RESEARCH FRONT

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GEOGRAPHICAL STUDY OF CENTRALITY OF PUBIC HEALTH CENTRES IN SOLAPUR DISTRICT OF MAHARASHTRA

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ABSTRACT

Increasing population of India requires medical facilities to maintain public health. 'Public health centers constitute the backbone of the rural health care services'. The public health care services are very inadequate therefore private sector has a virtual monopoly over ambulatory curative services in both rural and urban areas and over half of hospital care. There are hierarchies of public health care facilities i.e. primary health care, hospital care facilities. It provides an integrated health services to the rural population by different health personnel like doctor, nurse and male-female health worker etc. It provides an integrated health services to the rural population. The present attempt is concerned with the calculating the centrality values of the health centres in the Solapur District. The entire investigation is based on the intensive fieldwork, for which schedule and questionnaire techniques have been employed to collect the information regarding 23 parameters selected for the study. It is also supplemented by the secondary data. The composite scores of centrality are obtained by location quotient method of Davies.

Key Words: Medical Facilities, Centrality, Weightage, Conceptual.

INTRODUCTION

Studies in medical geography are catching the increasing attention of geographers in India that is regarded as rural and urban area. In the present time study of primary health Care system become a multifaceted subject in health practices all over world. In both, land of village and land urban, 'human resource' is an important resource upon which regional development is depending. It is obvious that the health centres differ from each other in respect of their population size, functional capacity and aggregate importance. The present attempt with the problem of calculating the centrality values of the health centres in the study area.

Centrality simply means to the measure of importance of a place in terms of its functional capacity to serve the needs of the people in the surrounding area. The centrality of place of can be expressed qualitatively, such as the low and the high centrality as well as quantitatively with the help of the centrality values. The centrality value can be obtained by converting the functional base of a place into the scores on the basis of the frequency and importance of the function performed by the place. The centrality however depends on central functions. These functions have a certain range beyond the limits of the surrounding region. Christaller (1933, 1966) considered central places as the places, which provide central goods and services to their hinterlands. According to him, the centrality of a place is that component of its functional magnitude which is required for the population of its hinterland.

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In the present investigation an attempt is made to find out the centrality and hierarchy of public health centres in Solapur district of Maharashtra. The entire investigation is based on the intensive fieldwork, for which schedule and questionnaire techniques have been employed to collect the information regarding 14 parameters selected for the study. It is also supplemented by the secondary data. The composite scores of centrality are obtained by location quotient method of Davies.

OBJECTIVES

In view of the above, the specific objectives of the present to study-

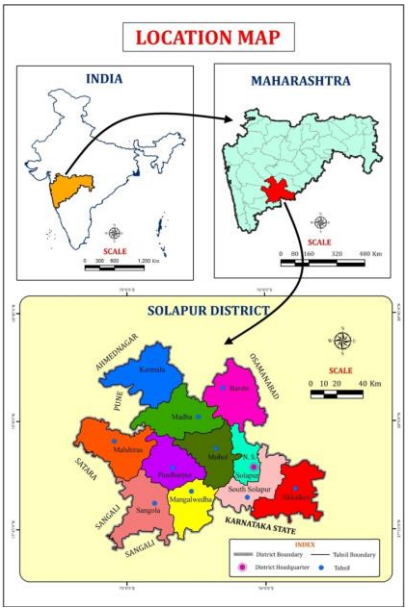
1. To Calculate the centrality of public health centres.
2. To determine and analysis the centrality of public health centres

DATABASE AND METHODOLOGY

For the present investigation the empirical data regarding primary health centres have been collected through intensive field work which is supplemented by the secondary data abstracted from socio- economic review and district statistical abstracts and district census hand book. Centrality score is calculated by giving weightage to selected fourteen indicators of various functions and services. The composite scores of centrality are obtained by location quotient of Davis (1967). The results are shown with the help of table and maps.

STUDY REGION

For the present investigation Solapur district is selected as a study region. 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 14895 sq. kms along with eleven tahsil out of which 338.8 sq.km is urban (2.28%) and 14505.8 sq.kms. (97.72%) is rural area. 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 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 percent respectively.



METHODS OF MEASURING CENTRALITY

Centrality of a place can be measured in several ways by taking into account a single function or all the functions available at the place. The single functions index has been used by several authors. The number of telephone installed was used by Christller (1933) in his original work.

Berry and Garrison (1958) have considered all central functions for identifying the centrality a place. Retail service has very important functions, which has been given more attention by several scholars, which others have given more importance to professional and other services.

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Davies (1967) has pointed out that, if the entire establishment is included for measuring centrality, the problem of equivalence is very important. In the absence of such weight age should be given to such establishment in respect of floor place and turnover. This problem can be resolved to some extent by classifying them as shops of convenience good.

