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SPATIAL DISPARITIES IN HEALTH CARE INFRASTRUCTURE IN SOUTH 24 PARGANAS DISTRICT OF WEST BENGAL, INDIA

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ABSTRACT

Health, a crucial human development indicator, is at a critical juncture at present. Access to public health services in many developing countries is hardly adequate. Inequalities in health care infrastructure loom large, resulting in poor health outcomes. Again these backdrops, the present paper opts to scrutinize the health care infrastructure and its spatial disparities with special references to South 24 Parganas district of West Bengal. Based on secondary data, the paper seeks to develop Health Infrastructure Index with the help of several indicators, pertaining to availability of health care service, performances of the public health care center, and accessibility to health care infrastructure. The study revealed that availability of health care service in terms of doctor population ratio, primary health care center per 10,000 populations are far from satisfactory; the preference for home deliveries is high, poor connectivity and accessibility still poses a setback for good health care service.

KEYWORDS: *Availability, Accessibility, Health Care Infrastructure, Inequalities, Distance, Health Outcomes*

INTRODUCTION

The socio-economic development of a country, among other things, largely depends on the quality of human resources. The quality of human resources can not only be visualized in terms of educational, and technological skills that it possesses, but also by the status of its health (Rajaswari and Sinha, 1993). Inadequate health services, long distances to health facilities, lack of effective and efficient transportation system, inadequate health personnel and inability to afford the cost of health services act as major hurdles constraining rural people from accessing health services (Dinye et.al. 2014). Negligence of primary care and primary health care institution influenced the utilization of health services and worsen the epidemiological profile of the rural population in India (Dey.et.al 2018). Access to health care is considered as a crucial developer of the health of the total population (Shalini et.al 2015). Keeping the facts in mind i.e., to enhance the health of Indian villagers, the National Rural Health Mission (NHRM) of India as per the 12thplan document of the Planning Commission aims to provide impelling health care to the rural population, especially in the remote and most disadvantaged groups. Access to health service and the quality of care administered at all levels of health care have been considered as the central determinants of health outcome. Efforts to eliminate inequalities in the access basic health care services have been emphasized for the overall improvement of health in developing countries (Odini2016).The District of South 24 Parganas

has been facing the problems of disparity in the distribution of the health services which create regional imbalances in development of the District (Mondal2017). In fact, West Bengal in general and South 24 Parganas, in particular, suffer from the long jam of disadvantage in term of both quality and quantity of health care infrastructure. For some places, physical access to health care services is difficult, Inadequacy looms large with regard to health infrastructure, socio-cultural barriers are there; most of the health care facilities are polarized in urban areas. Private health care facilities like nursing home are also located in notified areas. Against the backdrops, the present paper is divided with four sections viz, Section-I depicts the availability of Health care infrastructure, Section-II Portraits the performance of Public Health Care Service Centre and or accessibility of Health Care Infrastructure is the subject domain of Section III. Where Section IV is tries to construct a Health Infrastructure Index (HII) and a reasoned explanation of its spatial dichotomy. The last section concludes the paper.

OBJECTIVES

The paper has the following objectives, viz,

- To scrutinize the availability of health care service among different blocks of South 24 Parganas
- To highlight the performance of public health care infrastructure and its spatial variation
- To examine the accessibility of health care infrastructure along with its regional dichotomy
- To develop health care infrastructure index and provide an explanation for its spatial disparities

STUDY AREA

The District of South 24 Parganas came into existence on March 1, 1986. Prior to that date, it was a part of undivided 24 Parganas. The southern part of the district covers dense mangrove forests and the entire district is characterized by heterogeneity in terms of physical, socio-economic and cultural profiles combined with unique geographical location. The district is situated in the extreme southern part of West Bengal. The District lies between 21º 29' N to 22º 40'N and 87º 57'E to 89º13'E with a total area of 9,960 sq.km. Its rural area encompasses 9,783.24 sq. km and urban area 176.76sq km. At present, the district of South 24 Parganas is divided into 5 Subdivisions, 29 Blocks, 312 grampanchayats and 7 municipalities. Alipore is the District headquarters and it is located in Kolkata.

The district has a total population of 8,161,961(Census of India2011), out of which 74.42 percent population live in rural areas and 25.58 percent population live in urban areas. Population density is 819 persons per sq km. The Hindus constitute 65.86 percent of total population, Muslim constitutes 33.24 percent and Christians with 0.76 percent. The total literacy rate of the district is 77.51 percent; female literacy rate is 71.40 percent. South24 Parganas comprises a total of 99 health care institutions under the control of the Chief Medical Officers, 141 Private Health Care institutions, 5 Institutions run by local bodies.

