Knowledge: a multidisciplinary e-journal
ISSN: 2581-3471
Website: https://www.vivekanandacollegeforwomen.org/ejournal

Disparity in health care services of Duars and Sundarbans of West Bengal: a comparative study

Piyali Kanji

Assistant Teacher, Moukhali G.G. Vidyalaya, South 24 Parganas

E-mail: piyali_kanji@ymail.com

and

Dr. Amitajyoti Bagchi

Associate Professor, Vivekananda College for Women, Kolkata

E-mail: amitjbagchi@gmail.com

Abstract:

Adequate health care services foster the quality of life of people in a region. Duars and Sundarban are the regions where very physical entity poses as hindrance towards introduction of developed health care services. Even though these two regions are at par with each other so far underdevelopment in health care services are concerned some differences amongst them are also noticeable. In which way one region has an edge over the other is depicted in this study keeping an eye on the overall problems of these regions.

Keywords: *Health care services, quality of life, population-bed/doctor ratio, regional imbalances*

Introduction:

Health is a key indicator of Human Development. According to World Health Organization (WHO) health is the state of physical, mental and social well-being in unison and not merely absence of disease or infirmity. It is one's fundamental right to have good health by not identified through any socio-economic parameter like standard of living, caste, religion etc. But many people live at far from this ideal condition. In West Bengal, particularly in the regions of Duars and Sundarbans, geographical setting is another hurdle towards rendering adequate health care services to inhabitants. Being located at the foothills of the Himalayas some areas of the

Duars is feebly accessible. At the other end of the State well within tidal zone of Bay of Bengal the location of Sundarban is also disadvantageous from accessibility point of view. As the accessibility is very poor in these two forested zones the inhabitants face uphill task to procure heavily needed articles and services to fulfill their basic needs. Health care service happens to be one of the basic needs. In Duars region about 72.63% of population lives in rural areas where as in Sundarbans their share counts for 96.72% (Census of India, 2011). It is matter of fact that this population lack health care facilities since independences (Saini and Yadav, 2015). To what extent this huge population is devoid of basic health care services needs a thorough probe.

Literature Review:

In the opinion of De (2014) at sundarban region there were regional imbalances in terms of health care services. According to him, shortage of safe drinking water and deficiency in proper nutrition is the cause behind poor health of the inhabitants there. Mandal (2017) had expressed health services varies with changing literacy rate of South 24 Parganas District. Barman and Roy (2018) highlighted on the regional disparities in health services of Koch Behar District. But adequate academic works have not yet been done to understand in depth regarding deficient health care services in Duars and Sundarban, the two extremely located regions of West Bengal.

Objectives:

The objectives of this study are like the following:

- To assess the effectiveness of existing health care system for foresters at Duars and Sundarban region.
- To get a comparative situation in regard to infrastructural facilities of health care services at Duars and Sundarbans.
- Analyze the causes of inadequate health services of these two regions.
- To find out pathways for improving health care services at Duars and Sundarban regions.

Purpose of the Study:

- Geo-environmental conditions combined with lack of government initiative (extrinsic variables) are responsible for development of dissatisfaction amongst residents towards

existing health care services at Duars and Sundarbans (H_0).

- Social customs and practices (intrinsic variables) are responsible for development of inhibition towards existing health care services at Duars and Sundarbans (H_a).

Study Area:

The study area comprises northernmost and southernmost regions of West Bengal situated at extremely two different geographical setting. Duars is situated at the foothills of mighty Himalayan mountain ranges. This region in West Bengal comprises an area of 4,750 sq. km. Latitudinally this region is extended from $25^0 58^/$ North to $27^0 45^/$ North and longitudinally from $89^0 08^/$ East to $89^0 59^/$ East. It is a landlocked region bordered by Darjeeling in the West, Assam in the East, Koch Behar in the south and shares international boundary with Bhutan in the north and Bangladesh in the south respectively. Latitudinal extension of Indian Sundarban is from $21^0 38^/$ North to $22^0 37^/$ North and longitudinally it is extended from $88^0 02^/$ East to $88^0 57^/$ East. Broadly Sundarban is bordered by Hugli river in the West and Ichamati-Raimangal rivers in the East. An imaginary line Dampier-Hodges denotes the boundary in the North. Bay of Bengal is the southernmost limit of Sundarbans. It comprises 19 blocks of North and South 24 Parganas. Indian Sundarban covers 9,630 sq. km. area.

