INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact Factor: 6.078
(Volume 8, Issue 3 - V8I3-1142)
Available online at: https://www.ijariit.com

Spatial Analysis of Area Influence of Primary Health Centres in the Tribal Tehsil of Nashik District

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ABSTRACT

Individuals, families, and communities initially come into contact with the national health system through primary health care, which brings health care as close as possible to where people live and work. Well-trained health practitioners must provide "scientifically sound and socially acceptable procedures made universally accessible. "The major goal of this article is to calculate the influence area of primary health centres in Nasik district of tribal tehsils. Jackson's (2009) approach has been used to calculate the Influence Area of Primary Health Centres. The development of a primary health centre necessitates the presence of 30000 non-tribal residents and 20000 tribal residents. The numbers of Primary Health Centres necessary in the Nasik district of tribal tehsils have75, but only 43 have been created, and more than 32 are needed. The impact area of Primary Health Centres in tribal tehsils of Nashik district is 213.86 square kilometres. The effect of area of Primary Health Centres in Nashik district is 18.24 villages, according to the population, the influence area of Primary Health Centres in tribal tahsils of Nashik district is 32528.33.

Keywords— *PHC, SPHC, Influence area, Tribal Tehsils, equity*

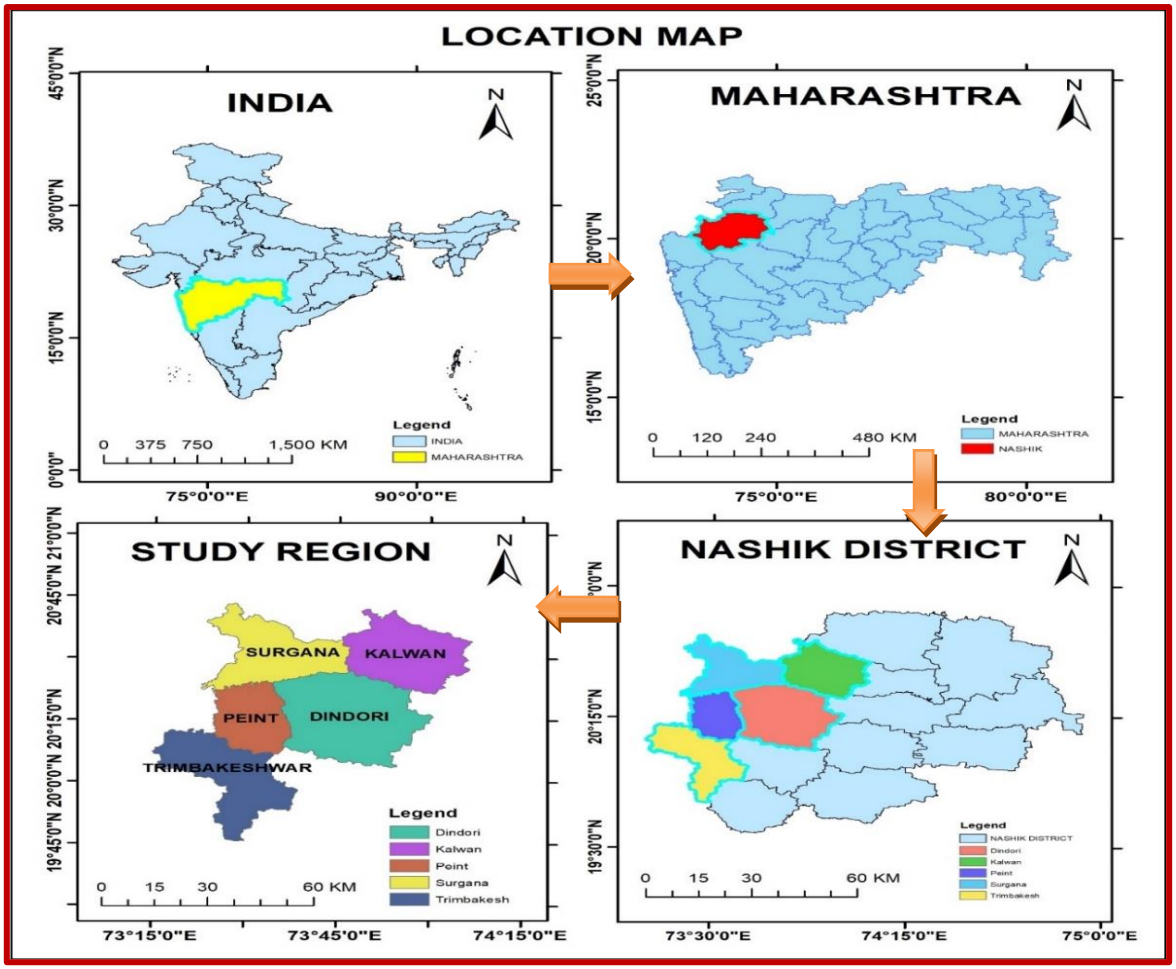
1. INTRODUCTION

In any sphere, health is a critical component of national progress. Nothing can be considered more important in terms of economic development of resources than the people's health, which is a measure of their vitality and capacity as well as the potential man hours for productive labour in relation to the total number of people maintained by the nation. The health workers are a critical consideration for the efficiency of industry and agriculture *(Goel, 1984)*[1]. The primary health centre (PHC) is an individual's, families, and community are first point of contact with the national health system, bringing health care as close as possible to where people live and work. It must provide "scientifically sound and socially acceptable methods made universally accessible" by well-trained health professionals. As a result, a key component of PHC is spatial (potential) accessibility, which takes into account the availability of well-trained health care providers, prospective demand from the community for health care services and geographic accessibility due to the distance between residents and providers. The concept of geographical accessibility has been widely employed to assess the equity of access to PHC services.

2. STUDY AREA