Box 1: District at a glance (In Terms of Health Parameters)

Doctor-population Ratio 1: 17981; Bed Population Ratio 1: 2383, Medical Institution Population Ratio 1:28027, Primary Health Care Centre Population Ratio 1:96288, Sub centre Population Ratio 1:5589

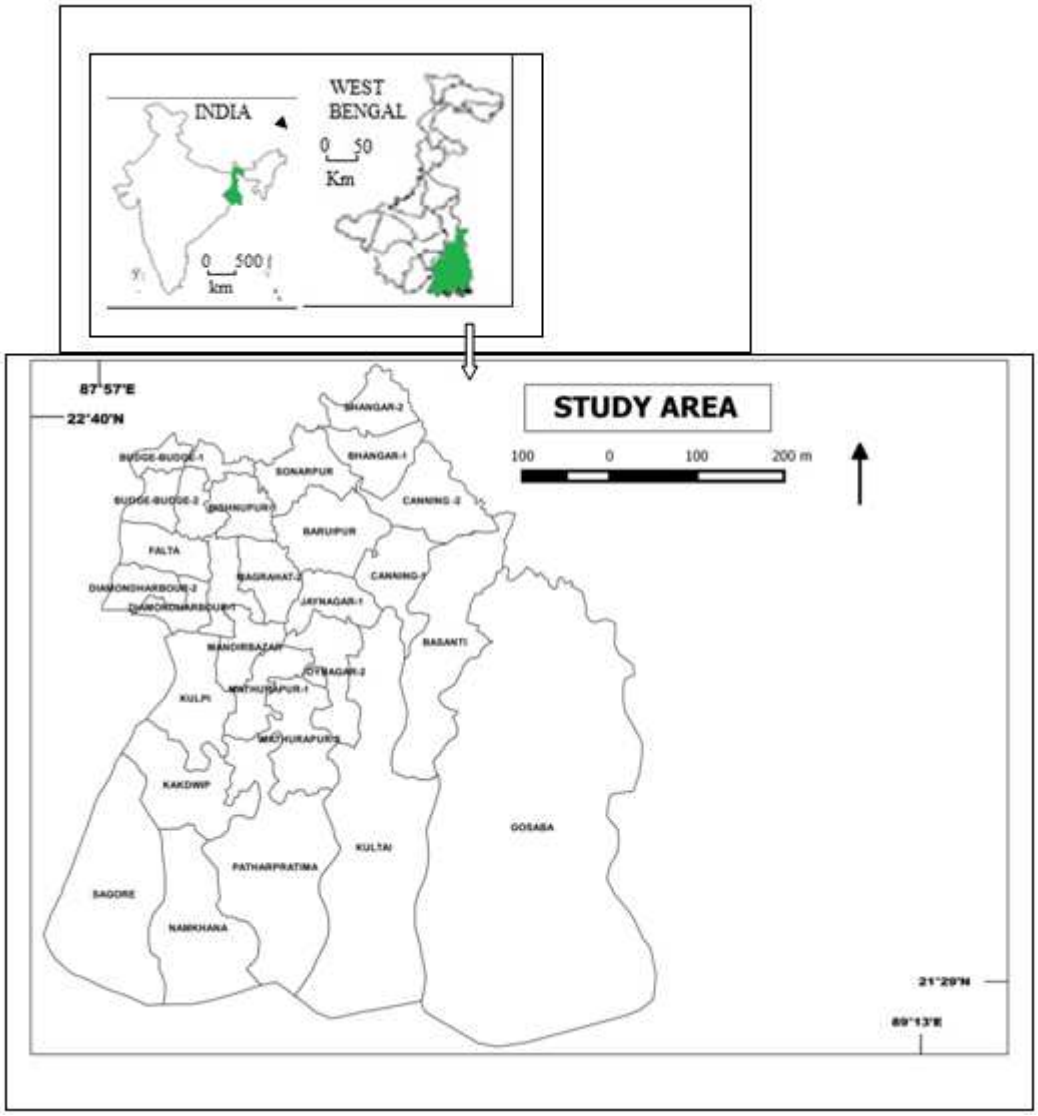

Figure 1: Location Map of the Study Area

The study area i.e. South 24 Parganas, situated in the extreme southern part of West Bengal, comprises a total of 99 health care institutions under the control of the Chief Medical Officers, 141 Private Health Care institutions, 5 Institutions run by local bodies**.**

METHODOLOGY AND DATABASE

The present paper is entirely based on secondary sources of data, collected from Census of India 2011, andDistrict statistical handbook published by Bureau of Applied Economics and Statistics Government of West Bengal in the year 2011, and Human Development Report, Government of West Bengal for the year 2009. Table-1 in the present study seventeen indicators of health infrastructure have been taken in various blocks of South 24 Parganas. The indicators have been grouped into three broad categories, namely;

- Availability of health care infrastructure II. Performances of the public health care center
- Accessibility of health care infrastructure

