness about cancer, tobacco control and application of self or assisted screening technique for Cancer controlling.

REFERENCES:

I.Agnihotri, R.C. (1995): “Geomedical Environment and Health Care”, Rawat Publications Jaipur, P.165.
II.“Annual vital statistics of Maharashtra Report” published by Government of Maharashtra from 1971 to 2005.
III.Misra, R.P. (2007): “Geography of Health: A Treatise on Geography of Life and Death in India, Concept Publishing Company, New Delhi, Pp. 270-276.
IV.Park, J.E., and Park, K. (2011): “Text Book of Preventive and Social Medicine”, Mrs. Banarsidas Bhanot, Jabalpur, Pp. 353- 355.
V.Statistical abstract of Maharashtra State published by Government of Maharashtra, Directorate of Economics And Statistics, Govt. Press, Nagpur- 1971 to 2001.
VI.Stamp, L.D., (1964), The Geography of Health and Death, Collins London,P.66