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Strategic Planning for Basic Medical Facilities in the South Konkan Region: Challenges, Opportunities, and Sustainable Healthcare Solutions

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Introduction

Josh Billing has said about the health that ***'health is like money , we never have true idea of its value until we loss it'*** . Importance of health is explain in this one sentence. What is health ? Health is a imperative part of Human being. And this can only be maintain by prevention and better health care facilities. Health care involves diagnosis, Treatment and prevention of disease. Provision of adequate health care is often considered a fundamental societal goal(Peter Anthamatten and Helen Haze 2011). Providing the best possible health to all people is codified in the constitution of the world Health organization , which states +

that 'The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race , religion, political belief, economic or social Condition'(WHO 1946).

Health care In India.

In India health services are increasing to control communicable diseases. National health policies of 1983 and 2003 has served us well and have has helped us to controlled many diseases and eradicated quite a few of them. But still India needs improve for better health care facility , especially in public domain . Helath care inequality are observed in most of the rural parts of the countries . Health service in India are organized at three level: national , state , and local. They are public , semi-public or private. This paper deals with the health care and planning strategy for basic medical facilities in south konkan region.

Roll of Geographers in Health care planning

Geographers use a variety of social and spatial approach to analyze health care issues. The study of health care provisions considers where and how health acre is provided across different communities. Often this work focuses on examining inequalities. Geographers have traditionally focused on spatial methods such as location allocation modeling which aims to determines the best location for health care facilities based on factors such as travel time between and their users.(Peter Anthamatten 2011)

Objectives

1. To examine the existing spatial distribution pattern of different types of basic medical facilities available in the Study Area.(Ratnagiri and Sindhudurg Districts).
2. To identify the well served areas , overlapped areas and the areas of functional – gaps in respect of basic health care facilities .
3. If the functional gaps are identified then to propose a planning strategy for new locations of basic health care facility in order to fill the location gaps for balanced development of the area under study.

Data base and Methodology:

The present study is mainly based on the secondary data, collected from the Health department of Maharashtra and Personal Observation. Latitudes and Longitudes of the Sub centers , PHCs, Rural hospitals with 30 beds, , and Sub district hospitals with 50 beds, Sub district hospitals with 100 beds, District Hospitals and were collected from Department of Health, Government of Maharashtra.

The influence zone of these health institutes i.e Sub centers , PHCs, Rural hospitals with 30 beds, Sub district hospitals with 50 beds, Sub district hospitals with 100 beds, District Hospitals were demarcated by circles with the radii of 1, 3,5,8 ,and 10 kilometers respectively. These circles have been adjusted to the boundaries of the villages lying within their limits.The villeges which falls in side the circles have assumed as well served area , where as the villages lying beyond the peripheries of these circles have been considered as functional gap areas.

Distribution of Medical Facilities in Study area.

The quality of medical facility available in the study area is extremely variable. Ranging from the organized and advanced in the urban areas to the most primitive in the rural areas. Looking at the distribution of basic medical facilities in both Ratnagiri and Sindhudurg district it indicates that these medical facilities are unevenly distributed among the various thesils.

District Ratnagiri.

Table 6.1 revels the great variations in the distribution of basic medical facilities in Ratnagiri district. It is evident from the table that there are total 428 medical institutions which comprise of Primary Sub-Centers, Primary Health care Centers, Rural Hospitals, Sub-district Hospitals and a District Hospital. Extreme difference is found in the distribution of medical institutions. Chiplun leads has the highest no of medical institutes, there are 68 medical institutes and Thesil Mandangad places last with 25 medical Institutions. The number with the other thesil also keeps varying with khed 57, Dapoli 54, Rajapur 54, Ratnagiri 51, Sangameshwar 51, Lanje 34, Gughgar 33. With some

Table 6.1 Distribution of Basic Health Facilities and bed available in Ratnagiri District (In Public and Public Institute) District Ratnagiri

