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Spatial Analysis of Distribution Pattern of Health Facilities in Deoli Tehsil.

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ABSTRACT: Health is the satisfaction of basic human needs and essential for bringing qualitative improvement in life and its benefits are to be enjoyed by all. It is in this context that a study has been made of Deoli tehsil, which is one of the 7 tehsils of Tonk district of Rajasthan state. There are 170 habitations in Deoli tehsil in which the distribution pattern of health facilities such as health centres, primary health centres and sub-centres, dispensaries, hospitals has been analyzed, according to the minimum population of a habitation, how many health facilities are required is calculated. The area of study demarcates the services provided and gap-areas as per the prescribed methodology, and plans have also been presented to provide health facilities where they are not available.

KEY WORDS: Health facility, qualitative improvement, basic need, health center, dispensary.

I. INTRODUCTION

In the present research paper, an analytical study has been done on the distribution of existing health facilities in Deoli Tehsil of Tonk district. The 170 inhabited habitations located in the study area have been taken as a unit of analysis, under which circles of fixed diameter for the serving area were drawn from the primary health center and sub-center and dispensary as the center for analyzing health facilities. Any habitation found within the periphery of these circles was treated as the serving area of the health centre and the habitations outside the circle were treated as unserved areas. In the end, suggestions were presented for providing health facilities for unserved areas.

II. AIMS

1. To study the distribution of health facilities available in the tehsil.
2. To find out the threshold population for health facilities.
3. Demarcation of service provided and gap areas in Tehsil.
4. Submission of plan for providing service to gap areas in Tehsil.

III. METHODOLOGY

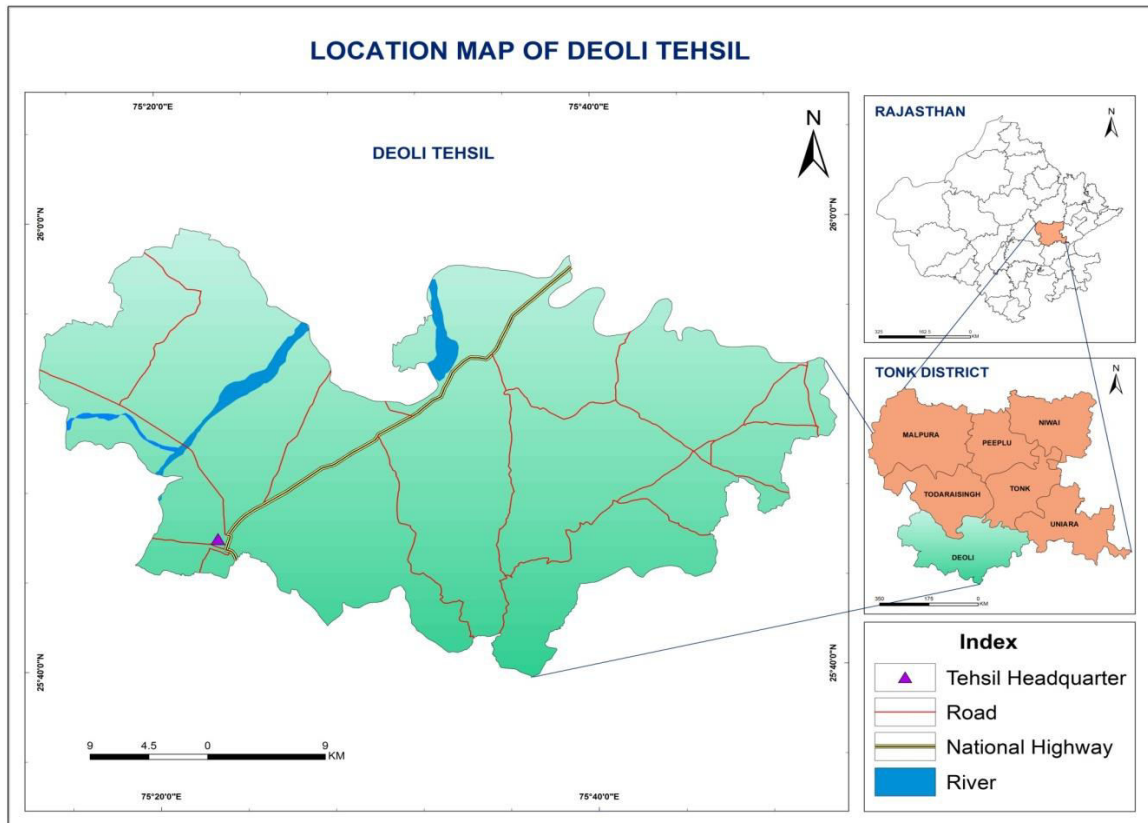
The study is based on secondary data from Tonk District Census Handbook 2011 and information received from office of District Statistical Officer. The minimum population for health facility has been determined on the basis of the Richmond method.