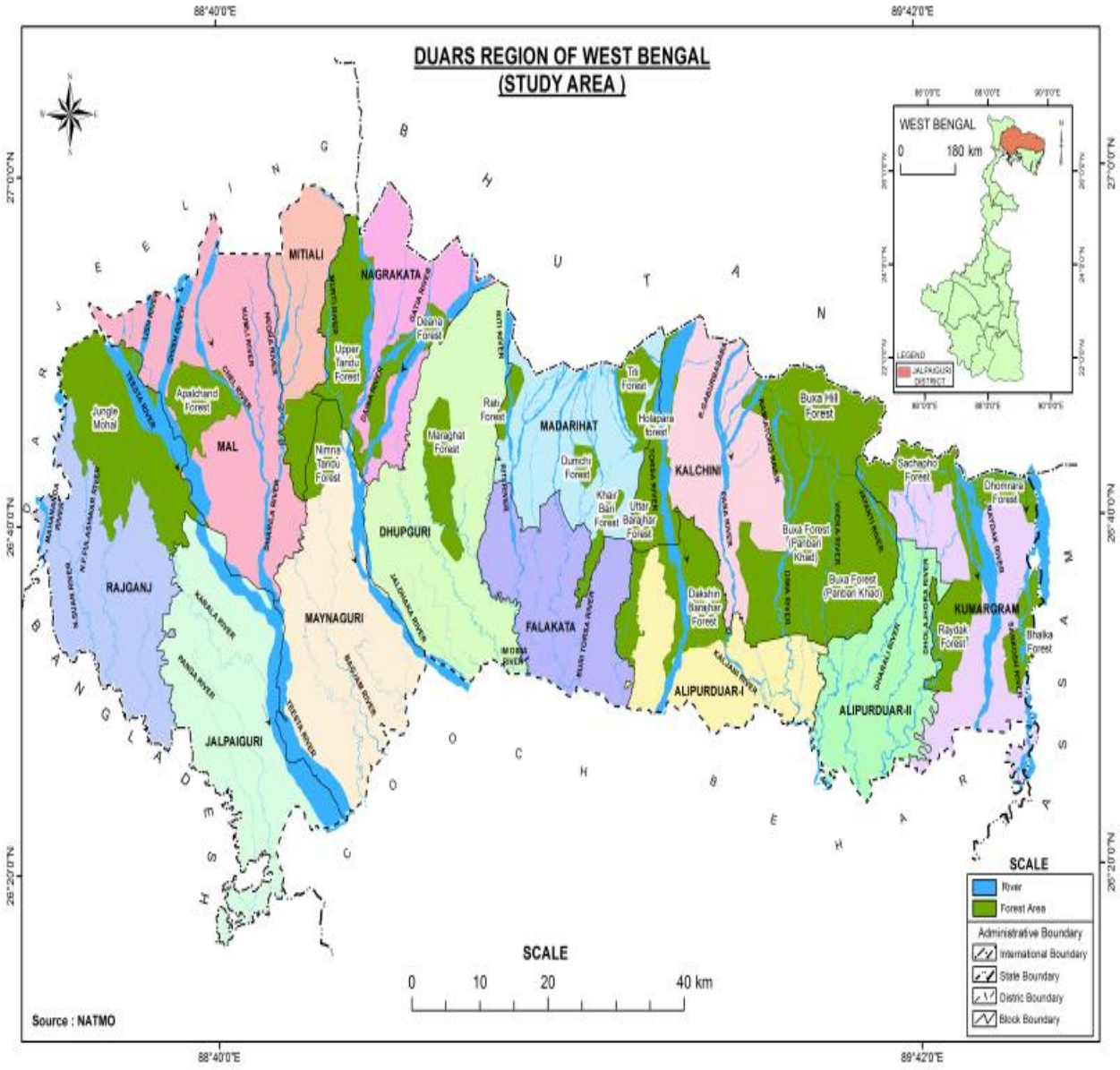

Fig. 1: Study Area, Duars Region

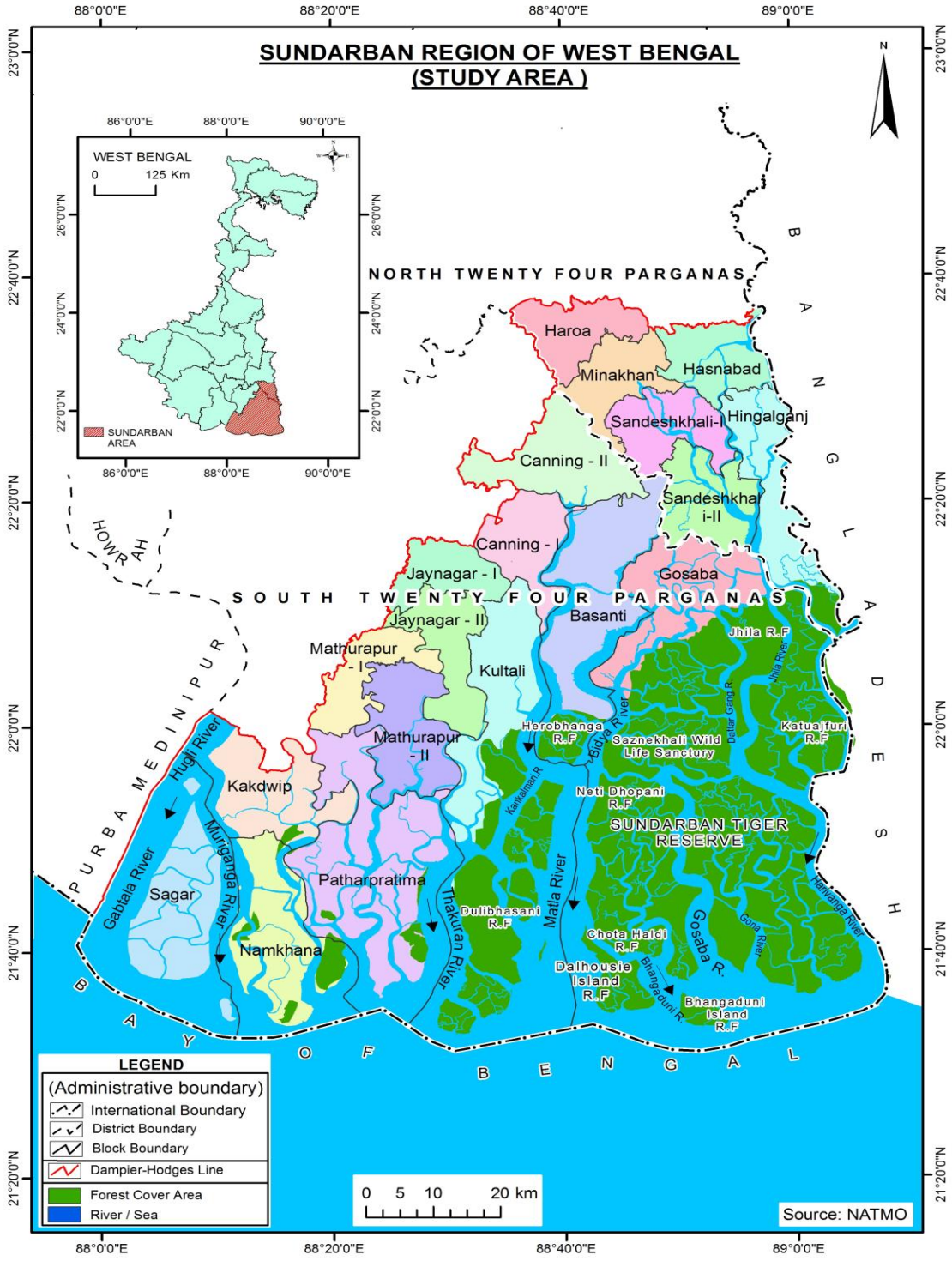

Fig. 2: Study Area, Sundarban Region

Methodology:

The present study has been done based on primary and secondary level data source. Secondary data has been gathered from Census of India, 2011 and Bureau of Applied Economics and Statistics, Government of West Bengal, 2011. The primary data has been collected with the help of survey schedule interviewing respondents. It was done to identify the causes of inadequacy of health care services at Duars and Sundarban regions. Here, total health care services has been calculated using the indicators like total population, number of hospitals, number of beds, number of health centres, number of dispensaries and family welfare centres. Table no.7 shows the health situation of Sundarban and Table no.10 shows of Duars. By using these tables score values has been calculated based on absolute number of facilities and population threshold (Table no.8 and Table No.11). After that, scores of all variables for all blocks have been tabulated in whole (Table no.9 and Table No.13). The sum of scores of all determinants is mentioned as total score of each block of Sundarban and Duars. Perception studies about existing health services have been tested by Chi Square Method by using the following formula.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Here, χ^2 = Chi Square Value

O= Observed Value (Number of respondents opinion regarding existing health care system)

E= Expected Value

Results and Discussion:

A correlation exists between human health and the socio-economic condition of those people living at a specific geographical area. Low capabilities of economically and socially backward rural people coupled with poor access to health services made the health related undefended situation of a family or community almost intangible. There have been wide range regional disparities in the studied regions of Duars and Sundarbans.