The study area is located in the north-western and south west region of the Nashik District. It extends from 19^0 44' 57" to 20^0 43' 55" north latitudes and 73^0 14' 05" to 73^0 06' 57" east longitudes. Study area covers an area of 4581.98 sq. km., which is 29.40 % of the geographical area of the district. It is surrounded by Deola and Chandwad tehsil in the east and the north-east, Gujrat state in the north, Palghar districts of Maharashtra State to the south-west, Igatpuri tehsil to the south. It consists of 05 tehsils,

namely Peint, Dindori, Surgana, Kalwan and Trimabkeshwar. The population of the region is 976092. It includes 760 villages and 40 PHC.



3. OBJECTIVES

- To calculate the area of Influence of PHC in Tribal Tehsils of Nasik District.
- To search the adequacy & inadequacy of PHC in study areas.

4. DATABASE AND METHODOLOGY

The current study is based on primary as well as secondary data. Secondary data was utilised in the Tribal Tehsils of Nashik District from Social and Economic Review 2019 and the Nashik District Census Handbook 2011.It is calculated the area of Influence of Primary Health Centres using Jackson's approach. For calculations and cartographic representation, MS-Excel software has been employed. It used Arc GIS-10.8 software to create isopleths maps. As per the calculation of the area of Influence of Primary Health Centres are using following Jackson's approach formulas.

$$1)\ \text{Area Influence} = \frac{Total\ Area}{Total\ Number\ of PHC}$$

$$2)\ \text{Area Influence} = \frac{Total\ Villages}{Total\ Number\ of PHC}$$

$$3)\ \text{Area Influence} = \frac{Total\ Population}{Total\ Number\ of\ PHC}$$

5. DATA ANALYSIS AND INTERPRETATION

According to the Maharashtra government's Public Health Department, a basic need programme has been established for health facilities in Maharashtra. According to government of India standards, a population norm has been declared for the creation of a health institution. The development of a primary health centre necessitates the presence of 30000 non-tribal residents and 20000 tribal residents.

The Maharashtra government's Public Health Department declared a basic need programme for health facilities in Maharashtra. In the Nashik district's tribal tehsils, 75 primary health centres are necessary, but only 43 have been created, with another 32 required. In the district of Nashik, the tribal tehsil is in the same situation. (Table No.1)

Table 1: Area of Influence of Primary Health Centres in Tribal Tehsils of Nashik District-2021

Sr. No.	Tehsil	No. of PHC	Area (Sq. km)	No. of Villages	Total Population	Influence Area by Total Area	Influence Area by Villages	Influence Area by Population
1	Peint	07	557	145	119838	79.57	20.71	17119.71
2	Dindori	11	7470	157	704524	679.09	14.27	64047.63
3	Surgana	08	821	190	175816	102.62	23.75	21977
4	Kalwan	09	859.71	152	346000	95.52	16.88	38444.44
5	Trimbakeshwar	08	900.27	125	168423	112.53	15.62	21052.87
Total		**43**	**10607.98**	**769**	**1514601**	**213.86**	**18.25**	**32528.33**