In this study, some assumptions regarding the accessibility and distance of health facilities to people have been considered. It is assumed that the dispensary can serve an area of radius 5 km. Primary Health Centres and Sub-Centres can cater to an area of radius 8 km. Based on this assumption, circles of 5,8 kilometres of radius were drawn from such centres. These were later adjusted according to the limits of settlement boundaries. Those who came within the circle were considered as service provided and those who remained outside the periphery were considered as the gap areas of service.

IV. STUDY AREA

Deoli Tehsil is situated at the southern end of Tonk district between 25^o44' North latitude to 25^o58' North latitude and 75^o10' East longitude to 75^o52' East longitude. Jahazpur tehsil is located on the southern boundary of the study area. Kekri tehsil forms its boundary to the west of the tehsil. In the north, the boundary of Todaraisingh, Uniara

and Tonk tehsils touches the study area. Hindoli tehsil forms its boundary in the east. The tehsil is spread over an area of 1228.35 sq km and has a population 214408 as per the 2011 census.



V. DISTRIBUTION PATTERN

It is clear from Table 1 that the distribution of health centres in the tehsil is very backward. Out of the total 170 habitations in the tehsil, only 7 habitations are able to avail this facility. The remaining 162 habitations are deprived of this facility. Out of 13 habitations with population 2000-4999, only two habitations at Panwar and Dhukala have this facility. Out of the 8 habitations having population more than 5000, this facility is available in 5 habitations namely Dooni, Nasirda, Thawla, Nagarfort and Anwa.

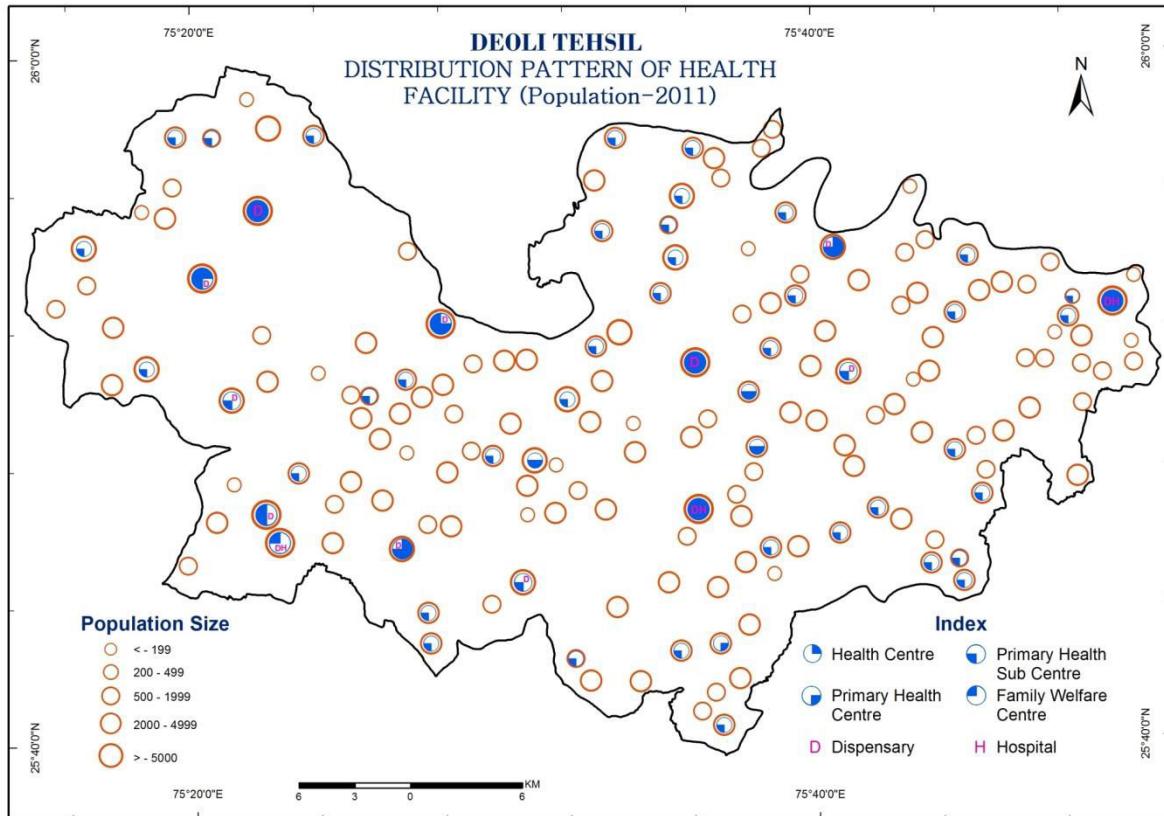
Table 1
Deoli Tehsil: Distribution of Health Facility (2011)