- Health Care Facilities in Duars and Sundarbans

It has been observed that Duars region had 537 Sub-Centres (SC) and 38 Primary Health Care Centres (PHC) for population of 38,69,675 in against of the State's 10356 Sub-Centres (SC) and

922 Primary Health Care Centres (PHC). On the otherhand, the Sundarban had 838 Sub-Centres (SC) and 47 Primary Health Care Centres (PHC) catering 36,13,226 population according to 2011 census. So, the ratio of population and primary health care services is comparatively higher in Duars (6729.87) over Sundarban (4042.74).

- Health Status in Duars and Sundarbans

Status of health care facilities has been unfolded in the context of Population-Hospital Bed Ratio and Population-Doctor Ratio. Population-Hospital Bed Ratio in Health Care Institution is one of the key indicators of health services. At district level, in Duars, 839 persons per hospital bed was found where as it was 1975 persons per hospital bed in Sundarban region according to 2011 census. Alipurduar-I shows highest level of population dependency per hospital bed (4,930 persons) highlighting the demand for more hospitals in Duars region (fig no.3). Population-Bed ratio was lowest at Nagrakata block (909). It means lesser number of patients over there.

Maximum numbers of persons (4856) depend on a single hospital bed at Minakha block and minimum at Kakdwip block (728) of Sundarban region (fig. no.4). Proximity to the hospital was far from adequate in Gosaba block. The villagers need to cover about 35 kilometers from Gosaba river ghat to Canning Sub-Division Hospital. The farthest village, Kumirmari, surrounded by intertidal rivers of Bidyadhari, Datta and Herobhanga, the distance reaches about 107 kilometers to get access to hospital facilities.