Thesil	District Hospital	Sub-District Hospital (100 Beds)	Sub-District Hospital (50 Beds)	Rural Hospitals (30 Beds)	Primary Health Care Center with (6 Beds)	Primary Health Sub Center	Total Healthcare Centers (Excluding primary health Sub Centers	Total Institute	Actual beds Available	Bed Population Ratio	Total Population Served
KHED	-	1	--	-	8	48	9	57	258	1:703	181615
GUHAGAR	-	-	-	1	4	28	5	33	113	1:1090	123209
CHIPLUN	-	-	1	-	9	58	10	68	194	1:1438	279122
DAPOLI	-	-	1	-	8	45	9	54	188	1:948	178340
MANDANGAD	-	-	-	1	3	21	4	25	89	1:698	62123
RATNAGIRI	1	-	-	1	8	41	10	51	254	1:1257	319449
RAJAPUR	-	-	-	2	8	44	10	54	203	1:817	165882
LANJA	-	-	-	1	6	28	7	35	124	1:862	106986
SANGAMESHWAR	-	-	-	2	11	38	13	51	207	1:958	198343
Total	1	1	2	8	65	351	79	428	1630	1:990	1615069

* Excludes Family planning sub Centers ,allopathic dispensaries and T.B Hospitals .

*Desired Norms as per Modeliar committee for bed Population ratio = 1:10000.

extend it is acceptable that the distribution is based on the population and the area covered by the thesil but if the accessibility is taken in to consideration then this numbers makes disappointment.

District Sindhudurg.

Being the southernmost district of the Maharashtra state with rugged terrain , mountains , hills and jungles the condition of distribution of basic medical facilities is same even here . It may be noted from table 6.2 that even the distribution is extremely uneven. In Sindhudurg thesil Kudal with 49 has highest no of public medical institutes , and thesil damarg least with only 19 institutes. A part from this thesil kankawali has 44, sawantwadi 43, Devgad 42, Malvan 41, Vengurla 28, and Vaibhavwadi 20.

It is evident from the table 6.1 and 6.2 that in study area there are 588 PHSC's , 102 PHC's of them more than 58 PHC's are with 6 bed facility , and rest of them contain with 10 to 13 beds. There are 15 Rural Hospitals with 30 beds facility, 3 sub-district hospitals with more than 50 beds facility and 2 district Hospitals with more than 90 beds available. These medial units are providing basic medial facilities to a population of 24.64 lacks (2011 Census) residing in both rural and urban areas of the district . It is also apparent from the tables that there are 2672 beds available. Including T.B Hospitals, Family planning centers and other public health units there are 4437 beds available in both districts.

Table 6.2 Distribution of Basic Health Facilities and bed available in Sindhudurg District

District :- Sindhudurg

Thesil	District Hospital	Sub-District Hospital (100 Beds)	Sub-District Hospital (50 Beds)	Rural Hospitals (30 Beds)	Primary Health Care Center with (6 Beds)	Primary Health Sub Center	Total Healthcare Centers (Excluding primary health Sub Centers)	Total Institutes	Actual bed AVALIABLE	Bed Population ratio	Total Population Served
DEVGHAD	-	-	-	1	6	35	7	42	127	1:952	120909
DODAMARG	-	-	-	---	3	16	3	19	41	1:1192	48904
KANKAVLI	-	1	-		6	37	7	44	134	1:1009	135295
KUDAL	1	-	-	1	6	41	8	49	176	1:884	155624
MALWAN	-	-	-	2	5	34	7	41	158	1:707	111807
SAWANTWADI	-	1	-	1	5	36	7	43	182	1:810	147466
VAIBHAVWADI	-	-	-	1	2	17	3	20	76	1:576	43845

VENGURLA	-	-	1	1	4	22	6	28	148	1:579	85801
Total	1	2	1	7	37	237	48	286	1042	1:815	849651

* Excludes Family planning sub Centers , allopathic dispensaries and T.B Hospitals .
*Desired Norms as per Modeliar committee for bed Population ratio = 1:10000.

The reason to mention the number of beds only from the PHSC, PHC, Rural hospitals, Sub –District and District Hospital is that the people for their day to day health and other dieses go to these particular institutions.
Most of the thesils fulfill the bed/ Population ratio as per suggested by the Mudaliar Committee, expect Chiplun , Ratnagiri , Guhagar from Sindhudurg district and Dodamarg,Kankavli thesils from the Ratnagiri Taluka.