Table 1: Selected Indicators of Health Care Infrastructure of Various Blocks of South 24 Parganas

Availability of Health Care Infrastructure	**X1**	Doctors population ratio
	X2	Population served per primary health care center
	X3	Population served per subcenter
	X4	Number of medical institution per 10,000 population
	X5	Number of beds per 1000 population
	X6	Medical officers per 10,000 population
Performance of Public Health Care Service Center	**X7**	Percentage of outdoor patient to total patient
	X8	Percentage of the indoor patient to total patient
	X9	Percentage of institutional delivery to total institutional delivery
	X10	Percentage of home delivery to total home delivery
	X11	Percentage of crude birth rate
	X12	Percentage of a crude death rate
	X13	Percentage of immunization to total immunization
Accessibility of Health Care Infrastructure	**X14**	Number of medical institution per 100 sq km
	X15	Number of sub-center per 100 sq km
	X16	Number of primary health care center per 100 sq km
	X17	Percentage of village with nearest primary health care center within 5 km (If not available within the village

Source- Computed by Authors, 2018

In the present work, community development blocks have been taken as the unit of the study. The detailed methodology for preparing Health care infrastructure index (HII) runs as follows:

Iij= Xij-minXij / maxXij-minXij

Iij is the infrastructure indicator for the jth block with respect to ith variable and Xij represents the value of the ith infrastructural development indicator in jth block, minjXij and maxjXij are the mum and maximum values of Xij respectively (De,2014).

RESULTS AND DISCUSSIONS

Section-I Availability of Health Care Service

It's to note that health care generally corresponds to the availability of primary, secondary, tertiary level of health care service. Primary health care center, Sub-center, Community health care center is included in the primary health care service. Secondary level embraces district and sub-divisional hospital, block Primary health care center. Tertiary level is more specialized than the secondary level. This care is provided by the regional and district level hospital or specialized hospital etc. In the present study, availability of health care infrastructure is analyzed on the basis of six selected items, as follow viz, Doctors Population Ratio, Population served per primary health care center, Population served per Sub–center, Number of Medical Institution per 10,000 populations, Number of Beds per 1000 Population, Medical officers per 10,000 Population.

The Doctor-Population ratio (figure-2) is the most important factor affecting the health care service in the study area. Wide variation is found to occur in so far as the Doctor- Population ratio is concerned. It ranges from more than 65000(65322) in Canning-II block. It is observed that Canning-II, Basanti and Magrahat-II blocks are in the very

vulnerable position where more than 50,000 people are served by one doctor. It's to note that 18 percent blocks also show disappointing performances for one doctor is these to serve 25,000 to 50,000 people.

