

## Facility distribution of Primary Healthcare Support in Jalpaiguri District: A Need Based Comparative Analysis

**Subhasis Bhattacharya**

Associate Professor, Dept. of Economics, Sidho-Kanho-Birsha University, India

### Abstract

The publicly provided health facilities have some common features like higher-tier hospitals or health units overloaded with patients, whereas the basic levels are underutilized. In this study, each and every health unit is characterised by five categories, namely, number of beds, number of available doctor, number of available trained multipurpose workers availability of general services and availability of special services. Primary Health Centres (PHCs) are those which offer primary care services to the health seekers by the medical doctors (not specialist) for the first time and other health professionals who also have first contact with patients. The study found 2.77 percent share of doctors actually performed in the PHCs of Jalpaiguri district. Almost 97 percent of the PHCs did not have facility to conduct caesarean section and / or basic emergency obstetric care (EMOC) services. Even the three first referral units (FRUs), facilities designated to provide 24X7 comprehensive EMOC services, were found lacking in several critical inputs.

**KEYWORDS:** Primary Health Centres, Maternal & Child Health, Bed Density, Western Dooars.

### Introduction

World Health Organisation (WHO) emphasised in the year 2000 that each country will provide better health care with some fair financial distribution. As the health sector is now projected to have the fastest growing share of government expenditure over the next few years, it is extremely appropriate to establish which factors are the key determinants in affecting peoples' demand for healthcare, in order to maximise the benefit impact of future expenditure patterns. Thus, to understand the main determinants of healthcare demand which will be important in expanding our knowledge of how changes in government policy will impact on individuals and their demand of healthcare services. Another important aspect may arise with the increase in public expenditure on healthcare where the poor often benefit less from it. It is important to differentiate how poor and non-poor consumers of health services make decisions about treatment. The publicly provided health facilities have some common features like higher-tier hospitals or health units overloaded with patients, whereas the basic levels are underutilized. Hence it is an important and significant task for the stakeholders to consider the efficient side as well as the inefficient side of the health support function of the publicly provided institution. Arrow (1963) first identified some features of health seeking behaviour in terms of demand for healthcare. The features are demand for medical care is unsteady, irregular and unpredictable in nature. Illness is not only risky but also costly as it leads to death. It is such a commodity where the product and the activity of production are identical. Before consuming such a good a patient cannot testify the quality of care. As a result, some trust elements exist within the patients and providers relation. But the physician has more information than the patients, so the product quality is uncertain and there is some asymmetry within the uncertainty. The supply of medical care is artificially controlled by licensing to maintain the quality and extensive price discrimination is

practiced in the profession. The private costs are very much lower than the social cost, so society achieves optimality by non-market means.

For the attainment of better result oriented objectives, health system has to perform some basic functions. First one is service provision i.e. by providing cost effective and acceptable quality of services. Second one is resource generation i.e. by providing health workers, equipments, drugs and physical facilities. Third one is financing for health system i.e. through taxation, insurance and out of pocket payments. Last one is management of health, which is done by provision of coordination through policy formulation and supervisory regulation. Different studies highlighted that efficient health infrastructure can be determined by (i) per-capita availability of government hospitals (ii) per-capita availability of government hospital beds (iii) per-capita availability of doctor (iv) per-capita availability of primary health centres (PHCs) (v) per-capita availability of primary health sub-centres(SCs) (vi) per-capita availability of paramedical staff (vi) availability of medicine in local shops (even private) and PHC's and (vii) number of ambulance for transfer to urban health centres. The other gross indicators for the efficient functioning of public health systems are (i) the average rural population served by the health infrastructure (ii) average rural radius distance covered by the health infrastructure and (iii) average attendance of doctors and paramedical staff.

Western Dooars, a cluster of biosphere reserves and home about 2.5 million people, is a part of Jalpaiguri district of West Bengal state and it is the agglomeration of 11 blocks. The nature of the study is both the primary and secondary type. The public health care system in Western Dooars, following the same pattern as in other parts of rural West Bengal, deliver preventive and curative services at multiple levels of institutions (or, facilities) and through outreach workers.