Settlement size	Total settlements	Number of Health Centres	Number of Primary Health Centres	Number of Primary Health Sub Centres
0 to 199	16	00	00	01
200 to 499	45	00	00	05
500 to 1999	88	00	03	29
2000 to 4999	13	02	03	11
More than 5000	08	05	05	07
Total	170	07	11	53

The Tehsil is also backward in terms of distribution of Primary Health Centres. Not a single habitation is available in 61 habitations with a population of less than 500. Out of 88 habitations with population 500-1999, only 3 habitations Sitapura, Tokrawas Bundi, Tokrawas Uniara have this facility. Out of 13 habitations with population 2000-

4999, 3 habitations namely Panwar, Dhuakala, Niwarian and 5 habitations with population more than 5000 are available at Dooni, Nasirda, Rajmahal, Nagarfort and Anwa.

The distribution of PHCs is slightly higher as compared to Health Centres and Primary Health Centres. This facility is available in 53 habitations out of 170 habitations located in the tehsil.



In addition to the above health services, dispensary facilities are available in 5 habitations with population 2000-4999 and eight habitations with population 5000 and above in the study area. Apart from this, hospital facility is available in 3 habitations Nagarfort, Anwa and Deoli urban centres having population more than 5000.

The average distance of health centres in the entire tehsil is 12.89 kilometres, the average distance of primary health centres is 10.28 kilometres, the average distance of primary health sub centres is 4.68 kilometres.

VI. THRESHOLD LEVEL OF POPULATION FOR HEALTH FACILITY

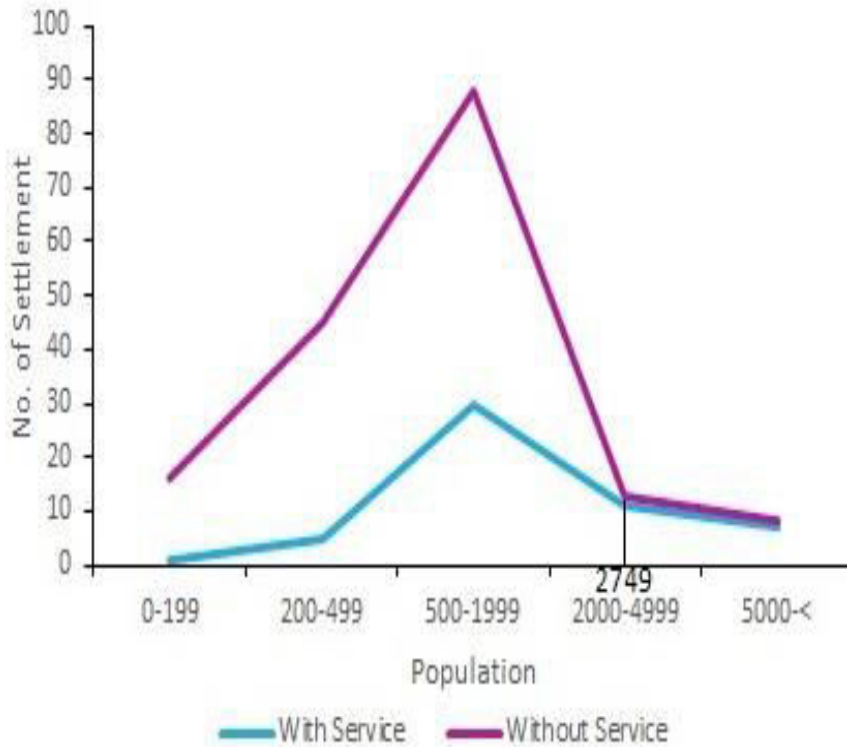
The threshold population for health facility in Deoli tehsil has been determined on the basis of Richmond method. It shows the total number of habitations with and without works on the OY axis while the population sizes of habitations on the OX axis are shown. This technique provides two curves which show the number of habitations with service and the number of non-functional habitats. When the two curves intersect each other at a point, this point represents T50 (minimum population) value as a population measure. This is the upper level of the population where all habitations of this level must have this function