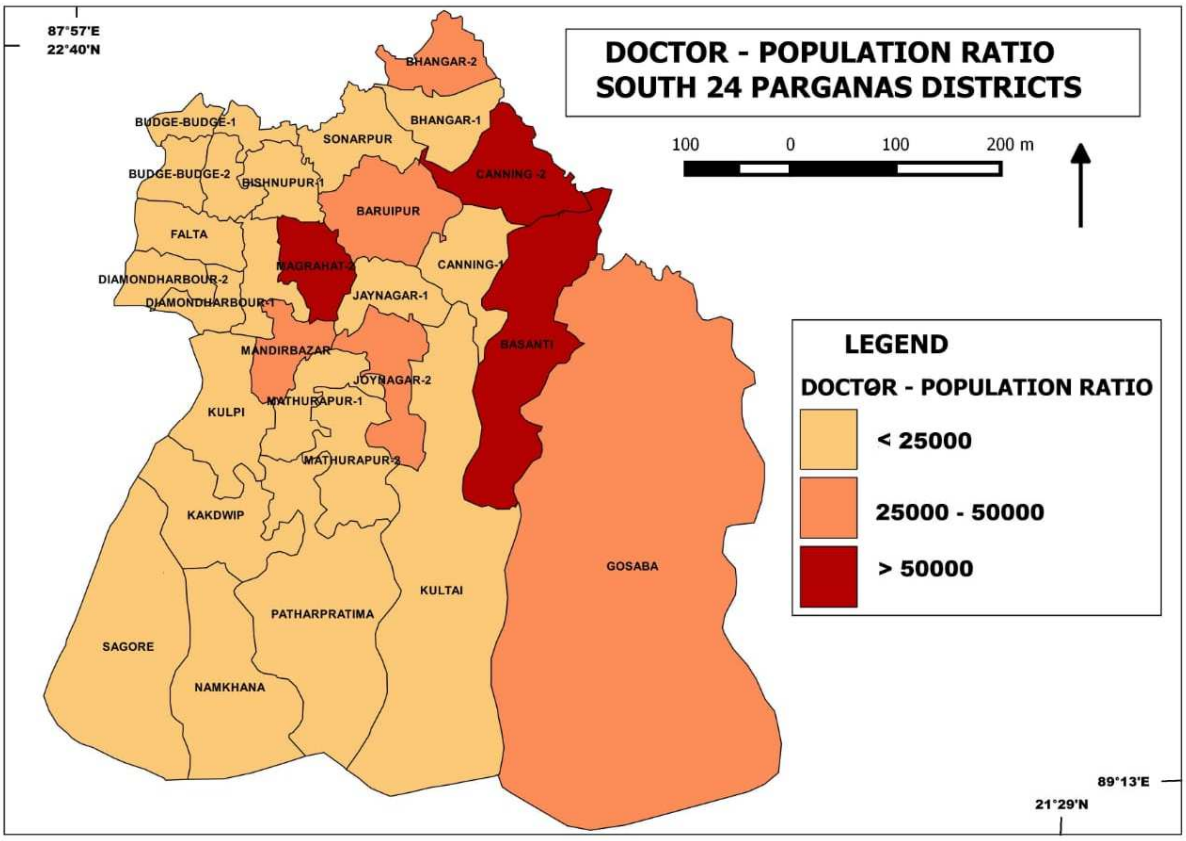

Figure 2: Doctor Population Ratio

Doctor population ratio is the number of doctors available to the population of the district. The data of South 24 Parganas talks about the huge gaps between populations per doctor.

In the Indian rural health care system, the subcentre is the most peripheral and first contact point between the primary health care system and the Community. But limited and low quality of health care services paralyzes the health opportunities of the common people. In eleven blocks out of 29 blocks, one primary health care has to serve more than one lakh people. The picture of four blocks, namely Canning-I, Canning-II, Kulpi, Magrahat-II is so grim that for every two lakh population there is only one primary health care center.Figure-3represents Population per primary healthcare in various blocks of the study area. It's to mention that only five blocks of the study area are found to be at close to the national norms. The National norm spoke of one primary health care for every 30,000 populations in plain areas and for 20,000 populations in Tribal, Hilly and Backward areas (Indian Public Health Standards National Health Mission 2005**).**

