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Health Care Facility Mapping with GIS in Majuli, India

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Abstract-This paper concerns the availability of healthcare facilities including primary health centers (PHC), sub-centers and community health centers in the Majuli region, Jorhat district of Assam, India. Majuli Consist of two development blocks i.e. Ujoni Majuli and Majuli blocks. The paper is based on secondary data and analyses are done in GIS environment. It is identified that primary health care centers are not equally distributed in Majuli development block but instead of PHC there are lots of sub-centers and community health centers are available in the study area. Again availability of sub-centers is found satisfactory in both of these blocks. The number of community health centers is very low in the whole region of Majuli. The result also shows served areas of primary health center in Ujoni Majuli block (77.13%) is much higher than the Majuli Development block (43.70%), again for sub-center and community health center, it is found satisfactory than the PHC service area in both of the blocks.

Keywords: Healthcare facilities, Availability, Majuli, Ujoni Majuli

I. INTRODUCTION

Health is regarded as an essential part of human development. 'It plays a vital role in the well-being of a society that has implications for the quality of life as well as for productive capacities and capabilities' [1]. The determinants of health are defined by the World Health Organization (WHO) as 'the range of personal, social, economic and environmental factors which determine the health status of individuals or populations' [2]. On the other hand availability of healthcare services is equally important for health outcomes and overall development of our society. For the good health status of individuals, equal access and availability of healthcare facilities are very important. The paper mainly concentrates on the distribution of health care facilities in Majuli development block of Jorhat district, Assam and also trying to show served areas of health centers in GIS environment. This study helps to identify the areas which are properly served by health care facilities and areas that are not served by any health care facilities in the Majuli and Ujoni Majuli development blocks of Jorhat district, Assam.

II. OBJECTIVES

1. To show the distribution of health centers in Majuli and Ujoni Majuli development blocks, Jorhat district.
2. To identify the served and unserved areas of available healthcare centers.

III. THE STUDY AREA

The study area is Majuli island, which is divided into two development blocks i.e. Majuli and Ujoni Majuli block of Jorhat district, Assam, India. It is located in the northern part of the district. However, in 2016, it is announced as the first island district of the country. The island had a total area of 1,250 square kilometers (483 sq mi) at the beginning of the 20th century, but having lost significantly to erosion it had an area of only 352 square kilometers (136 sq mi) in 2014. It has 247 villages (91 villages in Ujoni Majuli, 156 villages in Majuli) with a population of over 167,304 (68847 for Ujoni Majuli, 98457 for Majuli) and a density of 300 individuals per square km.

IV. DATA AND METHODOLOGY

A. Data Sources

This paper is based on secondary data. Data obtained from the Planning map of Jorhat District [3], District Statistical Handbook [4], Assam Statistical Handbook [5], The Village and Town Directory [6], etc.

B. Methods

Secondary data like the location of health centers are collected from the Assam disaster management authority in this study. The analysis is done in GIS environment using spatial analysis tools like proximity analysis (Buffer operation) and overlay analysis etc. After digitizing the health centers of Majuli and Ujoni Majuli block, 5 km. buffer is created from each PHC and Sub-Centre and Community Centre. With the help of these buffers, served area and un-served area of each health centers are identified (using union) in both of the blocks.

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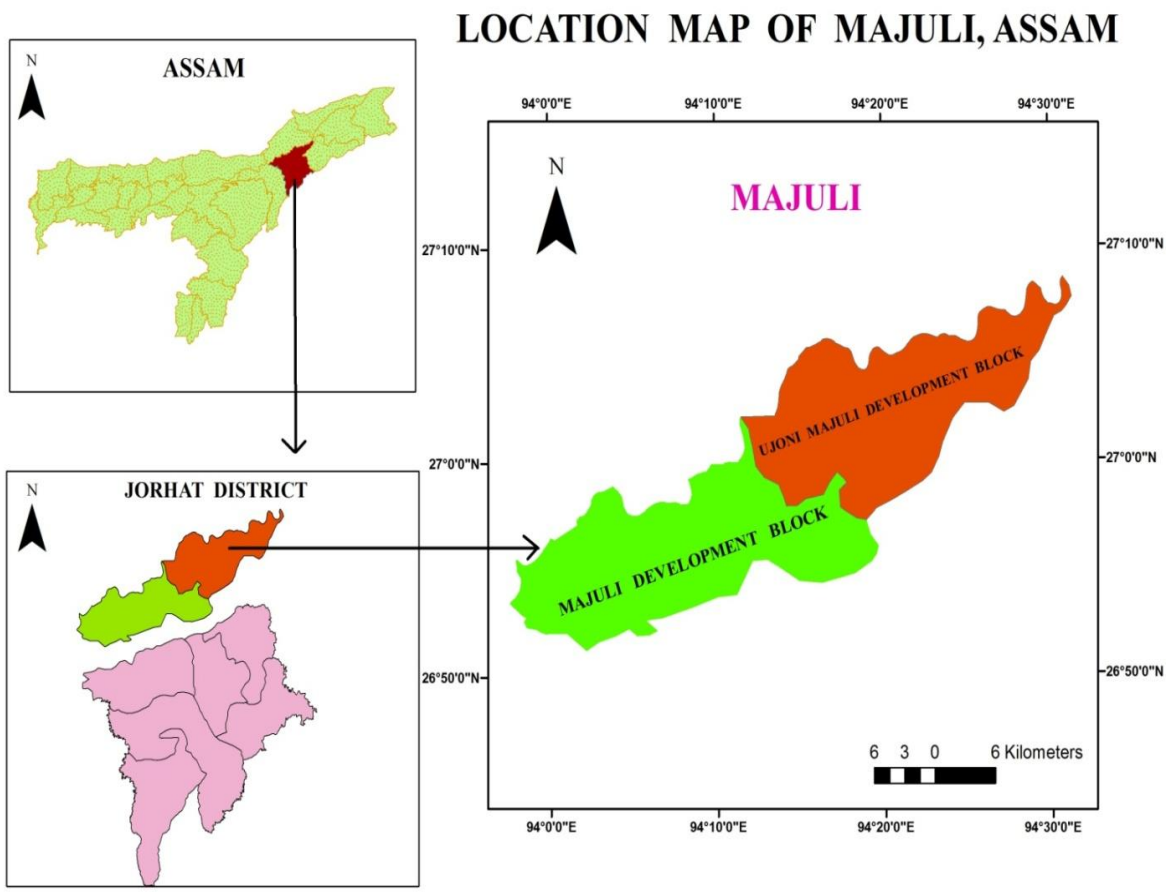

