EUROPEAN ACADEMIC RESEARCH
Vol. II, Issue 6/ September 2014

Impact Factor: 3.1 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Spatial Distribution of Primary Health Centres in Solapur District of Maharashtra

A. G. NIMASE
Assistant professor
Department of Geography
Chhatrapati Shivaji College, Satara
India
DR. T. N. LOKHANDE
Associate Professor and Head
Department of Geography
K. B. P. Mahavidyalaya, Pandharpur
India

Abstract:

Health is an essential input for the development of human resource and the quality of life. The present study is intended to find how the primary health centers in the Solapur district are distributed. In order to serve maximum population in rural sector, the government has taken initiative to establish health centres in various places of the district. This facility is provided for the people at reasonable and cheaper rate, in order to avoid many complications of rural people.

Primary health centres helps in increasing social contact between village and community and medical officer. Manned by a medical officer and fourteen other staff, it acts as a referral unit for six curative, preventive, promotive and family welfare services. As of 2011, a total 77 PHCs are functioning in the Solapur district. A PHC covers 14556.2 sq.kms rural areas and a population of 2918665 in 1138 villages.

The aim of present investigation is to analysis the spatial distribution of health care centres in Solapur district of Maharashtra. The distribution of primary health centres has been examined by the technique of nearest neighbor analysis. The distribution of primary health centres influenced by mainly population density. In the study

region primary health centres are unevenly distributed. Present study gives an idea of real situation of Health Care service Delivery and helps to remove problems in Primary Health Center in Pandharpur tahsil of Solapur District and also helps to planners, Health scientists and research scholars. Further, this study has shown that there is a need of policy change regarding working style of PHCs.

Key words: Health, Distribution, Policy, preventive, Welfare, Services, human resource

Introduction

In India, Primary Health Centers are the key stone of rural health care. PHCs play a vital role as the first level contact between individuals and the health system. Today human resources development through primary health center is become essential issue to geographical epidemiology, medical geography and spatial pattern of health services in rural community. Primary Health Centers are the back bone of the rural health care services in the state or any country. It provides an integrated health services to the rural population.

The concept of Primary Health Center was first introduced by planning committee of Indian national concerns chaired by Jawaharlal Nehru in 1940. The Bhore committee in 1946 gave the concept of to provide as services close to the people as possible and integrated curative and preventive health care to the rural population. The central council of health as its first meeting held in January 1953 had recommended the establishment of primary health centers, community development blocks to provide comprehensive health care to the rural population. Normally in India, a PHC cover a population of 20000 in hilly tribal or difficult areas and a population of 30000 in plains areas with 4-6 indoor/observations beds. It act as referral unit for 6 sub-centers and the higher order public health center located at the

sub-district and district level. The Mudaliar Committee (1955), Jungalwalla committee (1965), karther Singh Committee (1973), the shrivastav Committee (1975), and the Bajaj committee (1986) have also highlited the importance of up gradation of PHCs.

Disease free nation leads to high level of productivity of human being and so it is an important element can be attained by improving the health and nutritional status of the population. Hence that is necessary to concentrate to rural population.

Objectives

This study is undertaken in seventy seven primary Health Centers in Solapur district .The main objectives of this paper are:

1. To analyze the spatial distribution of primary health centres with reference to area, population, inhabited villages.
2. To analyze the spatial distribution of primary health centres in solapur district.

Data Base Methodology

The entire investigation is based on field work supplemented by secondary sources of data from socio-economic review and district statistical abstract. The correlation analysis has been used to find out the relationship. The neighbor analysis the distribution of primary health centres has been examined by the technique of nearest neighbor analysis. The statistical technique called the 'Nearest neighbor Analysis' first developed by plant ecologist Clark and Evens 91954), has been used to measure the pattern of incidence of different