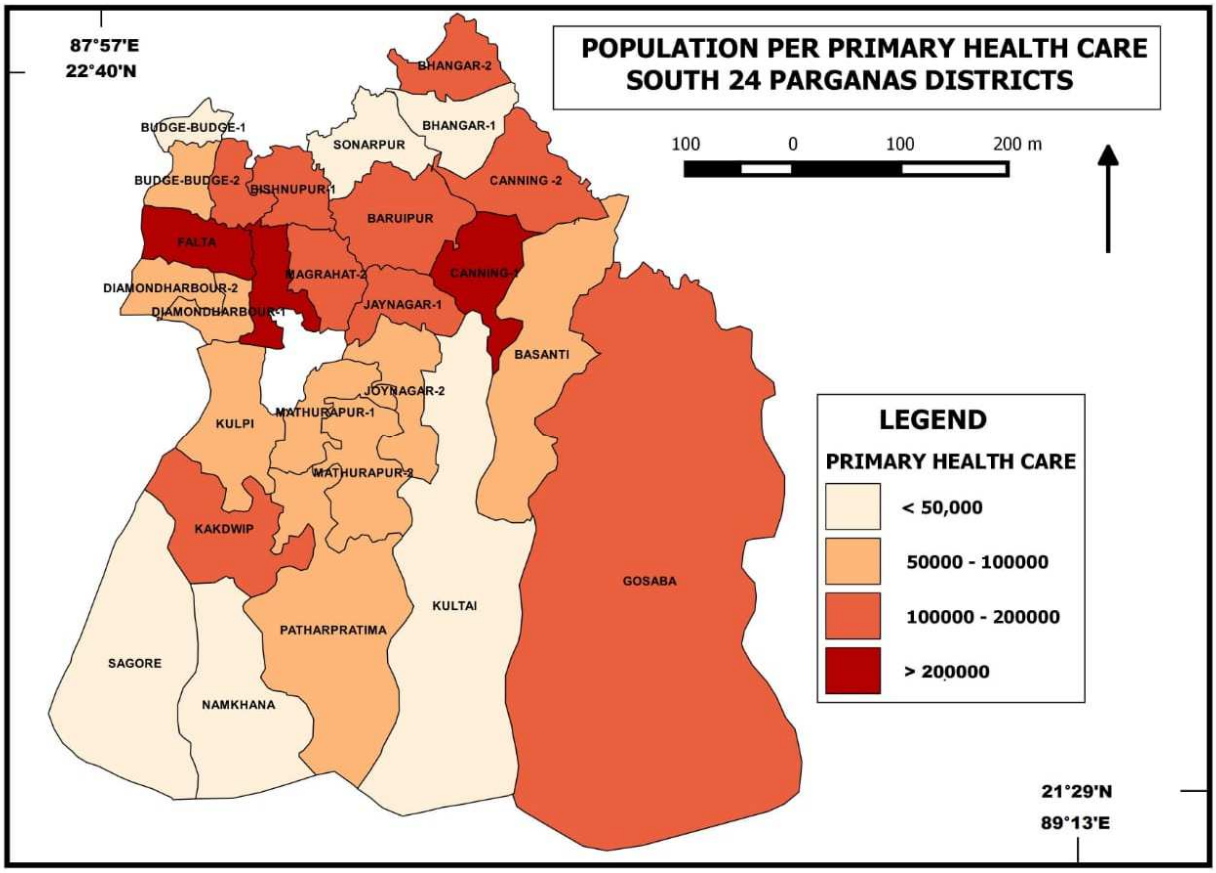

Figure 3: Population per Primary Health Care Center

Primary health care center is a basic part of the health care system. Public health care was established to provide accessible and available primary health care to people. Primary health care center generally consists of one or more doctors to lead the center and other paramedical support staff.

It's unfortunate to note that there is presently no block of South 24 Parganas that maintain Standard Population-Sub-center ratio of 3000 people (Indian Public Health Standards National Mission 2005). Out of Twenty Nine blocks, in Seventeen blocks, one sub-center is there to serve, more than 5000 people.

Population hospital bed ratio in health care institution is one of the important indicators of health service. In many cases, the building of health center is located and doctors are also posted but the bed is not available for the patient (Kathuria, 2012). Bed population ratio is highest in Magrahat-II block where one bed renders service to almost 5700 persons. Baruipur, Canning-II, Basanti. Gosaba, Mandirbazar blocks are in the tail where more than 4000 people are dependent on one bed.

In the present analysis, Medical Institutions include Medical College and Hospital, District and Sub-Divisional Hospital, Rural Hospital, Primary Health care, Block Primary Health Care, Private Medical Hospital etc. The availability of Medical Institutions is measured in terms of the number of Medical Institution per 10,000 Population. Canning-II is the most poorly served block in which 97983 persons are served by less than one Medical Institution. The region under study is found to have avulnerability in this indicator, more pronounced in the Deltaic blocks comprising of Basanti, Gosaba, and Sagar etc.

Section -II Performances of Public Health Care Centre

Healthcare service in the rural area in India not only depends alone on the availability and accessibility of health care services rather it is heavily dependent on the perceived needs of health-seeking behavior of the Communities. In many cases, despite having good accessibility and availability, the Community tradition hinders the adoptability of health care services in a region. More than 50 percent of people opt for institutional deliveries in just 5 Blocks (Out of 29 Blocks) in South 24 Parganas. Theimplies that home deliveries are more preferred through Daimas, or RMP (Rural Medical Practitioners). In Joynagar-II, Kultali, Canning-II, Basanti, and Kakdwip blocks, less than 10 percent of people choose for Institutional Deliveries (Figure-4). It can be stated that institutional deliveries are still back seated in South24 Parganas. And home deliveries are what people cherish to persuade.