### Earlier Studies

*Arrow KJ.* (1963) firstly distinguish between health and medical care. He identifies health as a combination of nutrition, shelter, clothing and sanitation. But the concept of medical care situated around the doctors, health facility units and character of health providers. The study identifies medical care with some important feature. Demand for medical care is irregular and unpredictable and there are costs of illness which can lead to death. Medical care is such kind of goods where product and activity of production are identical and a patient cannot argue about its tests before consuming it. Thus some kinds of trust elements are there in the consumption of medical care. It is such a product where physician has more information compared to patient, as a result some kind of uncertain quality exists in the product. Regarding supply, the author suggests that supply of medical care is controlled by the government artificially (through licensing) to maintain quality. Price discrimination is followed in this profession. Since private costs are much lower than social cost, the society seeks to active optimally through non-market means. In his study the author identifies that hospitals are performing with increasing returns up to a certain point particularly in the low income areas. *Gertler & Van der Gagg* (1988) provides a methodology for the ex-ante evaluation of the welfare effects of proposals of user fees to finance improved access to social services. Their study is based on willingness to pay for improved access to medical services where willingness to pay is the maximum price that can be charged without reducing the individuals welfare. The study confirms the decision that when public sector provides medical services at zero prices, it is difficult there to estimate the demand function. They also have found that consumers would be willing to pay significant amount for improved quality of

healthcare. *Dreze & Sen* (1995) have found that for India the government provided facilities are neither inexpensive as it seems nor of best quality and is also inaccessible. They investigate about the nature of public and private healthcare providers under the demand for healthcare seeking behaviour in India. The study shows that quality of public health services in India is not inexpensive as it seems and the quality of care is also not the best level. Private provision is much expensive and easily accessible. This study of *Gupta I and Dasgupta P* (2002), one of several to come out of NCAER's 1994 Human Development Index (HDI) Survey, attempts to derive demand functions for health care in rural India. It finds, as might be expected, that income and price are strongly correlated with one's choice of health care provider; further, the study finds, age is positively correlated with medical care utilization, and education is found to be an important determinant of provider choice. Lower levels of education are associated with increased demand for medical care; this is, however, likely due to higher average morbidity levels among the less educated. *Baru et.al* (2010) in their study considers that health status of Indian is very uneven and slow. There exists a large inequality in health and access of health service which is widening across the state and between rural and urban areas. The study identifies different types of inequalities existed in India's health sector. *Ensor T, & Witter S* (2001) have studied how the motives of practitioners in developing countries may be influenced by a lack of regulation and under-funding which in turn contribute to the presence of unofficial activities. The authors observe that in low income countries government's share of health expenditure is diminishing and costs are increasingly being borne by individuals and households and the private portion of health expenditure in low income countries increased rapidly.

### **Health facilities with infrastructure in Western Dooars**

Table-1 brings out the classification of distribution of health facilities in different blocks of Western Dooars. In this study, each and every health unit is characterised by five categories, namely, number of beds, number of available doctor, number of available trained multipurpose workers (including nurses, Auxiliary nurse midwives), availability of general services and availability of special services. The general services means mainly the general outpatient care services and the specialised services implied the more critical inpatient services. The health support from state level provided by 38 Primary Health Centres (PHCs) with 246 beds, 14 Block Primary Health Centres (BPHCs) / Rural Hospitals (RHs) with 405 beds, 7 upper tier health facilities with 1187 beds and 4 other hospital with 215 bed for all subdivisions of the district. The study found concentration of beds of the PHCs highest at Jalpaiguri Sub-division (110 beds) which is also the district head quarter, whereas in Alipurduar sub-division PHCs (which have more or less same level of population like Jalpaiguri Sub-division) have less number of beds (90 beds). The quite opposite scenario depicted at second tier health facilities provided by BPHCs and RHs. Here Alipurduar Sub-division provided more beds compared to Jalpaiguri Sub-division. But Mal Sub-division which bears 16 percent population pressure of the district has only 9.79 percent of total available beds in the district. The table represents a general scenario of availability of health facilities like other parts of the country. Among the total bed 11.98 percent are in Primary Health Centres (PHCs), 19.73 percent exist in Block Primary Health Centres (BPHCs) and Rural Hospitals (RH) and 57.82 percent bed are under the head of upper tier level including State General Hospital (SGH), Sub-divisional Hospital (SDH) and District Hospital (DH). In the district Jalpaiguri total number of hospital beds including all levels of health facilities is 2053 for the

total population 3016836, thus the total beds per lakh population is 4.11 and the total available doctors for serving those health facilities is 164 and the total family welfare centers are 527.