Source: Computed by Researchers- 2021

5.1 Influence Area of PHC by Geographical Area in Tribal Tehsils:

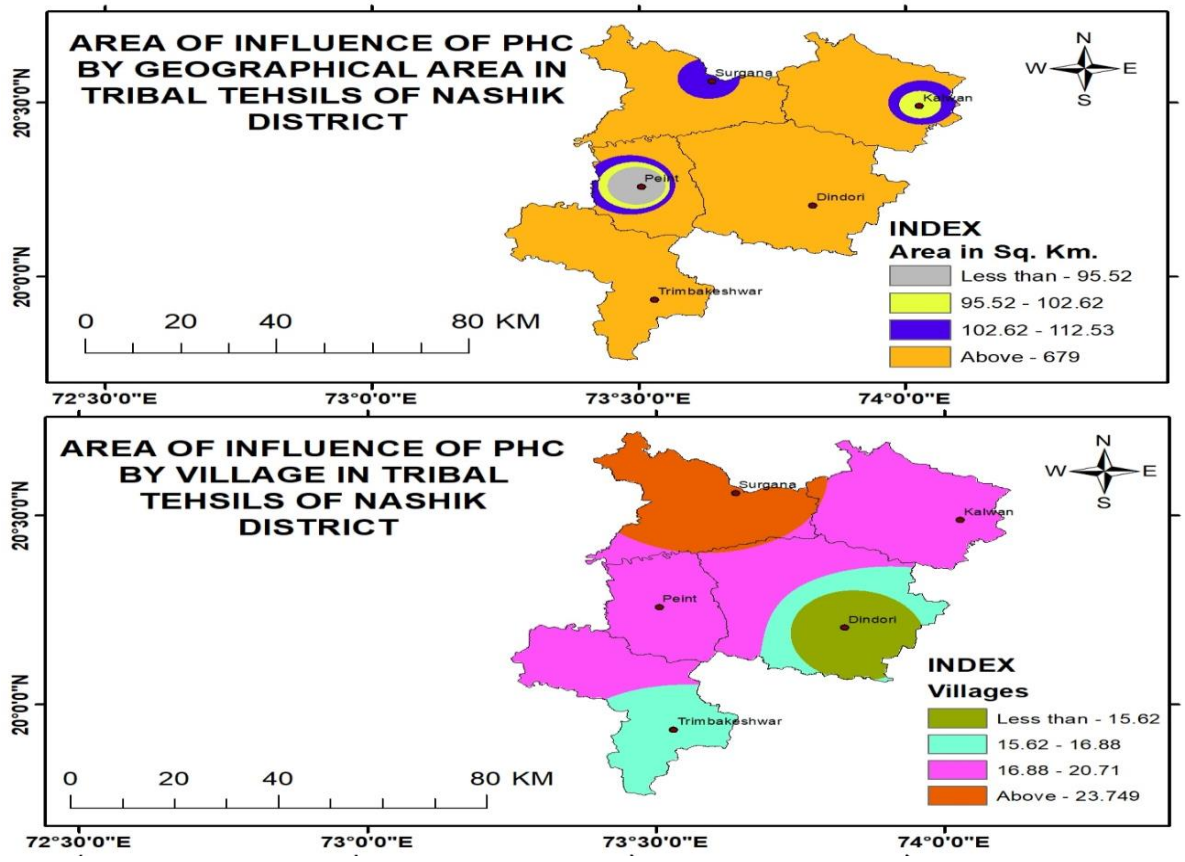
The influence area of Primary Health Centres shows how many square kilometres a single Primary Health Centres covers based on its geographical location. There are 43 Primary Health Centres in the Nashik district of tribal tehsils and the district overall geographical area is 10607.98 square kilometres. The study area of influence area of Primary Health Centres is 213.86 square kilometres. According to the geographical area, Didnori (679.09), tehsil has the highest influence area of Primary Health Centres, because of Dindori tehsil has largest population and most of the MIDC sector in Nashik district, large distance between two PHC's, while Peint tehsil has the lowest influence area of Primary Health Centres (79.57) because of remote area and adequacy of facilities. Remaining tahasils are covered by medium influence area as per geographical areas of the tribal tahasils..