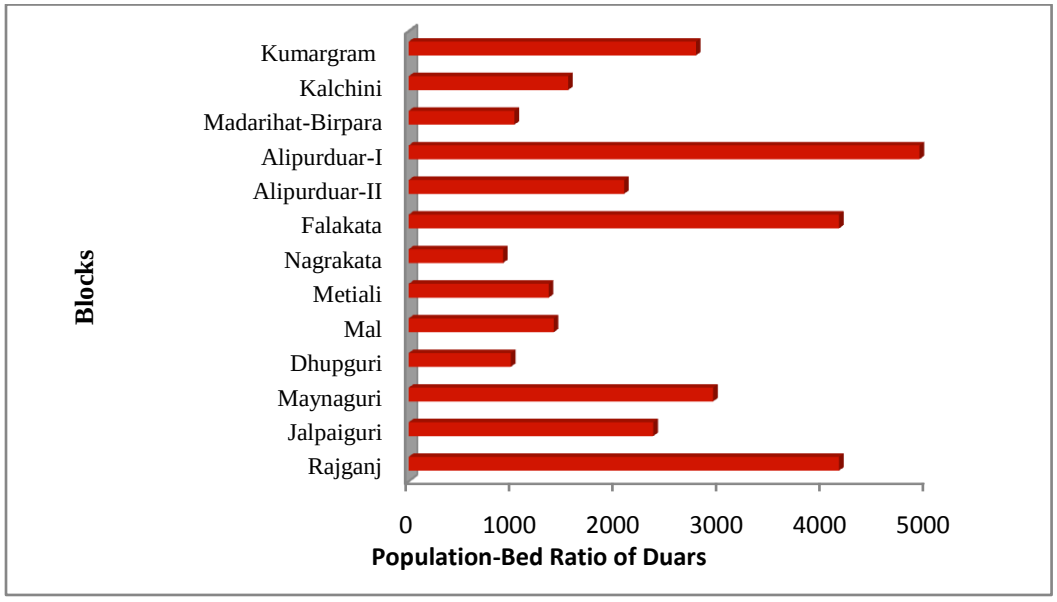

Fig.3: Population-Bed Ratio, Duars, 2011

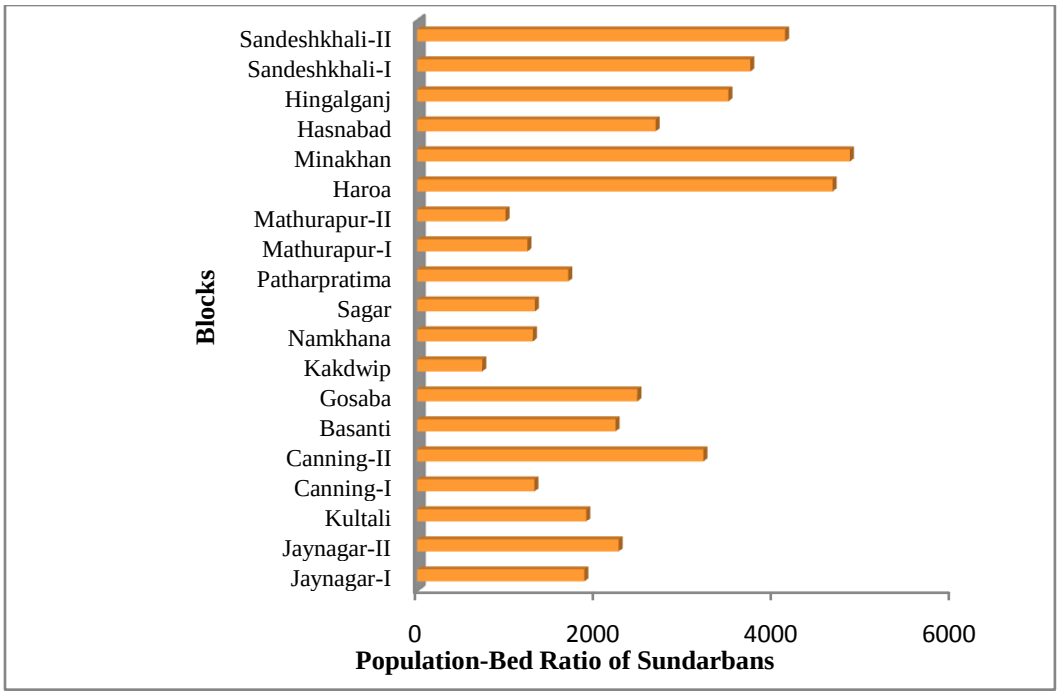

Fig.4: Population-Bed Ratio, Sundarbans, 2011

Huge burden is shouldered by doctors at Alipurduar-I as the population-doctor ratio is highest over here (fig. no.5). One doctor had to serve 54,233 persons in Alipurduar-I. Distance and inaccessibility from Alipurduar Sadar Subdivision Hospital and District Hospital at Jalpaiguri town made the villagers of backward parts of the District to depend on locally available health care facilities. The situation is slightly better at Madarihat-Birpara and Nagrakata block.