**Table-1: Block wise all Public Health facilities in terms of infrastructure in Western Dooars**

Sub-Division	BLOCK	Population	PHC		RH/BPHC		DH		OTHER	
			No	BED	No	BED	No	BED	No	BED
Jalpaiguri	Jalpaiguri	280927	5	32	1	30	4	728	2	102
	Maynaguri	281700	6	52	1	60				
	Dhupguri	418461	3	14	1	30				
	Rajganj	283967	3	22	1	30				
<b>Total</b>		<b>1265055</b>	<b>17</b>	<b>120</b>	<b>4</b>	<b>150</b>	<b>4</b>	<b>728</b>	<b>2</b>	<b>102</b>
Mal	Mal	265392	3	16	1	10	1	100		
	Meteli	105906	2	16	1	15				
	Nagrakata	115907	2	14	1	30				
<b>Total</b>		<b>487205</b>	<b>7</b>	<b>46</b>	<b>3</b>	<b>55</b>	<b>1</b>	<b>100</b>		
Alipurduar	Kumargram	178047	2	12	1	30	2	359	2	113
	Falakata	254273	2	10	1	30				
	Madarihat	185470	3	26	1	30				
	Kalchini	252571	2	4	1	30				
	Alipurduar-I	197231	2	14	1	30				
	Alipurduar-II	196984	3	24	2	50				
<b>Total</b>		<b>1264576</b>	<b>14</b>	<b>90</b>	<b>7</b>	<b>200</b>	<b>2</b>	<b>359</b>	<b>2</b>	<b>113</b>

Source: West Bengal ministry of health and family welfare web [www.wbhfw.gov.in](http://www.wbhfw.gov.in), 2011

[BPHC=Block Primary Health Centre, RH= Rural Hospital, SDH= Sub-divisional Hospital, PHC= Primary Health Centre, SC= Sub-centre, DH= District Hospital]

### Block wise Lower Tier Public Health Facilities

The picture of lower level health facilities in Western Dooars available for the unmet health needs. In the study area we consider all the blocks where the health supply units are scattered to supply the health facilities for the dwellers. The public facilities range from five sub-divisional hospitals (SDH) with specialised physicians and inpatient services to about 537 small sub-centres (SC) at the village level staffed by trained multipurpose workers. Within this range there exists 14 block level facilities (12 rural hospitals [RHs], and 2 block primary health centres [BPHCs]) and 38 primary health centers (PHCs) arranged in order of secondary to primary levels of care. In the area one district hospital (DH) located in Jalpaiguri block, which will be considered as the highest upper tier health units in the area. The block level facility (BPHC/RH), in addition to playing a role of a referral unit, acts as a hub of all primary health care activities within a block. The sub-centres are more or less adequate in number if one goes by usual standard i.e., 5000 population per sub-centre for the plain (in the hills it is 3000 population per sub-centers). The number of PHCs, on the other hand, is evidently inadequate by the same standard i.e., 30,000 population per PHC for the plain (in the hills it is 20000 population per PHCs). According to this standard, the blocks like Dhupguri, Falakata, Kalchini, Alipurduar-I are mostly suffered by the inadequacy by the number of PHCs and Maynaguri, Dhupguri,

Rajganj, Falakata blocks are of SCs. The inadequacy is mostly prominent for the PHCs rather than SCs. Mostly all PHCs are allotted for number of people out of national standard. Thus the interesting feature of the study whether the adequate number of SCs will fill the service gap of number of PHCs.

To observe this one can look after the length of patient queue both for inpatient and outpatient department of those PHCs and SCs. If some bypass tendencies are found, then that will be the darkest side of health delivery failure. According to our national standard norms for PHCs covering 30000 population, and on the basis of this calculation there like to exist 101 PHCs in the district, but there are only 38 actually performing PHCs. Thus huge shortages in terms of number of PHCs are exists in the Western Dooars area.