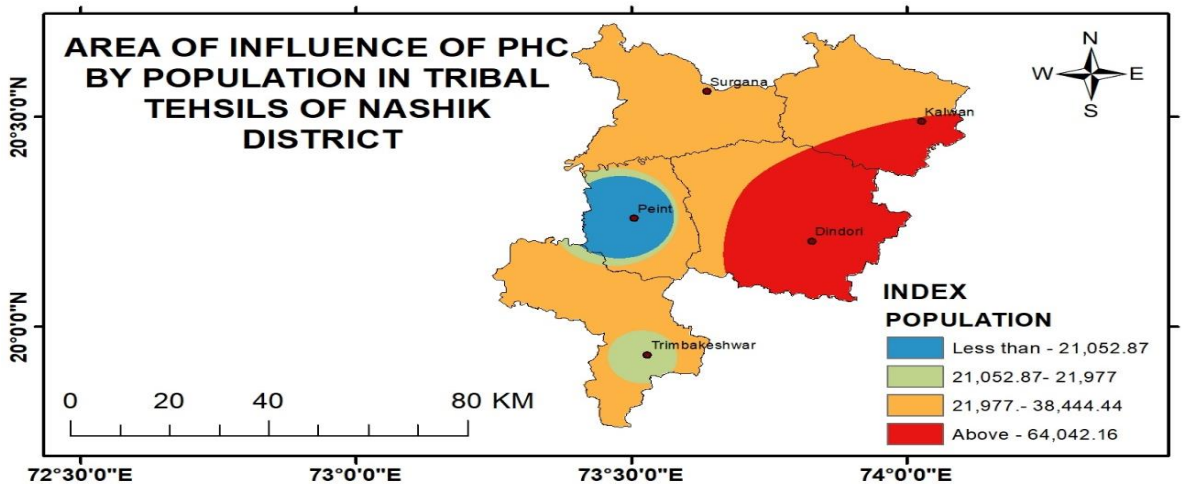
5.2 Influence Area of PHC by Villages in Tribal Tehsils

The influence area of Primary Health Centres shows how many villages are contained by a Primary Health Centres based on the number of villages. In the Nashik district of Tribal Tehsils, 43 Primary Health Centres have been created, with 769 villages spread over the district. According to the number of communities; the study area of influence of Primary Health Centres is 18.25 square kilometres. Surgana tehsil (23.75) has the highest influence area of Primary Health Centres by total number of villages in tribal tahasils, most of the houses settled in small pada's. While Dindori (14.27) tehsil has the lowest influence area of Primary Health Centres to total number of villages is large in the tehsil. But remaining tahasils are covered by medium influence area as per total number of villages in tribal tahasils.

5.3 Influence Area of PHC by Population in Tribal Tehsils

Depicts of how many people are surrounded by a Primary Health Centres, The Influence Area of Primary Health Centres, only 43 Primary Health Centres, have been constructed within the district with a total population of 1514601. According to the Population, the study area of influence of Primary Health Centres is 32528.33 square kilometres. Dindori (64047.63) tehsil has the highest influence area of Primary Health Centres. Due to the highest population in Nasik district and as per the government norms. Dindori tehsil should be 35 PHC required, while Peint (17119.71) tehsil has the lowest influence area of Primary Health Centres. The distance of PHC is less because of hilly area and it is not accessible.





6. CONCLUSION

According to the Maharashtra Government's Public Health Department, the number of primary health centres required in Maharashtra has not been met. In the tribal tehsils of Nashik district. Although 75 Primary Health Centres are required, only 43 have been created. In the study area, there is a 32 percent difference in the number of primary health centres. The tribal tehsil of Nasik district's the influence area of Primary Health Centres is 213.86 square kilometres. The research area of influence of Primary Health Centres is 18.24 square kilometres. According to the Population, in study area of influence area of Primary Health Centres is 32528.33 square kilometres. Geographically the highest influence area of Primary Health Centres is in Dindori tehsil (679.09), and the lowest influence area is in Peint tehsil (79.57). Surgana tehsil has the highest impact area of Primary Health Centres (23.75) and Dindori tehsil has the lowest influence area of Primary Health Centres (14.27) by total number of villages.

By population, Dindori tehsil has the highest influence area of Primary Health Centres (64047.63) and Peint tehsil has the lowest influence area of Primary Health Centres (17119.71). Government of Maharashtra should build more Primary Health Centres in the study area for public health. Because the influence area of Primary Health Centresin Nashik's tribal tehsils is minimal.

7. SUGGESTIONS

(a) The (Bhore Committee or the National Health Plan 1983) proposed demographic criteria for delayed health care services should be implemented. Therefore, for Dinndori more PHC should be created in the near future.
(b) According to the current population of Kalwan tehsil is requires 17 PHC, but it now has only 7 PHC, thus more PHC should be developed in this tribal tahsil in the near future.
(c) Developing a structural framework for health and overall growth change that reaches the lowest levels of settlements and incorporates plans and actions undertaken by the receiving group.
(d) This may have an influence of PHC in rural or indigenous areas. Physicians should be encouraged to work in tribal regions by providing additional incentives and services.

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