Brush (1953) pointed out that the status of service was determined by the functions they perform a combination or association or distinctive sets of functions. Godlund (1966) has also worked out the centrality of the Swedish settlement on the basis of the capacity of the services and services. For calculating the centrality he considered the total population of the place and also the number of the persons engaged in retail service and services in the places.

Davies (1967) has formulated the simple method for measuring the centrality in his south Wales studies. He assigns a score to every function davies is first to introduce a Location quotient method for calculating the centrality, taking into account the functional availability of area. He assigns a score to every function in the region, while calculating functional index of a centre, the relevant score for each function is to be multiplied by the number of functional units of the particular function. In this way the values of all the functional units for all the functions available at the centre can be obtained by multiplying with their respective scores. The summation of all these values gives the functional index of a place. The functional index for all places can be calculated by this method. This functional index gives model because this index is not related to the population of a central place. As a result, this index gives misleading results for lower order central places.

CHOICE OF METHODS FOR PRESENT STUDY

To calculate the centrality of a health centre, several methods are adopted by geographer who can be grouped into single function methods and multifunctional methods. For the present investigation, multifunctional method has been preferred where 23 percent different parameters have been considered, (Table -1). The centrality values have been obtained by location Quotient method of W.K.D. Davis (1967).

Measurement of Centrality by Davies Location Method:

Davies (1967) has used this method for south Wales. In this method a score for any single unit of function is calculated by following formula.

$$C = \frac{t}{T} \times 100 \qquad \text{-------} \qquad \text{(I)}$$

Where, **C** = Score for any function‘t’
t = One Unit of function‘t’
T = Total number of functional units of function**‘t’** in the area.

The weightiness scores of all the health centre have been considered for the centrality scores for all the variables calculated by adding up all values of single variable, we get composite value or index for each health centre (Table 1). The centrality values of health centres calculated by Location Quotient Method are given in Table -1 and show by Fig. 2.

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Table-1. Centrality Score of Public Health Centres by - Location Quotient Method

Name of Health Centres	Centrality value by Location Quaint Method	Rank	Name of Health Centres	Centrality value by Location Quaint Method	Rank
Solapur (DH)	628.57	1	Karkamb	145.45	39
Akluj (SDH)	598.30	2	Ankoli	142.86	40
Pandharpur (SDH	510.53	3	Korti	140.00	41
Malshiras (SDH	468.42	4	Modnimb	138.46	42
Karmala (SDH)	415.69	5	Talwade	137.50	43
Akkalkot (RH)	395.00	6	Chappalgaon	136.36	44
Barshi (RH)	382.35	7	Purandavade	130.77	45
Pandharpur(RH)	370.59	8	Mandaki	127.78	46
Madha (RH)	364.71	9	Shirpur	127.27	47
Kurduwadi (RH)	361.11	10	Manegaon	125.00	48
Natepute (RH)	358.82	11	Kamathi budruk	123.81	49
Malshiras (RH)	342.11	12	Jeoor	123.08	50
Wadala (RH)	323.08	13	Kem	122.22	51
Mangalwedh (RH)	300.00	14	Nagansur	120.00	52
Sangola (RH)	284.62	15	Malshiras	119.05	53
Mandrup (RH)	283.33	16	Bhose (N)	118.18	54
Pangari (RH)	269.23	17	Ropale(Kawe)	117.65	55
Mohol (RH)	246.15	18	Tembhurni	116.67	56
Karkamb (RH)	238.46	19	Velapur	115.38	57
Ropale	192.31	20	Narkhed	115.00	58
Bhalawani	191.67	21	Wadala	114.29	59
Kasegaon	190.00	22	Upaledumal	113.64	60
Walsang	188.89	23	Mandwae	111.11	61
Watumbare	184.62	24	Begampur	110.53	62
Kondi	183.33	25	Gadegaon	110.00	63
Karajagi	181.82	26	Dudhani	109.52	64
Pangaon	177.78	27	Kola	108.33	65
Agalgaon	176.92	28	Bhandarkawathe	107.69	66
Maindargi	169.23	29	Patkul	105.26	67
Khardi	168.75	30	Wagdari	105.00	68
Hotagi	166.67	31	Parite	104.76	69
Gaudgaon	164.71	32	Wadegaon	103.85	70
Borale	163.64	33	Tungat	100.00	71
Madha	161.54	34	Aurad	95.45	72
Jawala	158.33	35	Upalai	95.24	73
Chikarde	157.14	36	Anagar	93.75	74
Mandrup	153.85	37	Fondshiras	92.31	75
Mardi	146.15	38	Piliv	92.00	76
Name of Health Centres	Centrality value by Location Quaint Method	Rank	Name of Health Centres	Centrality value by Location Quaint Method	Rank
Vairag	91.67	77	Warkute	74.07	87
Puluj	90.00	78	Pimpalner	73.33	88
Joor	88.46	79	Akola	72.73	89

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Lawang	87.50	80	Boramani	71.43	90
Salgar	84.62	81	Malinagar	69.23	91
Sade	83.33	82	Andhalgaon	68.18	92
Tirhe	78.57	83	Marawade	64.29	93
Morochi	77.78	84	Shankarnagar	61.54	94
Kumatha	76.92	85	Yeliv	60.14	95
Shirwal	75.00	86	Shivane	52.63	96

Source: Compiled by Researcher

The weightage scores of all the public health centres have been considered for the centrality scores for all the variables calculated by adding up all the values of single variable and finally obtain composite centrality value or index for each primary health centres . The centrality scores have been depicted on. Fig 3.

