



Accessibility of Public Health Facilities in Solapur District: A Micro Level Regional Planning

KEYWORDS

Health Facility, Accessibility, Regional imbalance, Human Resource

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ABSTRACT

Health is one of the basic determinants of social well-being and development of human resource. Availability of health care amenities and facility may not be regarded as good indicators of human resource development until and unless their optimum distribution, accessibility and allocation with to threshold population and range of goods. There has been significant development in the health sector in India in the recent years. Though, government provides health facility to the masses but their unplanned allocation brings wide functional gaps leading to regional imbalance and inequalities in socio-economic development. Subsequently with time and space the existing health amenities and facilities gap that become a threat to social well-being and feel good factor of human resource. Present paper aims at quantitatively examining the accessibility of health care facilities and their existing functional gap in 2011 and estimated to exist in 2021.

To overcome the imbalances in accessibility of health care facilities and to achieve a balanced regional development in district a micro-level locational planning model has been proposed suggesting appropriate new sites without disturbing the present settlement system. The biggest enemy of health in the developing world is poverty. India is developing country. Because of this that is essential to there is need to develop adequate and logically sound conceptual structure of organization of public health care system and delivery system design in the present period.

Introduction

The biggest enemy of health in the developing world is poverty. India is developing country. Because of this that is essential to there is need to develop adequate and logically sound conceptual structure of organization of public health care system and delivery system design in the present period. Health is one of the basic determinants of social well-being and development of human resource. Availability of health care amenities and facility may not be regarded as good indicators of human resource development until and unless their optimum distribution, accessibility and allocation with to threshold population and range of goods. There has been significant development in the health sector in India in the recent years.

Objectives

The main objective of this study is to evaluate the distributional pattern of health care facilities and to examine the Spatio-functional gaps of health facilities.

Database and Methodology

The study was based on the secondary information supplied with primary data collected through field survey. Obtained data has been analysed based on both qualitative and quantitative methods. Cumulative frequency graphs have been used to visually interpret the distribution based on Mather's model of mean spacings follow;

$$S = 1.0746 \sqrt{A/N}$$

Where, S = Mean Spacing, A = Area of the given region, N = Total health centres of the region, and 1.0746 = Spacing constant.

Functional weightage of each facility and proposed of new location of facility has been estimated based on threshold population estimated based on the technique of Reed Muench Method. (Hagget, P. and Gunawardena, K.A. (July-1964) Determination of population threshold for set-

tlement function by Reed-Muench Method) Threshold population of any function is the midpoint of its entry level which is specified by a lower population level at which no settlements has that size have that function. The calculated median population Threshold has been given in Table1.

Adequacy and inadequacy of facilities of facilities have been examined through the analysis of spatio-functional gaps. It is a comparison of accessibility of facilities between the complementary region of service centre and whole study area. The model is thus;

$$R_{ij} = P/P_1 \times f_1/f$$

where, R_{ij} is the relative level of i th function, p is population of study area, P_1 is population of complementary region of service centre, f_1 is total functional weightage in complementary region of service centre and F denote total functional weightage study area. According to the method, the area with ratio of more than 1 is said to adequately served, while area with less than 1 is said to be inadequately served by the particular facility.

Table-1: Public Health Facility in Solapur District: 2011

Sr.NO	Name of the Facility	Mean Spacing
1	Primary Health Sub-Centres (PHSC)	6.30km
2	Primary Health Centres (PHC)	14.93km
3	Rural Hospitals	36.36km
4	Ayurvedic Centre	58.65km

Source: Compiled by Researcher

Study Area

Solapur district of state Maharashtra (India) has been taken as the study area. It is situated on the south east fringe of Maharashtra state. It lies between $17^{\circ} 10'$ to $18^{\circ} 32'$ north latitude and $74^{\circ} 42'$ to $76^{\circ} 15'$ east longitude. The district is bounded on the north by Ahmednagar and Os-

manabad 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° C while minimum is 16.1° 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.

Spatial Distribution of Health Facility

There are 431 primary health sub centres distributed in 1138 settlement, servers to the average population of 10946 persons per unit in the district (Table-2).

Table-2: Distribution of Settlement and Health Facility in Solapur District, 2011

Household Groups	Tahsils	Inhabited Village/settlement		Percent settlement by health facility		
		No	%	PHSC	PHC	RHS
< 34999	Mangalwedha	81	7.11	6.03	6.49	7.69
35000 - 44999	S.Solapur,	91	7.99	7.60	6.49	7.49 (Mandrup)
45000 - 54999	Mohol, karmala Akkalkot,Sangola	456	40.07	33.95	32.40	15.38
55000 - 64999	Madha	116	10.19	10.44	10.38	15.38
65000 - 74999	Barshi	137	12.03	9.97	9.09	23.07 (Pangari)
750000 - 99999	Malshiras, Pandharpur	237	20.82	27.37	25.66	15.38
> 100000	North solapur	40	0.35	4.64	6.49	Karkamb 7.69
Total percent	-	-	100	100	100	100
Total number of	-	1138	-	431	77	14

Source: District Census Hand Book, (Village Directory), 2011.

The same table also depict that, the mean spacing of settlement with PHSC is estimated as 14.93 km. 33.95 percent of PHSC are located in the household size varies between 45000-54999. Primary health centres are treatment administrative establishment of the health department. Total 77 unit of primary health centres distributed in 1138 inhabited villages. 40.07 percent settlement with 32.40 PHC is 45000-49999 big in size with household groups in Mohol and Akkalkot tahsil. 0.35 percent settlement with 6.49 percent PHC is > 100000 small in size with household groups such as North solapur tahsil only. 7.11 And 7.99 percent settlement with 6.49 percent PHC is < 34999 and 35000-44999 respectively in size with household groups such as Mangalwedha and south solapur tahsil. 33.95percent sub-centres are served for forty percent settlement in between 45000-44999 household groups. There are only one tahsil i.e. N.solapur 4.64 percent PHSC served for > 100000 household groups, in their 0.35 percent settlement active.