Fig-1: The study area

V. RESULTS AND DISCUSSION

Table 1: Block wise total no. of health centers in Majuli, Assam.

Block Name	Total no. health center	Primary health center	Sub-centre	Community health center	Private hospital
Ujoni Majuli	22	3	17	2	0
Majuli	15	4	11	0	0

Source: Assam Disaster Management Authority

Above table shows the number of available health centers in the Majuli region. It is found that the total no. of health centers is higher in Ujoni Majuli development block (22) than the Majuli development block (15) including primary health center, sub-center, and community health center (Table-1). In Majuli development block there is no community health center, while in Ujoni Majuli it is two. Private hospitals are not present in both of the blocks. *Fig2* shows the distribution of health centers including primary health center, sub-center and community health center in Majuli and Ujoni Majuli development block. From the distribution of health centers, serving areas are created around each health center. Fig 3 shows that served areas of primary health centers in Majuli and Ujoni Majuli Development block. It is found that the availability of primary health centers is not satisfactory in Majuli block, so these rural areas are facing the problem of low accessibility and availability of primary health services. But on the other hand in Ujoni Majuli Block service area of primary health centers cover almost the whole block. Therefore people from this block can easily avail of primary health services.

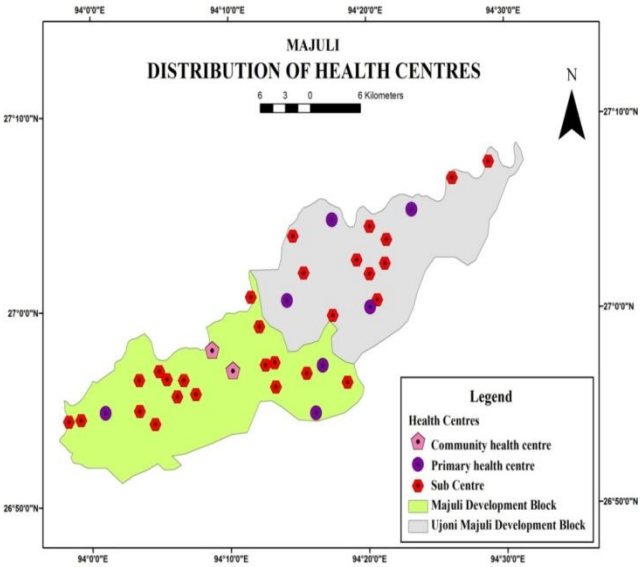

Fig2: Distribution of Health Centres, Majuli and Ujoni Majuli Blocks
Source: Assam Disaster Management Authority

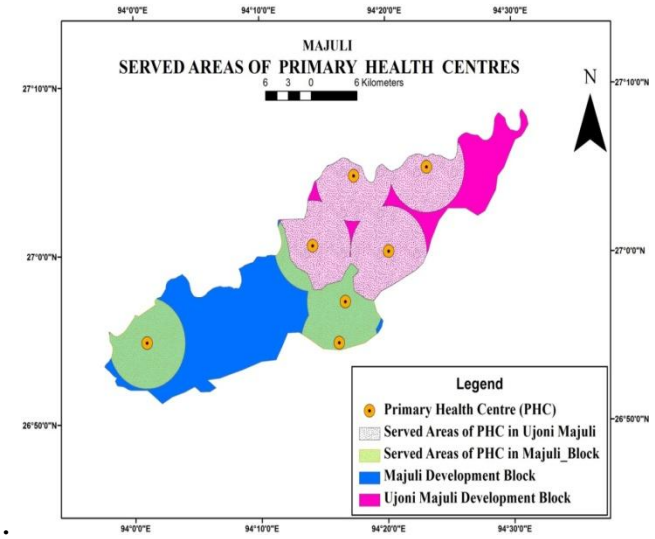

Fig3: Served Areas of Primary Health Centres, Majuli and Ujoni Majuli blocks
Source: Figure-2

Table2: Percentage of served and unserved areas of primary health centers (PHC), Majuli.