Study Area

The Solapur district of Maharashtra has been selected as an area for the present research work. It is situated on the south east fringe of Maharashtra state. It lies between17^0 10' to 18^0 32' north latitude and 74^0 42' to 76^0 15' east longitude. The district is bounded on the north by Ahmednagar and Osmanabad districts, on the east by Gulbarga districts (Karnataka state), on the south by Sangali and Bijapur (Karnataka state) and on the west by Satara and Pune districts. It comprises about 14844.6 sq.kms area (11 tahsils) out of which 338.8 sq.km. is urban (2.28%) and 14505.8 sq.kms. (97.72%) is rural area. Agro climatically entire district comes under rain shadow area. Average rainfall of the district is 545.4 mms. The monsoon period is from second fortinight of June to end September bringing rains from south-west monsoon. The maximum temperature of the district is 40.1^0 C while minimum is 16.1^0 C respectively. (Socio-economic Abstract of Solapur District 2011-12). The underline basalt on disintegration and decomposition brought varieties agencies had yielded three kinds of soil viz. deep black, medium deep and shallow soils. The district is provided with Bhima right bank canal and Neera and Man left bank canals. The total population of Solapur district is 4317756 (2011) out of total population 68.17 per cent population lives in rural area and 31.83 per cent population lives in urban area. Density and literacy of population of Solapur district is 290 persons per sq.km and 71.2 per cent respectively.

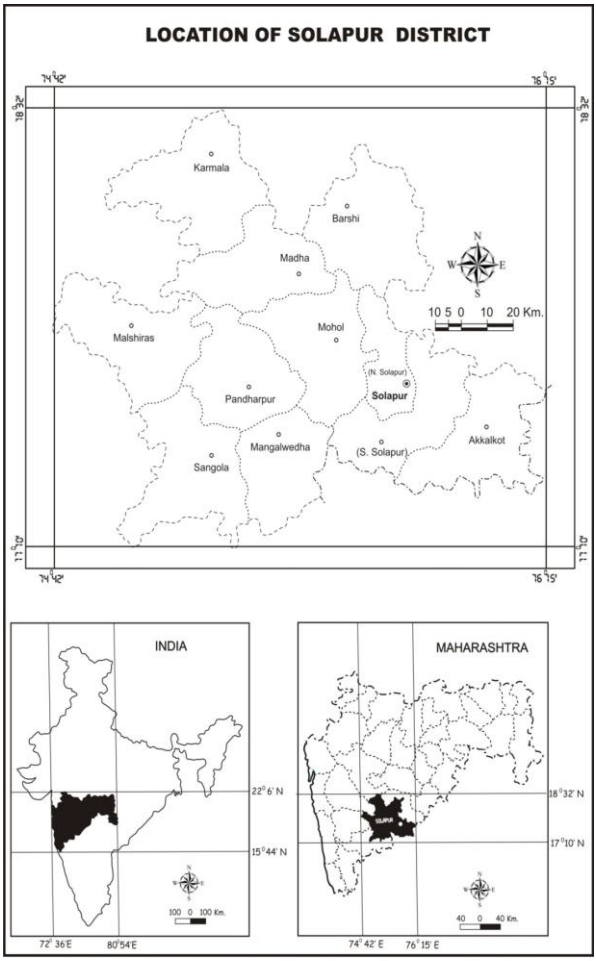

Fig. 1.1

Distributional Analyses of Primary Health Centres

Primary health centres play a vital role as the first level contact between individuals and the health system. Each and every geographical aspect is uneven distributed among the region because of differential of population, uneven topography. Health centres are also uneven distributed in the solapur district. Population is the major effective element on distribution of health centres. Health centres area the backbone of rural community. Herewith the term health centre included

primary health centres, primary sub-health centres and rural hospital in the solapur district.

An attempt has been made to map the pattern of hospital facilities in Solapur district in the years 2011 that in general high population density areas of study region and some tahsil of the solapur district lacked adequate health centres facilities in comparison to show to low population density areas. Barring tourist resort or regional spot such as Akkalkot, pandharpur, most of these areas were not having adequate health facilities. Malshiras tahsils has highest number of PHCs followed by Akkalkot, Madha and Pandharpur tahsil having each eight PHC centres. Barshi and Mohol tahsil seven primary health centres located in the year 2011. Sangola and south solapur have six primary health centres. North solapur and karmala lowest number of health centres which are five centres.