In the study area, total thirteen rural health centers are served in solapur district. Except S.Solapur and North solapur, remaining all nine tahsil give the service of rural health care facility. Mandrup are located in South Solapur and Pangari are located in Barshi tahsil.Two rural health centres are in Madha and Barshi tahsil.

Table-3: Distribution of Public Ayurvedic Centres in Solapur District

Sr.No	Tahsil	Number of A.Centres	Name of the Ayurvedic centres
1	Barshi	2	Shripat Pimpari and Gade-gaon
2	Karmala	1	Jinti
3	Mohol	1	Shetfal
4	Pandharpur	1	Shelve
Total		5	-

Above table reveals that there are only five ayurvedic centres are active for to provide the service for population in study area. These ratios are very low in relation of total population. There is need progress in ayurvedic centres. Except Barshi, Karmala, Mohol and pandharpur tahsil remaining tahsil lack of ayurvedic service from give to public health care administration.

Spatio-Functional Gaps of Health Facility

For the identification of spatio-functional gaps of Primary health facilities and for the proposal of their new locations to fill the existing gaps Pandharpur tahsil has been taken as the case study area. The settlement located with health facility has been considered as the service center as it provides health care facility to people of surrounding settlements. Complementary region of such service centre has been remarked based on information gathered through field survey all settlement of the tahsil .It has been observed that among the aforementioned health care facilities Dispensary is available only in one settlements (shelve) while primary health centre in three settlements (palshi, Mundhewadi and Bhoose) these four settlement located with medical facility are considered as service centres where people from surrounding settlements commute to avail this facility and from people to go to avian the aforementioned health care facilities ,dependent population of each eight service centres have been estimated based on which spatio-functional gaps have been identified.

Table-4: Tahsilwise Shortage/Gap in Primary Health Centres Facilities in Solapur District, 2011

Sr.No	Tahsil	Total population	IPHS Norms (As per 30000 Pop. 1 PHC)	In Position	Gap / Shortage	Gap in Percentage
1	Akkalkot	250890	8	8	0	0
2	Barshi	253989	8	7	1	5
3	Karmala	231290	8	5	3	15
4	Madha	301564	10	8	2	10
5	Malshiras	421244	14	12	2	10
6	Mangalwedha	184108	6	5	1	5
7	Mohol	276920	9	7	2	10
8	N.Solapur	105794	4	5	-1	-
9	Pandharpur	343445	11	8	3	15

10	Sangola	288524	9	6	3	15
11	S.Solapur	260897	9	6	3	15
Dis- trict Total		2918665	96	77	19	100

Source: Compiled by Researcher

Table-5: Spatio - Functional Gap of Primary Health centres in Pandharpur tahsil, 2011, 2021

Sr. No	Service Centres	Existing in 2011	Estimated to be exist in 2021
		Primary Health centres	Primary Health centres
1	Karkamb	0.89	0.86
2	Ropale	0.68	0.66
3	Tungat	0.73	0.69
4	Puluj	0.83	0.81
5	Khardi	0.66	0.61
6	Kasegaon	0.74	0.77
7	Gadegaon	0.61	0.65
8	Bhalawani	0.88	0.85

Source: Computed by Authers

Note: P=Based on Projected Population

It is observed in the field study that, people travel a distance crossing their own service area boundary to nearest service centres to avail health facility like PHSC, PHC , RH, Dispensary etc.

It is exhibited from the table- 5 that functional ratio of only PHC is less than 1 refers to inadequacy of functions in 2011. Which functional gap is estimated to be widening with the growth of population till 2021. Consequent widen functional gap would become a threat to human resource development as well as social being in the region. To overcome the future problem likely to be arising there is a need of well designed planning model. In order to achieve the goal of balanced regional development of health care facility by filling the estimated spatio-functional gap, a micro-level locational planning model has been proposed for the year 2021. The present planning model for order to save the inhabitants from common health problems. Increasing widening gap and problems arising in health centres are always threat to human resource. The common cause of the low level of the choice of PHCs for health care treatment are (Nimase A. G. & Dr .T.N. Lokhande. Aug-2013) conclude the lack of knowledge among the beneficiary families about PHCs, lack of funds at PHCs provide efficient service and the repeated absences of doctors. This planning model can be implemented without disturbing the present administrative boundary. It is essential to maintain quality of services and reducing gap between primary health centres.

For the better accessibility of health care facilities to maximum number of population within a minimum travelling distance this planning model is of two folds action, first is the estimation of required number of facility in addition to existing number fill the estimated gap, and second is the determination of new location. New location of proposed facilities has been determined based on priority assessment considering the threshold population of particular facility and nearest neighbor distance, connectivity and distribution of health facility keeping pace with growth of

population near about Nineteen sub-centres have been proposed for thirty seven new settlements during the plan till 2021. Today, one sub-centre for every 2.64 villages in the study area and there are one PHC for 14.77 inhabited village. In addition to existing 2.50 PHCs have been proposed for 37 settlements, while in addition to existing more dispensaries have been essential for new sites in the case of study region. As no any settlements of the region will be have sufficient population required to sustain and proper functioning of these facilities.

Table 6: Location of the Proposed Primary Health Centre Facilities in Pandharpur Tahsil, 2011

Sr. No	Name of the Proposed New settlement	Location code (Village No)	Total no of proposed Facilities-2011
1	Bhose	562315	03
2	Mundhewadi	562366	
3	Palshi	562339	

Source: Computed by Author