Inequalities in the Health Care Delivery System.
The study of the inequalities in the provision of health care helps in the health planning of the region. It is been found from the study that their has been inequality in the distribution of the Health care institutions.
To find out the distribution of basic medical facilities in the region composite centrality score value of basic medical facilities per 10,000 person have been calculated using the formula CCSV =10000 × C/TP. CCVS has been calculated for both the districts.

District Ratnagiri.
Table 6.1 and 6.2 shows the no of basic medical facilities in the districts. in Table 6.3 and 6.4 the same distribution is given to calculate the CCVS for both the districts.
It is evident from table 6.3 that there are 351 PHSC's , 65 PHC's with 6 bed facilities 1 rural hospital , ---District :- Ratnagiri

Table 6.3 Distribution of basic Health Facilities

Sr No	Taluka	Total Population (urban and Rural)	No Primary Health Sub centers	No of Primary Health centers with 6 beds facility	Rural Hospital with 30 Beds	Sub district hospital with 50 Beds	Sub district hospital with 100 Beds	District hospital with 200 bed facility	Centrality Score Value	Composite Centrality Score Value	Priority Order
1	Khed	181615	48	8	-	0	1	0	125.97	6.93	9
2	Guhagar	123209	28	4	1	0	0	0	26.62	2.16	1
3	Chiplun	279122	58	9	-	1	0	0	80.36	2.87	4
4	Dapoli	178340	45	8	-	1	0	0	75.12	4.21	7
5	Mandangad	62123	21	3	1	0	0	0	23.09	3.71	6
6	Ratnagiri	319449	41	8	1	0	0	1	136.48	4.27	8
7	Rajapur	165882	44	8	2	0	0	0	49.83	3.00	5
8	Lanja	106986	28	6	1	0	0	0	29.7	2.77	3
9	Sangameshwar	198343	38	11	2	0	0	0	52.74	2.65	2
Total		1615069	351	65	8	2	2	1	599.91	*3.61	

sub district hospital and 1 district hospital Ratnagiri. These medial units provide h=basic medical facilities to a population of 1615069 (as per 2011 census) .Thesil level variation in the distribution is also apparent from the table. For making the comparative study of the available of medical facilities at the thesil level Composite Centrality Score value has been calculated.

Where CCV stands for Composite Centrality Score Value of basic medical facilities per 10,000 persons. C stands for Centrality Score Value and TP stands for total population of the thesils.

Centrality Score Value for each thesil has been computed by allotting suitable weight age to the basic medical institutions according to their status . (viz. PHS's, PHS's . Rural Hospital , Sub –District hospital, and District Hospitals). The weight age to these institutions have been awarded on the basis of the following formula. $C=T \times 100/T$

Where t is one unit institution of medical facility.T is the total number of medical units of a particular category /status in the district.

On the basis of the above formula the centrality score value for PHC's, PHCS's, rural hospital , sub district hospitals ,and district hospital have been worked and summed up subsequently. The CCSV for all the 9 thasil have been computed shown in table 6.3

It may be noted that from the table that out of the total numbers of 9 thasil of the district only 4 are having the CCSV above district average of 3.61.the remaining thasil have CCSV below district average. In this thasils the CCSV vary from 2.16 in Guhagar to 3 .00 in Rajapur. The variant figure of CCSV indicates that the distribution of basic medical facilities among the various thasils of the district are not commensurate with the population residing therein.

District Sindhudurg

The same has been done to find out the distribution of basic medical facilities in District Sindhudurg. The centrality score value for PHC's, PHCS's, rural hospital , sub district hospitals ,and district hospital have been worked out to and summed up subsequently. The CCSV for all the8 thasil have been computed shown in table 6.4

It may be noted that from the table that out of the total numbers of 9 thasil of the district only 3 are having the CCSV above district average of 6.83 the remaining thasil have CCSV below district average. In this thasils the CCSV vary from 2.48 in Malvan to 6.11 in Vaibhavwadi. The variant figure of CCSV indicates that the distribution of basic medical facilities among the various thasils of the district are not commensurate with the population residing therein.