Table 2

Deoli Tehsil: Functional distribution and coordination of habitations including population size

Settlement Size	Number of settlements	Primary Health Centre/Sub Centre	
		With Service	Without Service
0 to 199	16	1	15
200 to 499	45	5	40
500 to 1999	88	30	58
2000 to 4999	13	11	2
More than 5000	8	7	1
total	170	54	116

Primary Health Centre and Subcentre



The minimum population for establishment of PHC/Sub-centre in a habitation in the study area should be 2749. The proposed Primary Health Centre/Sub Centres have also been identified according to this minimum population, which has been computed by the following formula.

$$Pf = Tp / T50f$$

Pf = Number of service functions offered

Tp = Total population of Tehsil

T50f = Minimum population for a service center

Number of service functions offered = 214408 / 2749

Number of service functions offered = 78

Table 3

Deoli Tehsil: Number of proposed, existing and required Primary Health Centres/Sub Centres with minimum population for health facility

Health Facility	Minimum Population	Number of Primary Health centres/Sub-Centres Proposed	Existing Primary Health Centres/Sub-Centres	Number of Primary Health Centres/Sub-Centres required
Primary Health Centre Sub Centre	2749	78	54	24

Thus, it is clear that the minimum population for establishment of a Primary Health Centre/Sub-Centre in a habitation in the study area should be 2749. On the basis of minimum population, 78 centres are proposed in the tehsil



but at present only 54 centres are functional. Therefore, 24 more centres need to be opened to fill up the functional vacuum or gap of this service in the study area.

VII. DELIVERY OF HEALTH FACILITY

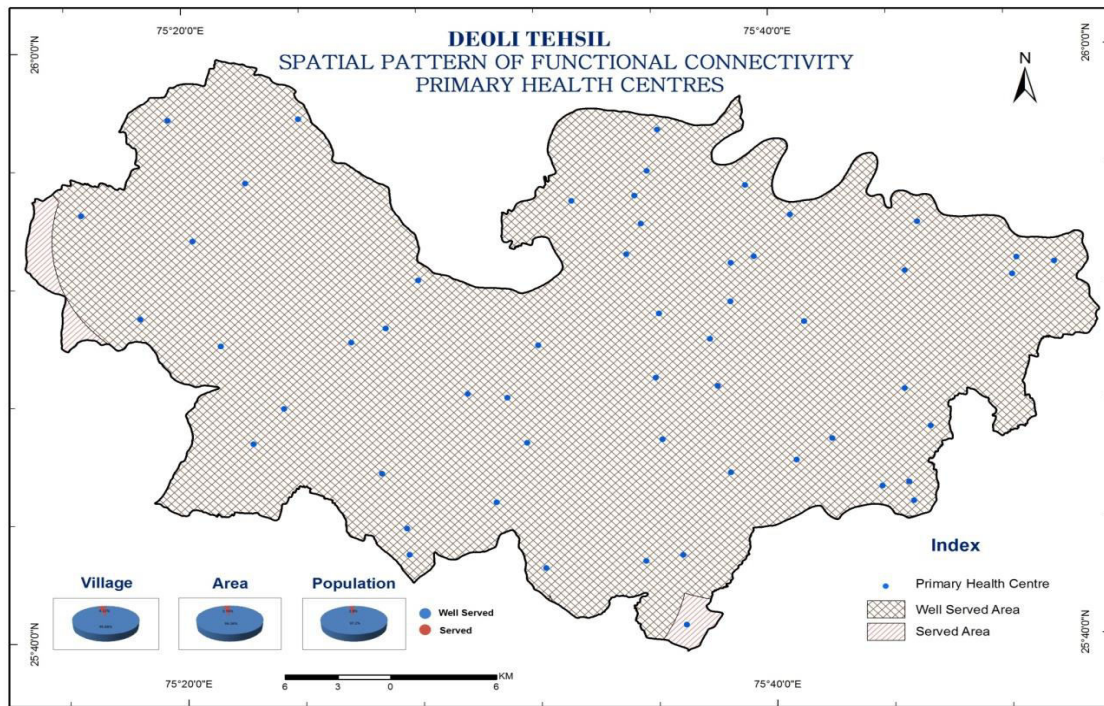
The method of drawing circles with service centres as centres has been used to identify the service provided and inter-areas in the study area. Settlements which fit within these circles are considered as service-oriented and those settlements which did not appear in any of the circles drawn were considered gap areas. Settlements which joined two or more circles were marked as well serviced areas.