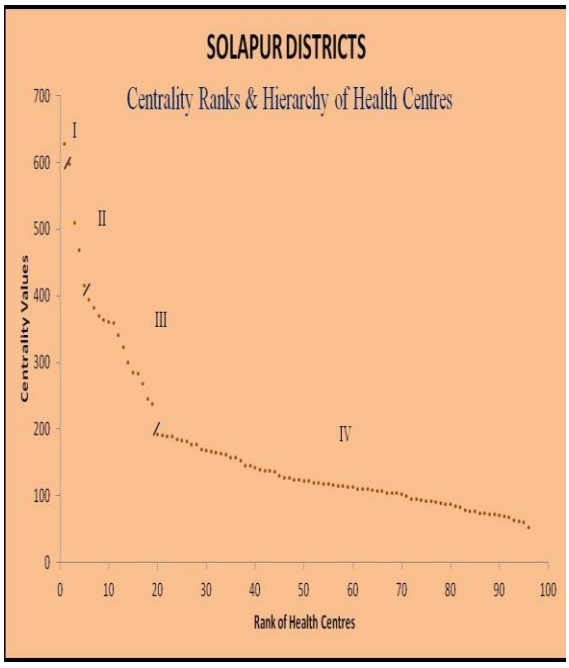

Fig.3

Regional Analysis of Centrality

The spatial distribution of the centrality values calculated for each health centres have been represented in Fig.4. The composite scores of centrality obtained by the 'location Quotient method (Davis, 1967), clearly show the notable difference between the lower and higher values. For analysis all the centrality values have been put according to their descending order (Table-1).

The highest centrality value is obtained by district hospital namely Solapur health centres (628.57) and is followed by Akluj sub-district health centre (598.30), Pandharpur (510.53), Malshiras (468.42) Karmala (415.69) these are very important sub-district health centres in the solapur district.

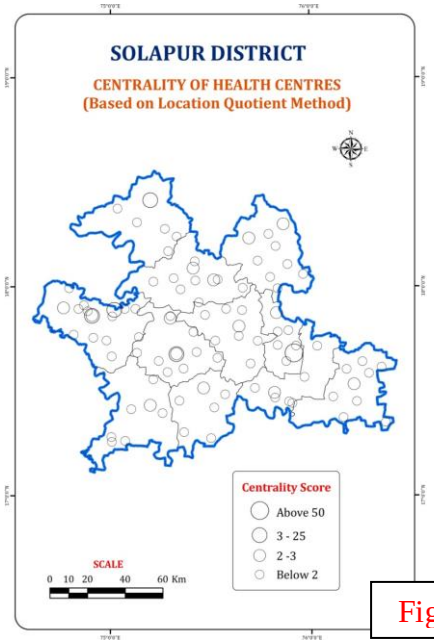

Fig.4

The centrality index of rural health centres ranges between 400 to 600. It includes mainly Mohol, Kurduwadi, Karmala, Natepute, Mandrup, Pangari, Wadala, Akkalkot, Barshi, etc. These centres. Generally these health centres are medium in size and major are located at tahsil head quarter.

About seventy seven primary health centres have below 200 centrality values. Thus the high centrality value health centres are situated in the western and north part of district, which are high population and agriculturally prosperous zones, and provide more services to the people. While low centrality value of health centres are distributed in the difficult area of the study region, which is less population, difficult road structure and inaccessible area (Nimase &Dr.lokhande,2013).

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CONCLUSION

Centrality is the means measure of importance of a place (public health centres) in terms of its functional to serve the need of the people in the surrounding area. Centrality score is considered in the study of the importance of rural public health centres in the Solapur district. The composite score of centrality obtained by Davies method clearly indicate high difference between the lower and higher values of centrality score. It is observed that, the places having high centrality are located in the town or city and functional large villages or higher proportion/density of population in the study area. It is notable that the rural public health centres which have attached as per high population norms, well infrastructural facilities have higher order, while low population, difficulty road accessibility and poor in infrastructural facilities have lower order health centres. The principal public health centres are mainly located in the town or city and its well connected with transports facilities and these district hospital centres are provided more services and facilities to the population

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