Block	Total area (Sq. km.)	Served areas of PHC (%)	Unserved areas of PHC (%)
Majuli	317.35	43.70	56.29
Ujoni Majuli	295.11	77.13	22.86

Source: Figure 3

Above table shows the total statistics of the served area of primary health center in both of the blocks. Ujoni Majuli block (77.13%) show a much higher service area of PHC than the Majuli Development block (43.70%). Therefore in Majuli development block more than half of the areas have primary health services. Fig4 shows the service areas of health sub-center and community health center of Majuli and Ujoni Majuli development block. Both of the blocks can easily avail of the health service because service areas almost cover up both of the blocks.

Table 3: Served and unserved areas of sub-center and community health centers

Blocks	Total area (Sq. km.)	Served area of sub-center and community health center (%)	Unserved area of sub-center and community health center (%)
Majuli	317.35	97.23	2.76
Ujoni Majuli	295.11	92.13	7.87

Source: Figure 4

Table 3 shows the calculated statistics of the served and un-served areas of primary health sub-center and community health center. It is found that the service area of sub-center and community health center is very much impressive than the PHC service area in both of the blocks. In Ujoni Majuli unserved area is almost 8% which higher than the Majuli block (2.76%).

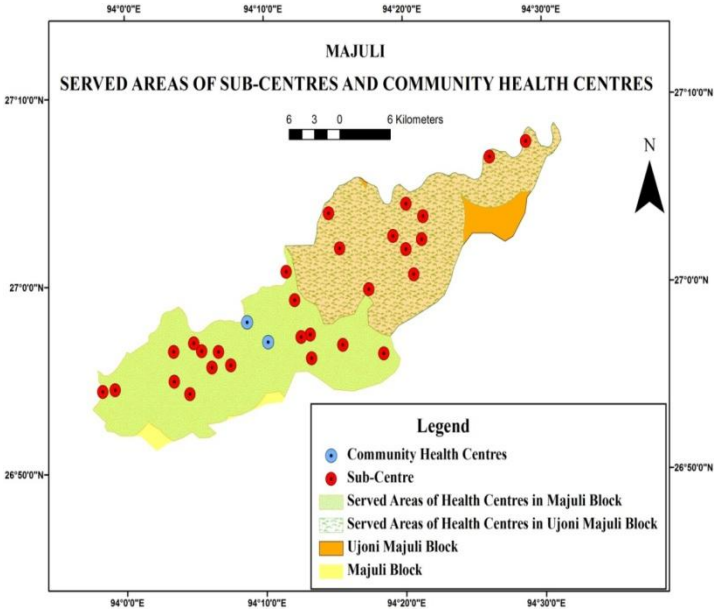

Fig4: Served areas of sub-centers and community health centers, Majuli and Ujoni Majuli
Source: Figure-2

VI. SUMMARY AND CONCLUSION

his paper is generally based on health center mapping and distribution of the region of Majuli, Jorhat district and its level of availability in two blocks. It is noticed that primary health care centers are not equally distributed in Majuli block but instead of PHC there are lots of sub-centers and community health centers are available. Again availability of sub-centers is found satisfactory in both of these blocks. The number of community health centers is very low in the whole region of Majuli, only two community health centers are available there. In comparison to both of these blocks, Ujoni Majuli block has the higher unserved areas of health centers (7.87%) than the Majuli block. This paper can help to identify the areas of Majuli region which are deprived of healthcare services. Therefore it will be useful in proper regional planning and management in the health sector.

REFERENCE

1. Government of Assam (2003): 'Assam Human Development Report'. Directorate of Economics and Statistics.
2. Takano, T., Nakamura, K., (2014): An Analysis of Health Levels and Various Indicators of Urban Environments for Healthy Cities Projects, Journal of Epidemiology and Community Health, Vol. 55, No. 4
3. Government of Assam (2012-2013): 'The Planning Map of Jorhat District'. Directorate of Economics and Statistics, Assam, Planning and Development Department.
4. Government of Assam (2011): The District Statistical Handbook, Jorhat District.
5. Government of Assam (2011): The Assam Statistical Handbook.
6. Government of Assam (2011): Village and Town Directory, Jorhat District.

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Dr. Swapnali Saikia currently is an independent researcher from the Jorhat district of Assam, India. She completed her post-graduation from Gauhati University, Assam in Geography with a specialization in Cartography. She completed Ph.D. from the same university. Her interest areas are well-being, life satisfaction, education and health issues, happiness studies, etc.

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