Area and primary Health Centres Ratio

The district covers geographical area of 14895 Sq.kms. This is 4.82% of the total area of Maharashtra state. Out of the total area of the district 339.60 Sq.km (2.28%) is urban and remaining 14555.40 Sq.kms (97.72%) is rural area. Area wise Malshiras tahsil is biggest covering an area of 1588.43 Sq.kms and North Solapur is smallest covering an area of 694.87 Sq.kms.

The number of health centres per 100 Sq.km of area is 0.52 for the entire district. However, this spatial variation at tahsil level is remarkable (Dr. Lokhande and Nimase, 2013). In Malshiras tahsil the ratio is 0.75 which considerably decreased to 0.31 in Karmala and 0.38 in Sangola tahsil. It is also observed that six tahsils fall in the classes above X. Out of which Akkalkot and Pandharpur fall in the class X+1 S.D. and Malshiras and north Solapur tahsil fall in the class X+ 2 S.D. Out of which Barshi, Karmala, Mangalwedha, Sangola and

S.Solapur fall in the class X-1 S.D. nobody tahsils are in the class X-2 S.D. (Fig.3.2).

Population and Health Centre Ratio

The number of Primary health centre per 10,000 populations comes to 1.78 for the region as a whole. However these spatial variations at tahsil level are remarkable. This ratio comes to 0.025 in the case of Akkalkot and Mohol tahsil. Which decrease to 0.004 the in case of S.Solapur. The Akkalkot, Madha, Mohol, S.Solapur Mangalwedha and Malshiras tahsil has their value above the mean 0.020. Out of which Barshi, karmala, pandharpur Sangola fall in the class 0.019 to 0.020.

Inhabited Village and Primary Health Centre Ratio

The number of health centre per 100 inhabited villages is 7 in the district .But there is also spatial variation at tahsil level. This relationship ranges from 12.5 in N.Solapur tahsil to 4.23 in Karmala tahsil. The relationship shows that two tahsil fall in classes above the mean (7.13) namely Malshiras and N.Solapur. Remaining tahsil are below the mean like, Akkalkot Barshi ,Karmala, Madha, Mangalwede, Mohol, Pandharpur ,Sangola and S,Solapur. Correlations analysis between these of two variables indicates the insignificant relationship. It is also observed that the population of settlements is low where the number of health centre is less, whereas population of settlements is greater, the number of health centre is more. It is mainly due to the size of the settlement affect on health centres.

Table No. 1 Solapur District: Primary Health Centres –Distributional Relationship with Area, Population and village

Sr.No	Tahsil	No of Primary Health Centres			
		X = 7 S.D. =1.95	Per 100sq.km **X=0.52 S.D.=0.12**	Per 1000 rural Popu. **X=0.020 S.D.=0.019**	Per100 inhabited village **X=7.13 S.D.= 2.40**
1	Akkalkot	8	0.57	0.025	5.92
2	Barshi	7	0.44	0.018	5.10
3	Karmala	5	0.31	0.019	4.23
4	Madha	8	0.52	0.024	6.89
5	Malshiras	12	0.75	0.024	10.25
6	Mangalwede	5	0.44	0.024	6.17
7	Mohol	7	0.53	0.025	6.93
8	N.Solapur	5	0.73	0.004	12.5
9	Pandharpur	8	0.61	0.018	8
10	Sangola	6	0.38	0.018	5.88
11	S.Solapur	6	0.49	0.022	6.59
District		**77**	**0.52**	**0.221**	**7.13**

Source: Compiled by the Researcher

Distributional Pattern of Primary Health Centres

The distribution of health centres has been examined by the technique of 'Nearest Neighbor analyses. This technique developed by Plant ecologist Clark and Evans (1954), has been used to measure the patterns of incidence of different species of plants. Recently it has been employed by geographers to study the spatial distribution pattern of settlements. For the present investigation, following formula developed by Hamond and Mcullaugh (1974) has been employed.

$$R_n = \frac{Dobs}{Dran}$$

Where

Dobs = is the measured mean distance between the nearest neighbor point observed in a given area

Dran = is the expected mean distance for a similar

number of points distributed in the same area

R_n = is the nearest neighbor index

$$Dran = \frac{1}{2\ (N/A)}$$

Where,

N = is the number of health centres in the study region**.**

A = is area of study region/ spatial unit.