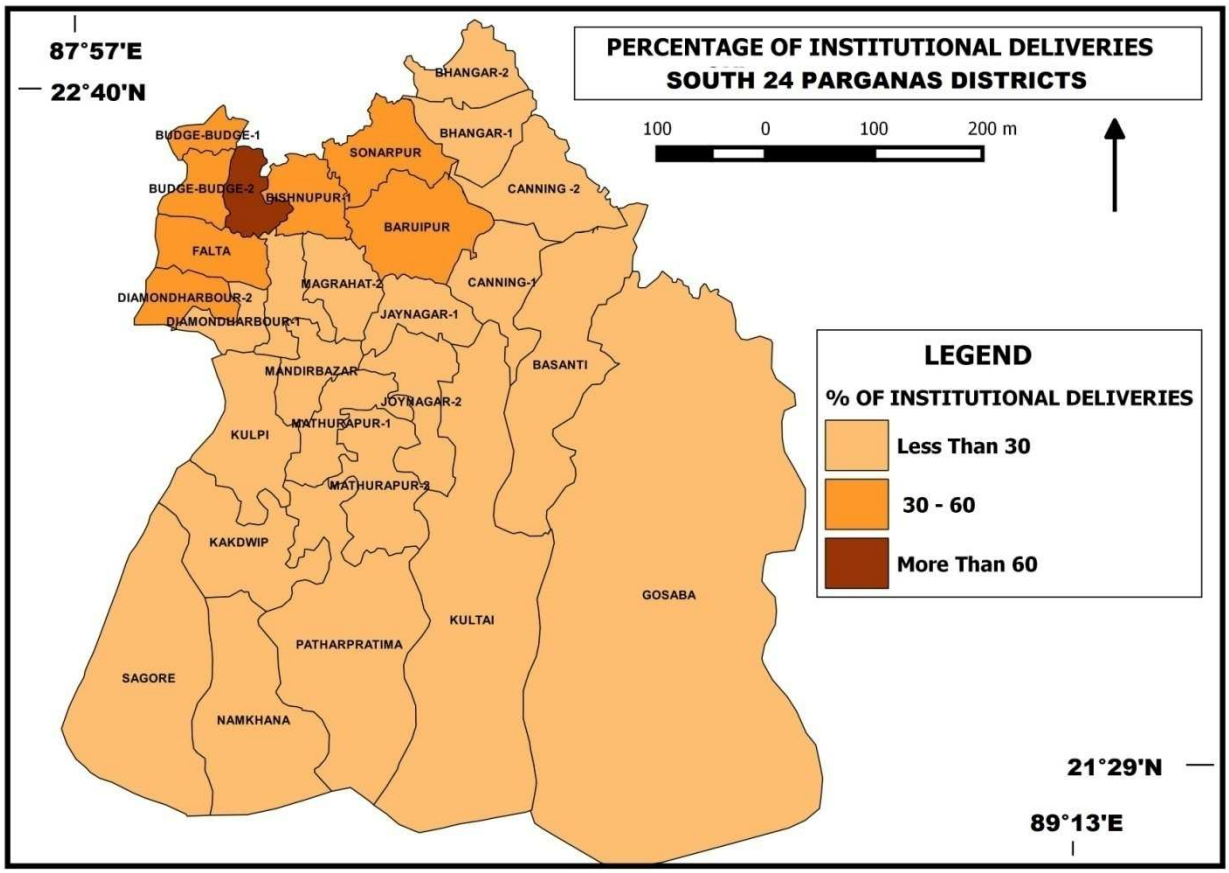

Figure 4: Percentages of Institutional Deliveries

Institutional delivery giving birth to a child in a medical institution under the overall supervision trained and competent health personnel where there more amenities available to handle the situation and save the life of the mother and child

The clinical attendance of the patient has been analyzed in terms of indoor and outdoor Patient to total patient. With regard to the treatment of Indoor patients, Bhangar-2, Basanti, Gosaba, Mandirbazar, and Patharpratima CD blocks are in a very severe position. The picture is a little bit better in Baruipur block with Indoor (5.23) and Outdoor (4.38) patient. Lowest number of Indoor(0.03) patient and Outdoor(0.46) patient are found in Namkhana block.

Section- III Accessibility of Health Care Infrastructure

Accessibility to health care facility ensures better health condition of the inhabitants (Figure-5). Budge-budge-1 Block posses the highest number of Medical Institution (23) per 100 sq km, Here one medical institution serves 4.35 sq km, whereassecond and third positions are occupied by DiamondHarbour-1 and Thakurpukur- Maheshtala Blocks, wherein one Medical Institution serves 6.25 sq km and 7.14 sq km respectively. About 59% of blocks have less than 5 Medical Institutions per 100 sq km. Amongst them, Joynagar-II, Kultali, Canning-II, Basanti, Gosaba Mandirbazar, Sagar and Patharpratima are in a vulnerable situation for the existence of one or two Medical Institutions per 100 sq km. Primary Health care center is useful service providers to rural Communities. Canning-I block secures the lowest position (0.47) in terms of Primary Health Care center per 100 sq km. In so far as the percentage of the villages with the nearest primary health care center within 5 km radius is concerned, the picture is very grim and alarming. In fact in Falta block, no village is having Primary Health care center within 5 km. The situation is also very disappointing in Bishnupur-I, Budge-budge-II, Kultali, Canning-I, Diamondharbour-I, Kulpi,Mandirbazar block with only more than 5% (but less than 10%) villages have the primary health care center within 5 km.