On the otherhand, unavailability and insufficiency of doctors in each hospital and health sub-centre play deprivation role in health services at Sundarban region. Highest doctor-patient ratio (42,880) was observed at Haroa block against the district level of 5,134 and 12,108 of whole Sundarban region (fig. no.6). Remote location of Gosaba block made the villagers to rely solely on the primary health care centers. In a comparative situation between Duars and Sundarbans, blocks of Duars are in better position so far population-bed ratio and population-doctor ratio are concerned.

- Available Infrastructure for Health Care Services:

Infrastructure in total Health Services has been analyzed in terms of number of hospitals, number of beds, health centres, number of dispensaries and family welfare centres in respect of total population of Duars and Sundarban. Table no. 1 shows the health situation of Duars and Table

no. 4 shows that of Sundarban. By using these tables score values have been calculated based on absolute number of facilities and population threshold (Table no.2 and Table no.5). After that scores of all variables for all blocks have been tabulated as a whole (Table no. 3 and Table no. 6). The sum of scores of all determinants mentioned as total score of each blocks of Duars and Sundarban.

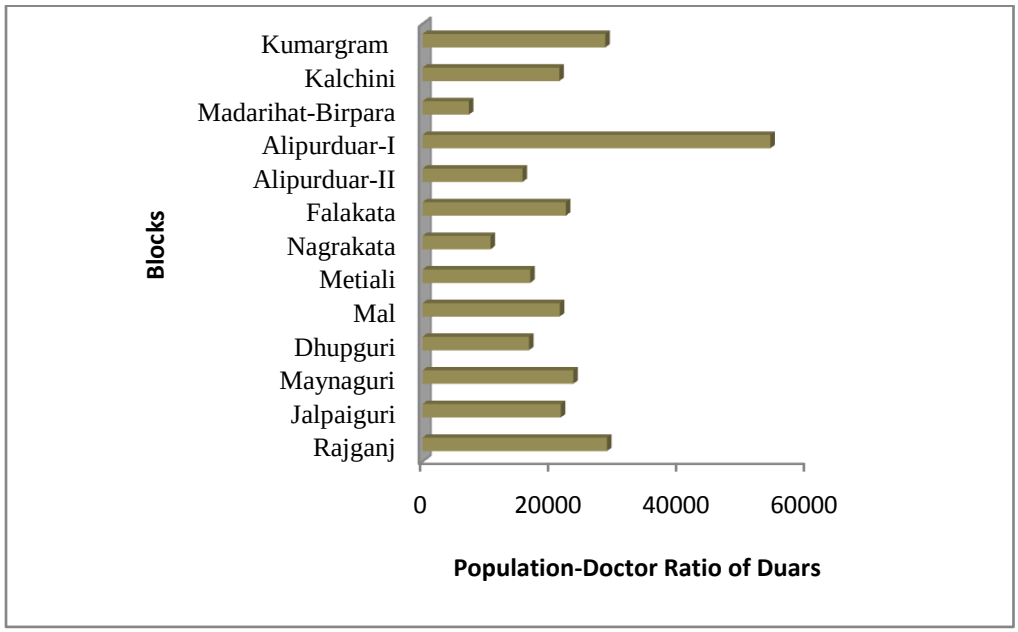

Fig.5: Population-Doctor Ratio, Duars, 2011

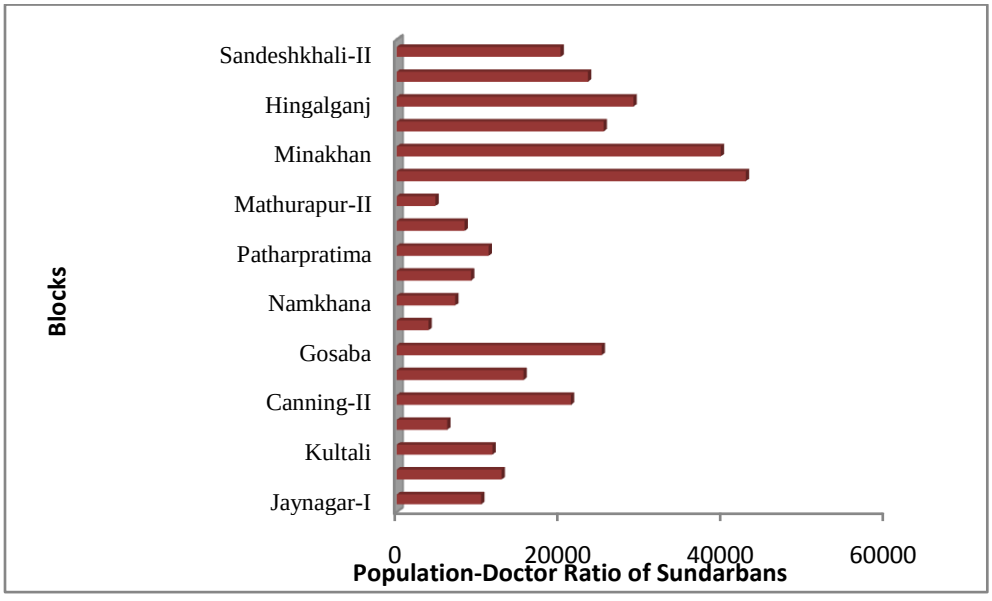

Fig. 6: Population-Doctor Ratio, Sundarbans, 2011

Table No. 1: Block wise available Health Care Services of Duars, 2011

Blocks	Population	Number of Hospitals	Number of Beds	Health Centres	Dispensaries	Family Welfare Centres
Rajganj	373776	1	90	3	6	1
Jalpaiguri	323445	2	137	5	12	1
Maynaguri	329032	1	112	6	5	1
Dhupguri	414854	0	421	4	3	1