### **Primary Health centre (PHC)**

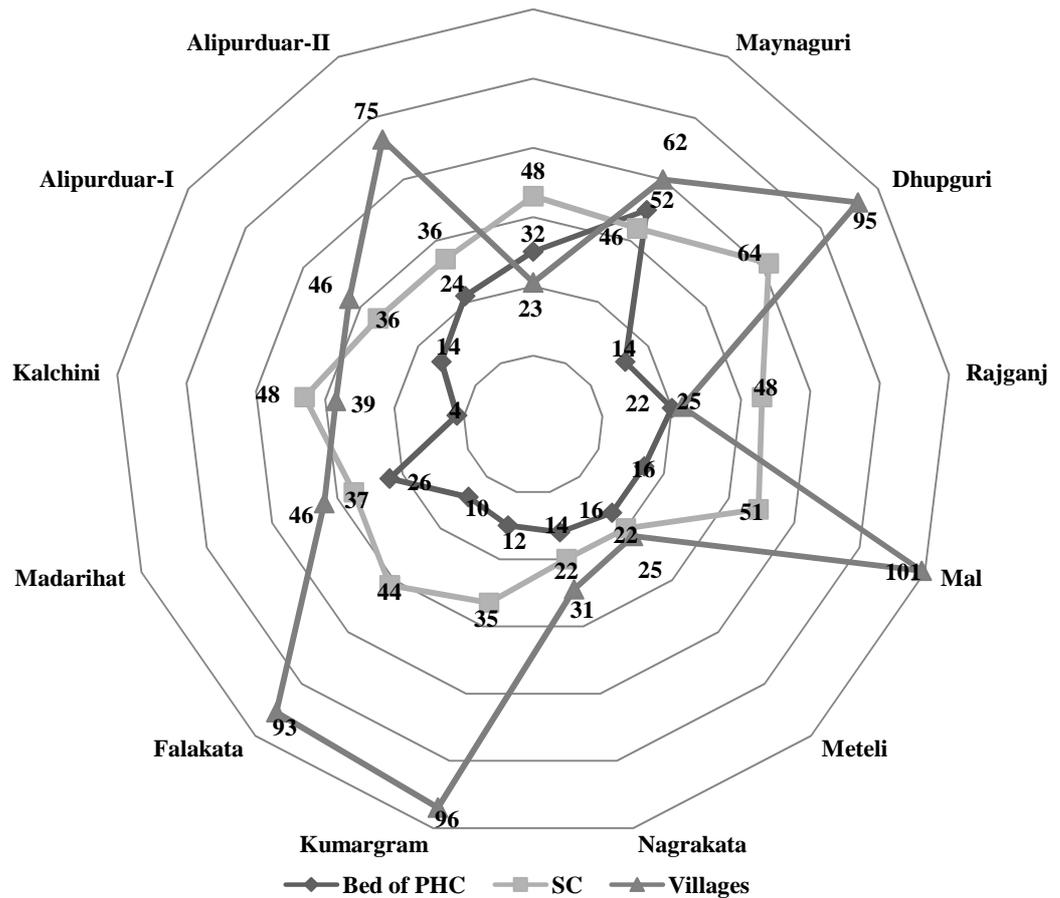
Primary Health Centres (PHCs) are those which offer primary care services to the health seekers by the medical doctors (not specialist) for the first time and other health professionals who also have first contact with patients. PHCs offer services according to Indian Public Health Standard (IPHS) are: (1) Medical Care along 6 hours availability of doctors for Out Patient Department (OPD) and at least 40 patients per doctor per day should served 24 hours medical support with proper referral services and at least 6 beds for IPD services. (2) Regarding maternal and child health care (MCH) PHCs have a huge allotted task. The areas basically deal with Antenatal care (early registration of pregnancies, provision of 3 antenatal checkups, minimum laboratory investigation like haemoglobin, urine, blood sugar etc, nutrition and health counselling, identification of high-risk pregnancies, distribution of Chemoprophylaxis for Malaria as per NVBDCP guidelines), Intra-natal care (Promotion of institutional deliveries, Conducting of normal deliveries, Assisted vaginal deliveries including forceps / vacuum delivery, Manual removal of placenta, Appropriate and prompt referral for cases needing specialist care, Management of Pregnancy Induced hypertension including referral, Pre-referral management), Post-natal care (initiation of breast feeding after half hour of birth, at least two postpartum home visits after delivery, provision of Janani Suraksha Yojana benefit), new born care, and family planning (Provision of contraceptives, Permanent methods like Tubal ligation and vasectomy, Counselling and appropriate referral for safe abortion services). (3) Management of sexually transmitted diseases (4) Nutrition services which coordinating the ICDS. (5) Disease Surveillance and Control of Epidemics services activated by disinfection of water sources, promotion of proper sanitation. (6) Organise training programme for health worker (HW), traditional birth attendance (TBA), ASHA worker, ANM etc.

Standing between sub-centres (SCs) and BPHCs, PHCs role is something critical. BPHCs were actually the PHCs initially but some facilities were extended with some extra manpower, EMOC, technical support for the growing health demand. In West Bengal 909 PHCs with 6612 bed strength and cater a bulk of patients. In 2011, the secondary data (Health on March Report of W.B. 2012) shows that 22,28,251 patients (which is near about 21.42 percent of total patients) were visited PHCs in West Bengal. In our study in Western Dooars we found 38 PHCs with 256 beds are serving for 3.01 million people with other upper level health facilities.