Table 4
Deoli Tehsil: Expansion of Health Facility

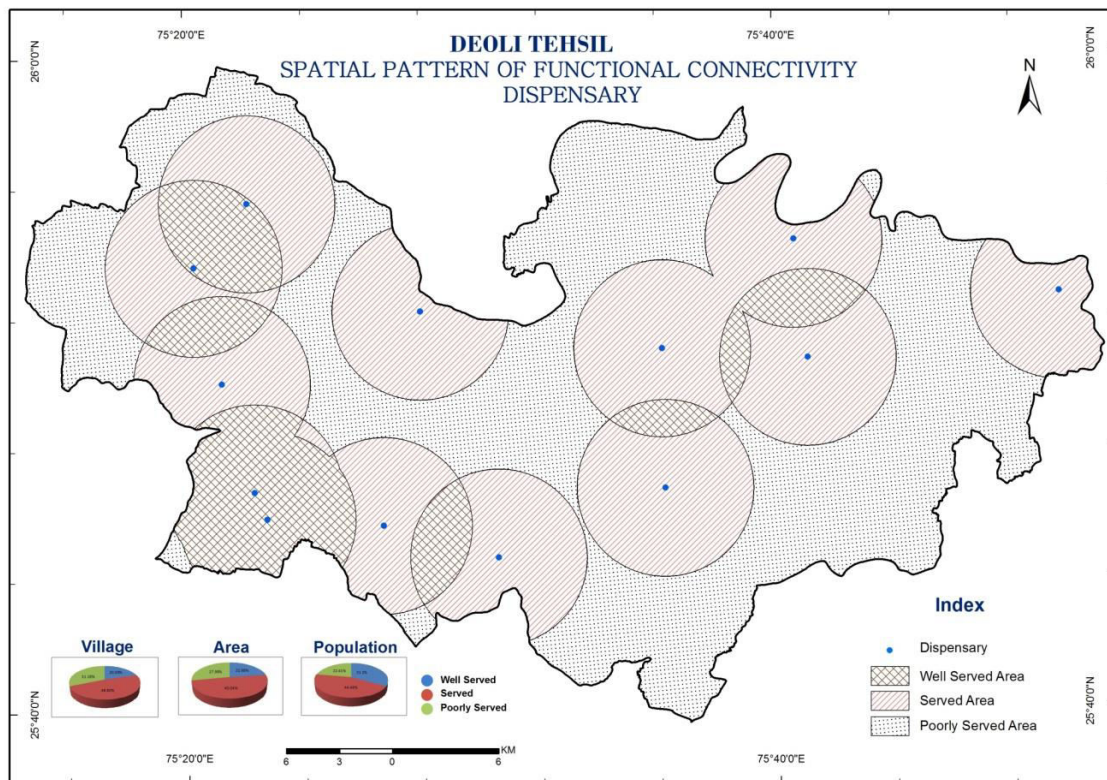
Health Facility	Radius of health facility (in kms)
Dispensary	5
Primary Health Centre/Sub-Centre	8

Table 5
Deoli Tehsil : Health facility, number of settlements

Field	Health facility (number of settlements)	
	Primary Health Centre (including Sub Centre)	Dispensary
Serviced Area	7	83
Gap Area	0	53
Well serviced Area	163	34



There are a total of 54 centres (including primary health centres, sub-centres) in the tehsil which provide free treatment and some Allopathic medicines. Located in any habitation, these centres can serve the area up to 8 kilometres around them. 95.88% of the habitations of the tehsil are enjoying this service well and 4.12% of the habitations are accessible to the people. Not a single settlement is deprived of this service.



Out of 170 habitations in the study area, 13 habitations have dispensary facilities. The distribution of this service in the study area is very uneven. In the dispensary, a patient gets only some first aid and some medicines. Thus, a dispensary can cater to an area of up to 5 km in its vicinity. 22.98% of the study area is well availing this service whereas the population living on 27.98% area has to travel a long distance to avail this service.

VIII. CONCLUSION

The distribution of health centres in the tehsil is very backward. Only big centres are able to avail this facility. The Primary Health Centres are also only in few habitations. Therefore, this service should be installed where this facility is not available. Because the development of the country depends on the efficiency of the people for which health is a primary need. The proposed Primary Health Centres and Sub-Centres should be accessible to the people so that the delivery of health facilities is balanced and all areas can benefit from them.

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