Mal	299556	0	214	0	2	1
Metiali	117540	0	87	2	2	1
Nagrakata	127397	1	140	2	4	1
Falakata	290722	1	70	2	10	1
Alipurduar-II	218272	2	105	2	11	1
Alipurduar-I	216931	1	44	2	9	1
Madarihat-Birpara	202026	1	198	3	13	1
Kalchini	298458	1	194	2	3	1
Kumargram	199609	1	72	2	2	1
Total	3411618	12	1884	35	82	13

Source: Census of India, 2011; Bureau of Applied Economics and Statistics, 2012-13

Table No. 2: Score Values of Health Care Services of Duars, 2011

Facilities	**Absolute no. of Facilities**	**Population Threshold**	**Score**
Number of Hospitals	12	284302	157.00
Number of Beds	1884	1811	1.00
Health Centres	35	97475	53.83
Dispensaries	82	41605	22.98
Family Welfare Centres	13	262432	144.92
Total Population of the Districts- 3411618			

Source: Computed by the Authors

Table No. 3: Block wise Score Values of Health Care Services of Duars, 2011

Blocks	Number of Hospitals	Number of Beds	Health Centres	Dispensaries	Family Welfare Centres	Total Score
Rajganj	157	90	161.49	137.88	144.92	691.29
Jalpaiguri	314	137	269.15	275.76	144.92	1140.83
Maynaguri	157	112	322.98	114.9	144.92	851.8
Dhupguri	0	421	215.32	68.94	144.92	850.8
Mal	0	214	0	45.96	144.92	404.88
Metiali	0	87	107.66	45.96	144.92	385.54
Nagrakata	157	140	107.66	91.92	144.92	641.5
Falakata	157	70	107.66	229.8	144.92	709.38
Alipurduar-II	314	105	107.66	252.78	144.92	924.36
Alipurduar-I	157	44	107.66	206.82	144.92	660.4
Madarihat-Birpara	157	198	161.49	298.74	144.92	960.15
Kalchini	157	194	107.66	68.94	144.92	627.52
Kumargram	157	72	107.66	45.96	144.92	527.54

Source: Computed by the Authors

In the fig no.7, the correlation between total population and health care services has been highlighted of Duars. It shows the positive correlation between the said variables. The degree of slope of regression line is barely high ($R^2 = 0.137$).