Table No.2 Solapur District: Primary Health Centres Nearest Neighbour Statistics-2011

Sr.No	Tahsil	No. of PHCs	Dobs (Kms)	Dran (Kms)	'R_n' Values
1	Akkalkot	8	7.3	7.14	1.02
2	Barshi	7	4.7	7.57	0.62
3	Karmala	5	4.9	9.09	0.53
4	Madha	8	7.00	7.14	0.98
5	Malshiras	12	4.7	7.93	0.59
6	Mangalwed	5	4.5	2.39	1.88
7	Mohol	7	4.8	7.14	0.67
8	N.Solapur	5	2.8	6.02	0.46
9	Pandharpur	8	7.1	6.49	1.09
10	Sangola	6	4.7	9.25	0.50
11	S.Solapur	6	8.1	6.02	1.34
District		**77**	**5.50**	**7.04**	**0.78**

Source: Compiled by the Researcher.

Since the study area presents a visible contrast in the density pattern and spacing of health centres, the R_n values at tahsil level are also calculated. In such situation different R values for different tahsils are obtained. R_n value for the district has been calculated in order to find out the association of health centres with each other. The results have been summarized in the table no 2.

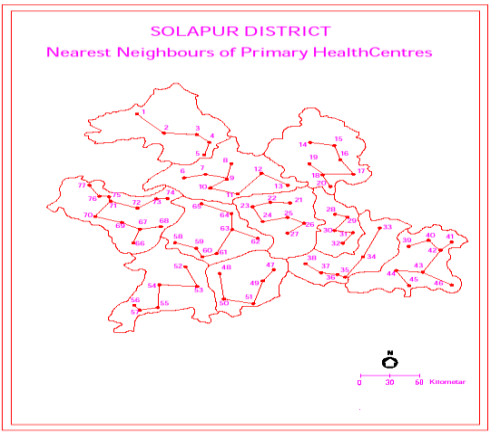

Fig.3.2

Conclusion

The analysis reveals that the health centres have noticed a near to random distribution. Where the degree of randomness is 0.78. The comparative analysis of the values of randomness shows that tahsils like Barshi, Karmala, Madha, Malshiras, Mohol, N.Solapur have the range of 0.51-1.00 where the health centres are distributed in a random manner. In the case of Pandharpur it is found near to random pattern, having the range of R_n between 1.00 to 1.09. The health centres in S.Solapur tahsils indicate random distribution towards regular pattern, having the R_n value 1.34. Whereas Mangalwedha having R_n value above 1.50 has regular uniform pattern (Fig 3.2& Table no.2).

REFERENCES

Moonis, Oacione. Survey of Research in Geography-1969-1972-ICSSR

Moodie, R (2000). The Art and Science of Health Promotion Key Note Address to Second International Confe rence on Primary Health Care 2000.

Nimase A. G. & Dr .T.N. Lokhande.(Aug-2013) Functioning and Problems of Primary Health Centers in Pandharpur Tahsil of Solapur district, the Indian Streams Research Journal ISSN 2230-7850 Volume-3, Issue-7.

Nimase A.G. & Dr. Lokhande T.N. (Aug.2013): Spatial analysis and utilization of the health centres in pandharpur tahsil of solapur district**:** Journal of Research Direction, ISSN NO**:**-2321-5488, volume 1, issue 2 /August 2013., pp-1-7.

Pacione, Michael. Medical Geography: Progress and prospects

Perrot, M. (2000). Health Education training in France: Evoluation Focuses and Perspectives. Promotion and Education, (vII) 1, 39.

Podgar, A. and Hagan, P (2000). Reforming the Australian Health care System: the Role of Government.

Rais & Akhtar: Geographical Aspect of Health and Disease in India.

Shukhla, P.K. Nutritional Problem in India.