CCVS SCORE in Table 6.3 and 6.4 revels that the district Ratnagiri and Sindhudurg lacks a balance and rational spatial distribution of basic medical units .It is therefore imperative to evolve a planning strategy for removing such spatial imbalance in respect of basic medical facilities. in the study area. The Thesil having the CCSV below district average needs urgent attention.

District :-Sindhudurg

Table 6.4 Distribution of basic Health Facilities

Sr No	Taluka	Total Population (urban and Rural)	No Primary Health Sub centers	No of Primary Health centers with 6 beds facility	Rural Hospital with 30 Beds	Subdistrict hospital with 50 Beds	Subdistrict hospital with 100 Beds	district hospital with 200 beds	Centrality Score Value	Composite Centrality Score Value	Priority Order
1	Vaibhavwadi	43845	17	2	1	0	0	0	26.80409	6.11	7
2	devghad	120909	35	6	1	0	0	0	45.14628	3.73	3
3	Kankavali	135295	38	6	2	0	0	0	60.68723	4.48	4
4	Malvan	111807	34	5	0	0	0	0	27.73945	2.48	1
5	Kudal	155624	41	6	1	0	0	1	147.6567	9.48	5
6	Vengurla	85801	22	4	1	1	0	0	134.3015	15.65	8
7	Savantwadi	147466	36	5	1	0	1	0	142.862	9.68	6
8	Dodamarg	48904	16	3	0	0	0	0	14.80267	3.02	2
		849651	**239**	**37**	**7**	**1**	**1**	**1**	600	*6.83	---

Suggestions

Keeping in view the CCSV and functional garps area following proposals may be advice in order to fill up the locational gaps in relation to basic medical facilities in Study Area

1. Up gradation of the existing medical facilities at selected locations is also inevitable.
2. During the survey it has been observed that there is an acute shortage of trained doctors .It is suggested that steps should be taken to fill up the vacant post , with the permanent doctors.
3. The frequency of Public transport has to be increase. It will help people to reach the helath institution at early.

References

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2. **Accessing Healthcare in Rural Maharashtra: A Location Challenge**: This article discusses the geographical and infrastructural barriers to healthcare access in rural Maharashtra, highlighting the need for strategically located medical facilities.
3. **Healthcare Accessibility in Rural Maharashtra: Challenges and Solutions**: This piece explores the primary challenges faced by rural healthcare systems in Maharashtra and proposes solutions to improve accessibility, which could inform strategies applicable to the South Konkan region.
4. **Healthcare Infrastructure - Comptroller and Auditor General of India**: This report provides an overview of the healthcare infrastructure in Maharashtra, including data on sub-centres and primary health centres, which can serve as a benchmark for assessing facilities in the South Konkan region.
5. **An Assessment of the Maharashtra State Health System**: This study presents a comprehensive assessment of Maharashtra's health system, offering insights that could be relevant to the South

Konkan region's healthcare planning.

6. **CURRENT STATUS AND CONSTRAINTS OF RURAL HEALTHCARE IN MAHARASHTRA**: This research paper analyzes the current status and constraints of rural healthcare in Maharashtra, providing context that could be pertinent to your study area.
7. **Planning and design of territorial healthcare facilities in rural areas**: This publication discusses opportunities, advantages, and recommendations for planning and designing healthcare facilities in rural areas, which could be applicable to the South Konkan region.
8. **LITERATURE REVIEW ON HEALTHCARE FACILITIES, PLANNING AND POLICY**: This literature review delves into the complexities of healthcare facility planning and policy, offering insights that could inform strategic planning in the South Konkan region.
9. **The Guiding Principles of Hospital Design and Planning**: This article outlines key considerations for hospital design and planning, which could be adapted to improve healthcare infrastructure in the South Konkan region.
10. **Designing for Rural Healthcare Access**: This piece discusses the importance of strategic hospital location and design in enhancing healthcare access in rural areas, offering insights relevant to the South Konkan region.