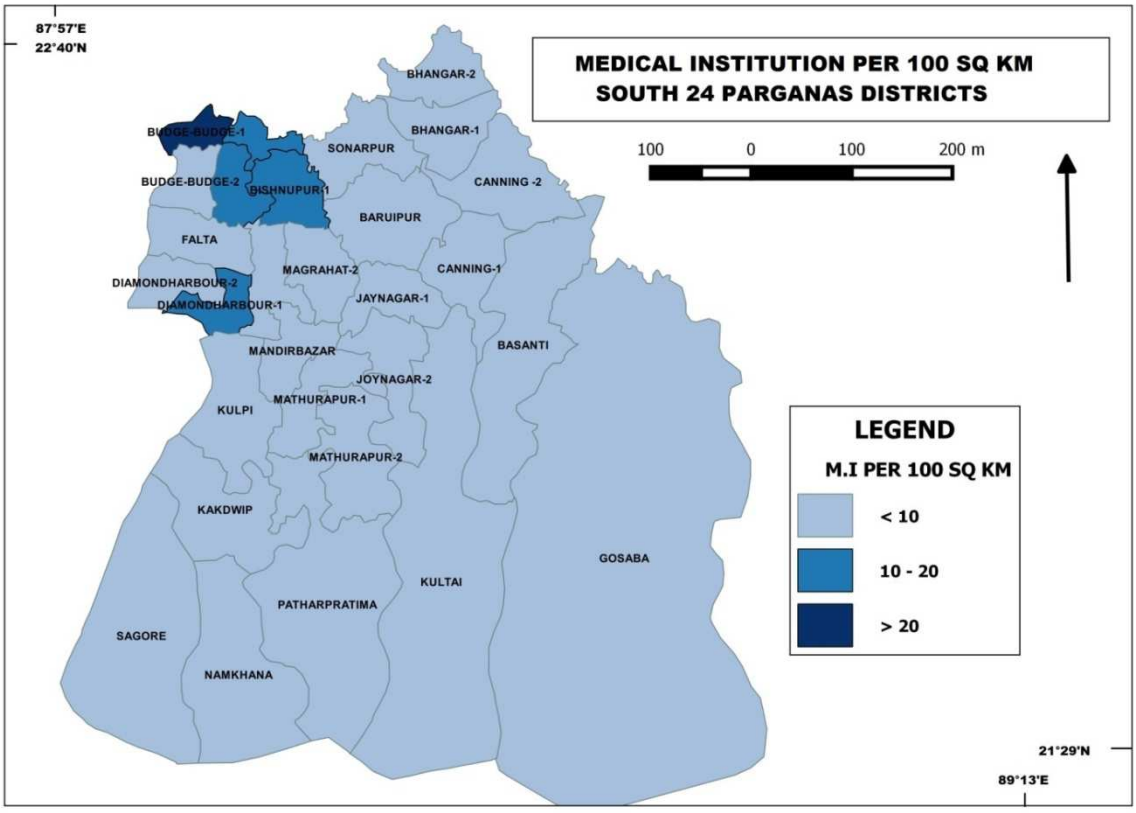

Figure 5: Medical Institution per 100 Sq Km

Medical institution per 100 sq km in terms of available of medical institution per sq km

Section IV: Health Care Infrastructure, its Spatial Disparity

Table 2 represents the Health Care Infrastructure Index (HII) for South 24Parganas. The objective is to identify the gaps in infrastructure development with regard to health care facilities at the block level of South 24 Parganas district. The Index (Health Infrastructure Index) depicts that Baruipur (0.476) tops the list followed by Magrahat-II,

DiamondHarbour-I, and Magrahat-I Blocks occupying 2nd, 3rd, and 4th rank respectively. It's to note that less than 7% Blocks of District show the high level of Health care Infrastructure. Sixteen blocks are found to be moderately developed in so far as the health care facilities are concerned. It accounts for 55% of the total infrastructure, mostly occurring in Deltaic region of Sundarban.

Table 2: Health Care Infrastructure Index in Various Blocks of South 24Parganas

Name of the Blocks	Health Care Infrastructure Index(HII)	Rank
Thakurpukur-Maheshtala	0.34576	10
Bishnupur-I	0.294958	19
Bishnupur-II	0.366122	7
Budge-budge-I	0.342631	11
Budge-budge-II	0.321813	16
Sonarpur	0.277279	22
Joynagar-I	0.300899	17
Joynagar-II	0.280056	20
Kultali	0.236532	28
Baruipur	0.476054	1
Bhangar-I	0.267408	23
Bhangar-II	0.334588	13
Canning-I	0.325917	15
Canning-II	0.351682	9
Basanti	0.252762	26
Gosaba	0.264991	24
Magrahat-I	0.374326	4
Magrahat-II	0.434469	2
Mandirbazar	0.370533	6
Kulpi	0.341459	12
Falta	0.336928	14
Diamondharbour-I	0.393846	3
Diamondharbour-II	0.377697	5
Mathurapur-I	0.286378	21
Mathurapur-II	0.249222	27
Kakdwip	0.360922	8
Namkhana	0.214495	29
Sagar	0.269469	25
Patharpratima	0.300976	18

Source- Computed by Authors, 2018

The high level of (Figure-6) Health care Infrastructure Index(HII) is attributed to the good performances of the health indicators like population per Sub-center, No of beds per 1000 population, Medical officers per 10,000 population, percentage of indoor patient, percentage of outdoor patient, percentage of village with nearest health care center within 5km.The poor performances of the health indicators like population per sub-center, population per primary health care center, Medical officers per 10,000 population, percentage of indoor patient, percentage of outdoor patient, percentage of Institutional delivery, Crude birth rate, Crude death rate, number of primary health care center per 100 sq km, number of sub-center per 100 sq km, percentage of village with nearest primary health care center within 5 km are responsible for very disappointing index of health care infrastructure. In 92% blocks of the area under deltaic region like Basanti, Gosaba, Sagar, Kultali, and Namkhana, poor transport and communication network, Irregular electricity supply, scarcity of portable water. Along with the natural calamities like cyclone and storm ripples are major handicaps with regard to health care infrastructure development.