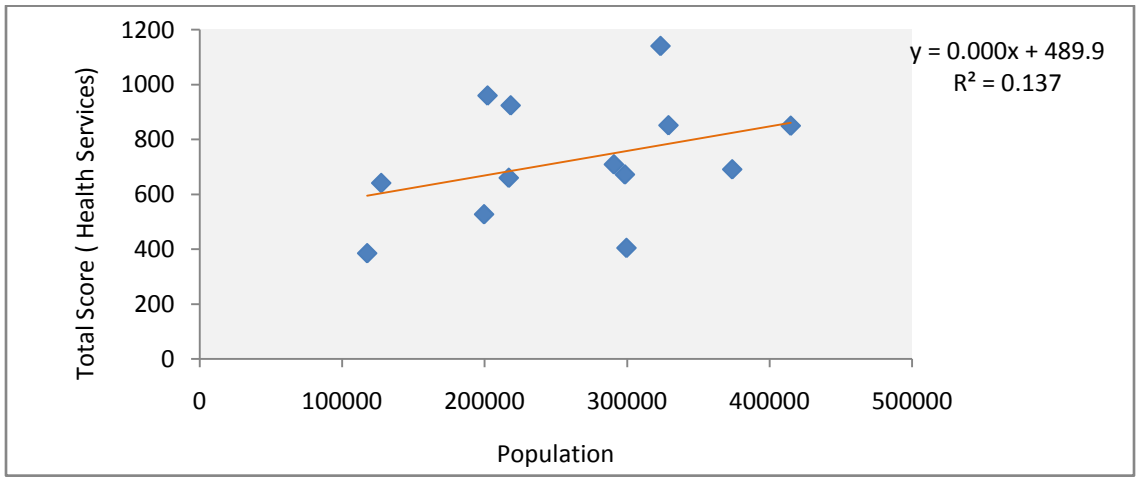

Fig. 7: Correlation of Health Care Services with Total Population, Duars, 2011

Table No. 4: Block wise available Health Care Services of Sundarban, 2011

Blocks	Population	No. of Hospitals	No. of Beds	Health Centres	Dispensaries	Family Welfare Centres
Gosaba	246598	0	51	3	25	1
Basanti	336717	0	77	4	5	1
Kultali	229053	1	62	4	9	1
Patharpratima	331823	0	100	1	76	1
Kakdwip	281963	1	198	0	7	1
Namkhana	182830	0	72	1	9	1
Sagar	212037	1	83	3	12	1
Canning-I	304724	1	118	1	11	1
Canning-II	252523	0	40	2	2	1
Mathurapur-I	195104	1	81	2	1	1
Mathurapur-II	220839	1	115	3	13	1
Jaynagar-I	263151	1	72	2	14	1
Jaynagar-II	252164	1	57	3	8	1
Haroa	214401	0	46	3	6	1
Minakhan	199084	1	41	2	9	1
Hasnabad	203262	1	76	3	12	1
Hingalganj	174545	0	50	4	5	1
Sandeshkhali-I	164465	0	44	3	10	1
Sandeshkhali-II	160976	1	39	2	8	1
	4426259	11	1422	26	242	19

Source: Census of India, 2011; Bureau of Applied Economics and Statistics, 2012-13

Table No. 5: Score Values of Health Care Services of Sundarban, 2011

Facilities	Absolute no. of Facilities	Population Threshold	Score
Number of Hospitals	11	402387	129.27
Number of Beds	1422	3113	1.00
Health Centres	26	170241	6.29
Dispensaries	242	18290	5.88
Family Welfare Centres	19	232961	74.84
Total Population of the Districts- 4426259			

Source: Computed by the Authors

Table No. 6: Block wise Score Values of Health Care Services of Sundarban, 2011

Blocks	Number of Hospitals	Number of Beds	Health Centres	Dispensaries	Family Welfare Centres	Total Score
Gosaba	0	51	18.87	147	74.84	286.71
Basanti	0	77	25.16	29.4	74.84	181.4
Kultali	129.27	62	25.16	52.92	74.84	329.19
Patharpratima	0	100	6.29	446.88	74.84	588.01
Kakdwip	129.27	198	0	41.16	74.84	365.27
Namkhana	0	72	6.29	232.92	74.84	376.05
Sagar	129.27	83	18.87	70.56	74.84	371.54
Canning-I	129.27	118	6.29	64.68	74.84	353.08
Canning-II	0	40	12.58	11.76	74.84	139.18
Mathurapur-I	129.27	81	12.58	5.88	74.84	258.57
Mathurapur-II	129.27	115	18.87	76.44	74.84	341.42
Jaynagar-I	129.27	72	12.58	82.32	74.84	341.01
Jaynagar-II	129.27	57	18.87	47.04	74.84	332.02
Haroa	0	46	18.87	35.28	74.84	174.99
Minakhan	129.27	41	12.58	52.92	74.84	310.61
Hasnabad	129.27	76	18.87	70.56	74.84	369.54
Hingalganj	0	50	25.16	29.4	74.84	179.40
Sandeshkhali-I	0	44	18.87	58.8	74.84	196.51
Sandeshkhali-II	129.27	39	12.58	47.04	74.84	302.73

Source: Computed by the Authors

The relationship between total population and total score values of health care services has been shown by using Least Square Method for Sundarban region (Fig. No.8). The slope of regression line depicts the negative correlation between total populations and total score i.e. total health care services. It means existing health care system is not in a position to support increasing population. In a comparative situation the enhancing health care system is matched with increasing population at Duars but this picture is absent in Sundarban region.

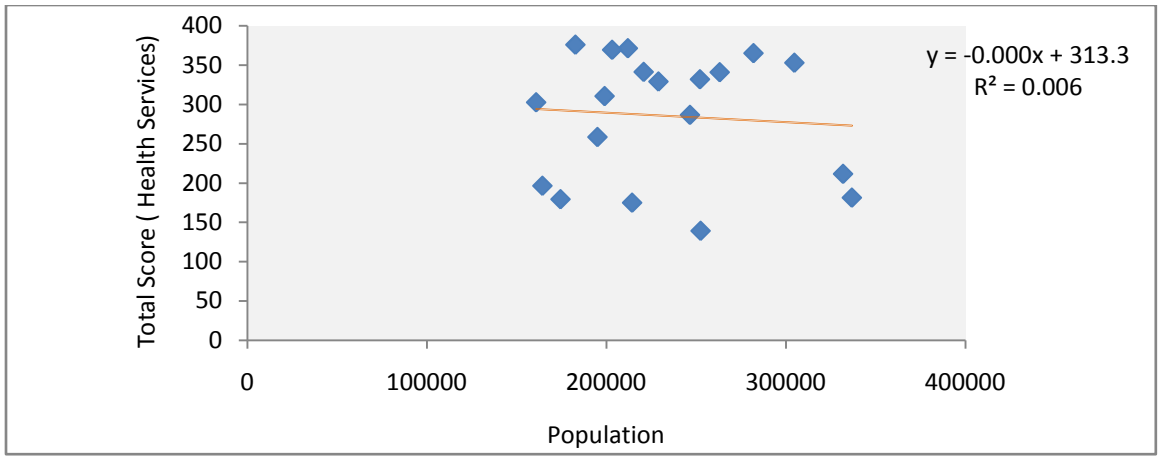

Fig. 8: Correlation of Health Care Services with Total Population, Sundarbans, 2011