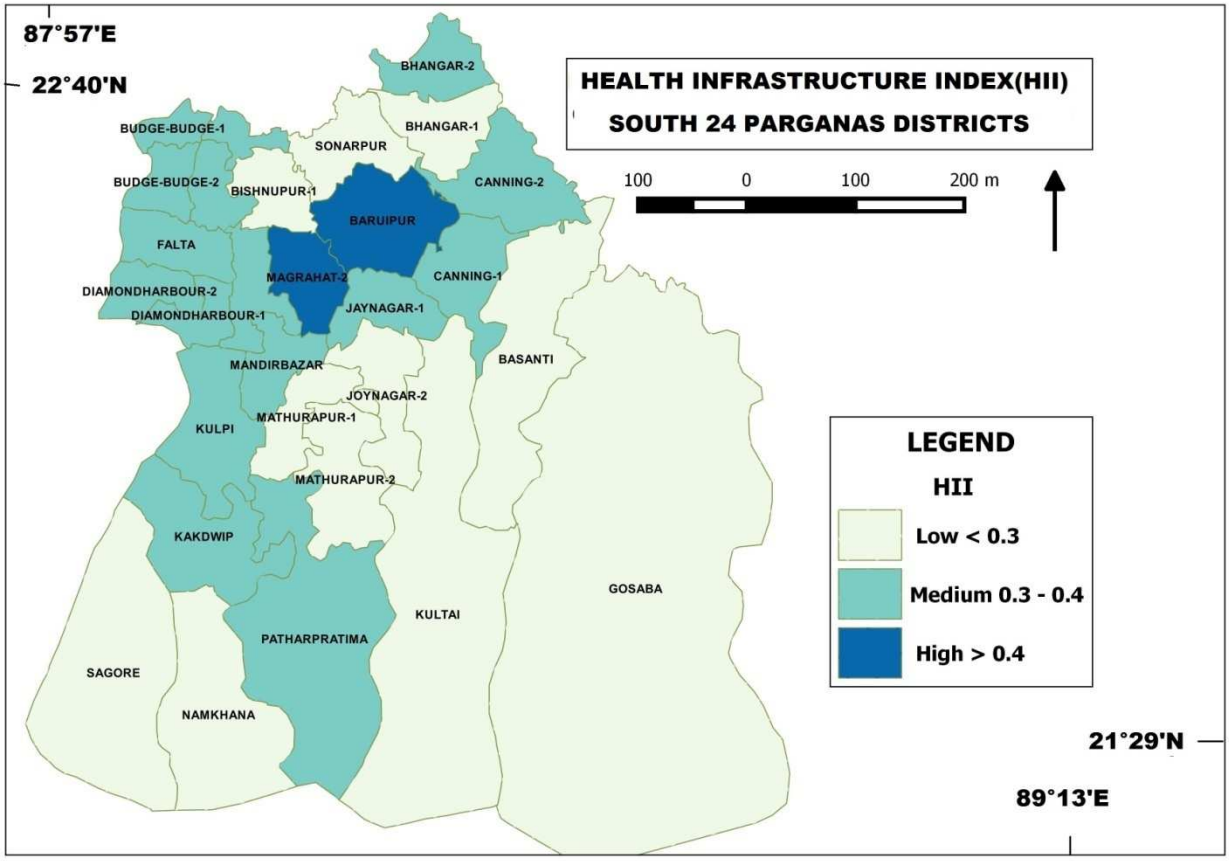

Figure 6: Health Care Infrastructure Index

A health infrastructure index is developed using health inputs like number of hospitals, number of doctors and number of beds. Health infrastructure index included Availability of healthcare service, Performances of public healthcare center, Accessibility of health care infrastructure

FINDINGS AND CONCLUSIONS

The study provides an analytical discussion of health care infrastructural facilities of health care system and health outcome with regard to South 24 Parganas District, West Bengal. It has been found from the study that lacunae do exist with regard to the availability and accessibility of Health Care Service and health outcomes as well. Majority of people depend on Primary Health care center, Sub-center, and Community health care center and that too is not found to be adequate. Regional disparities are there with regard to the availability and accessibility of health care services. And even if health care facilities are there, poor infrastructure nullifies all efforts of good health outcome. The problem is more pronounced in the deltaic region. The region witnesses poor Doctor-population ratio, population per primary health care center, Population bed ratio. A large number of people depend on traditional family norms. That puts a hurdle on having institutional facilities in case of delivery. That means home deliveries are prioritized still now. More than anything else, it is the poor connectivity and accessibility that jeopardizes the health scenario of the region.

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