- Perception about Existing Health Care System:

The inhabitants of the studied area gave stress mostly on scarcity of doctors at primary health centres. More so they opined that physical obstacles also play negative role particularly at the time of emergency. The respondents of studied regions expressed deficiency in health care services is abject level. Their views have been assessed by Chi-Square Test method as in shown in the following table.

Table No.7: Perception on Existing Health Care System of the Respondents of Duars and Sundarbans

Satisfaction for existing health services	Chi Square Value		Total	Chi Value=4.403452 Df=4 Table Value=9.488 Chi Test Value< Table Value Null Hypothesis Accepted
	Duars	Sundarbans		
Yes	0.0625	3.0625	3.125	
No	0.117647059	0.5955988235	0.713235	
No Response	0.391304348	0.173913043	0.565217	
Total	0.571451407	3.8320118665	4.403452	

Source: Primary Survey, 2018

Majority of respondents gave their views in against of the existing health care facilities so far the minimum standard is concerned. The table no.7 shows clearly that the resulted chi test value is

less than chi test table value. It suggests that null hypothesis is to be accepted. It means that the people of the said regions are not satisfied with existing health care systems in combating the communicable diseases.

- Causes behind Deficiency in Proper Health Care Services of Duars and Sundarbans:

Health seeking behavior of Duars people is closely related to the geo-environmental condition and occupation of the region. At Duars region water resource is degrading very fast due to excessive use of chemicals in the tea garden and it affects ground water, rivers, springs and other surface run-off. The loss of quality water and safe drinking water is causing human health hazards (Banerjee, Poddar, Chakraborty and Saha, 2009). It is basically felt during summer, pre-monsoon and monsoon period. Nature of health related problems vary in tea garden areas and forest fringe villages. Residents of forest fringe villages are more susceptible to diseases than to people residing at tea garden areas (Majumdar, A. 2014). Access to the medical centers from the scattered human settlements of Duars region is deficient. Over dependency on medical institutions highlights the crisis of basic facilities in a society. Deficiency in literacy level and backwardness in health care system leads people towards poorer health and suffering.

The islanders of Sundarban confront not only with physical health issues but also with mental disorder too. Water borne disease is one of the major root causes of physical illness of the region. The inhabitants chronically suffer due to lack of safe drinking water as the easy available river water is salty and is of no use for drinking. At the same time saline intrusion by frequent cyclonic storms enhance the salinity level of surface water as well as ground water. A considerable number of women get engaged in shrimp collection in order to earn easy money during new moon and full moon period leading to be in contact with saline water for a considerable period of time. This causes health hazards to them. Sometimes crocodile attack to the prawn collectors and tiger attack to the honey collectors lead to mental stress induced health hazard to the inhabitants of Sundarban region.

Conclusion:

There are marked regional disparity in health care services for people residing in Duars and Sundarban region. The Government needs to provide primary health care services to people residing particularly in deficient geographical locations. Easy accessibility to health services can

improve the condition of people suffering at backward regions of the State. Modern communication technology along with social networking system can be introduced for dissemination of medical services to down to earth people of these regions. Telemedicine services to the core forest villagers of Duars and Sundarbans can be of immense help to them.

References:

Banerjee, S.S., Poddar, B.C., Chakraborty, S., Saha, M. (2009). Environmental hazard of tea garden belt in Jalpaiguri District, West Bengal. *Geospatial World*. www.geospatialworld.net

Barman, B. & Roy, R. (2018). Regional disparity of health care infrastructure in Koch Bihar District, West Bengal. *Research Journal of Humanities and Social Sciences*, 9(4).

De, D. (2014). Spatial inequality in health care infrastructure in Sundarban, West Bengal, India. *International Research Journal of Social Science*, 3(12), 15-22.

District Census Handbook, 2011, series 20, part XII-A & B, Jalpaiguri (Village & Town wise Primary Census Abstract-PCA), West Bengal.

District Census Handbook, 2011, series 20, part XII-A & B, South 24 Parganas (Village & Town wise Primary Census Abstract-PCA), West Bengal.

Majumdar, A. (2014). Capability and well-being in the forest villages and tea gardens in Doors region of North Bengal. Leibniz Information Centre for Economics, Cooch Behar, India, pp. 1-24.

Mandal, A. (2017). Inequality in health services: a case study of South 24 Parganas District, West Bengal, India. *International Journal of Innovative Research in Science and Technology*, 6(9).

Saini, A. & Yadav, P.K (2015). Distributed system and its role in health care system. *International Journal of Computer Science and Mobile Computing*, 4(4), 302-308.