The PHCs of Jalpaiguri district are more or less evenly distributed over different blocks of the district. The distribution as follows from Kumargram PHC of Alipurduar sub-division in the extreme east, Belakoba PHC of Rajganj block in the extreme west and the farthest are Berubari PHC of Jalpaiguri Sadar, Matalhat PHC of

Meteli block, Luksan Tea Garden PHC of Nagrakata block and Totopara PHC of Madarihat block. The size and facilities of the PHCs are also varied over the blocks. For example 11 PHCs of Jalpaiguri districts are functioning with provision of bed only in size 4, which are 29 percent of the total PHCs in the area. The total number of OPD (Out Patient Department) patient examined in the PHCs during January to December of 2012 were 258037 (that was 234421 in 2011), while total admissions in these facilities (IPD) during the same period were 31539 (that was 33417 in 2011). This identifies the importance of PHCs in Jalpaiguri health scenario.

**Figure-1: Distribution of PHC Bed, No of SC, & No of Villages Jalpaiguri**



**Source: West Bengal ministry of health and family welfare web [www.wbhf.w.gov.in](http://www.wbhf.w.gov.in)**  
 The demand for primary care and Maternal & Child Health (MCH) care is soaring and under such situation if the existing primary level inpatient facilities are not encouraged to perform better, establishing of more and more PHCs will never full fill the aspiration of local people as well as the policy makers of the state. The distribution of beds of PHCs can be easily understood by the representation of radar diagrammatic representation of the all block level data along the series of the radar. Such technique is actually uses in statistics to explain the spread-out of different types of data which are significantly related by any logical relationships. The data of table-2 is shown in figure-1 the radar termination measures each blocks of the Jalpaiguri district. Here we plot the number of beds of PHCs, number of SCs, and the number of villages covered by the PHCs of a particular block in the series of the radar. In the figure the blue path identifies the bed number of PHCs in a particular block, the red line segments identified the numbers of the SCs under those PHCs in the particular block, and the green path shows the number of villages covered by those PHCs/SCs in

that block. From the centre the major axis is measured in a scale of 0 to 102, because in case of our data the highest number is occupied by the village number 101 (under Mal Block). Where the respective colour path intersects the blocks axis, the corresponding size of the variable can be measured from that point. The degree of divergence between the respective points for three variables for a particular block identifies the degree of mal distribution. According to the diagram the crisis are clearly visible for the Blocks like Mal, Kumargram, Falakata, and Dhupguri.

### Service rendered by PHCs

Now, the discrepancies between actual share patient loads weight what the PHCs are expected to bear and what they are actually presently bearing can bring some significant results. According to HMIS (2011) data, the number of people per lakh population visited the government hospital for inpatient services in West Bengal was 6637 and for the outdoor consultation were 61313 during 2011. Now if we hypothetically consider that PHCs are the only source for first time care during health needs, some important results and real positions of the PHCs can be drawn to face the situation. According to that standard, for Jalpaiguri district with population 3016836, thus 200227  $[(6637 \times 3016836)/100000]$  number of patients per lakh are cater PHCs for inpatient services and 1849712  $[(61313 \times 3016836)/100000]$  number per lakh for outpatient consultation. In West Bengal, total available beds in PHCs are 6612, out of which Jalpaiguri only have 256 beds i.e., PHCs beds share for the district is only 3.87 percent out of total available beds. Thus the expected number of inpatients to be served by the PHCs is only 7449  $[200227 \{ (6637 \times 3016836)/100000 \} \times 3.87\%]$  in 2011, but the capacity of the PHCs to serve is 200227  $[(6637 \times 3016836)/100000]$ . The difference between 200227 and 7449 identifies the service gap in inpatient care in PHCs in Jalpaiguri district, which is 192778. Similarly for the outpatient department visits for doctors consultation in PHCs, the study found 21 doctors are performing in different PHCs of Jalpaiguri, where as the corresponding figure for West Bengal is 758. The study found 2.77 percent share of doctors actually performed in the PHCs of Jalpaiguri district. The burden of outpatient actually served by the PHCs is 51237  $[(61313 \times 3016836)/100000 \times 2.77\%]$  but what is their capacity is to serve 1849712  $[(61313 \times 3016836)/100000]$ . Hence the gap can be easily calculated as 133737  $(184974 - 51237)$ . The descriptions are shown in table-2.

**Table-2: Service rendered by PHCs in Jalpaiguri District**

Service	Expected total patient as per 2001 census	Expected total patient in PHCs as per 2001 census	Actual Patient in PHCs 2011	2011 Gap % of Need
Inpatient Admission	20227	7449	3416	54.16
Out-door doctors Consultation	1849712	51237	37812	26.2

*Source: Jalpaiguri CMOH office, 2011*

### Bed density in PHCs

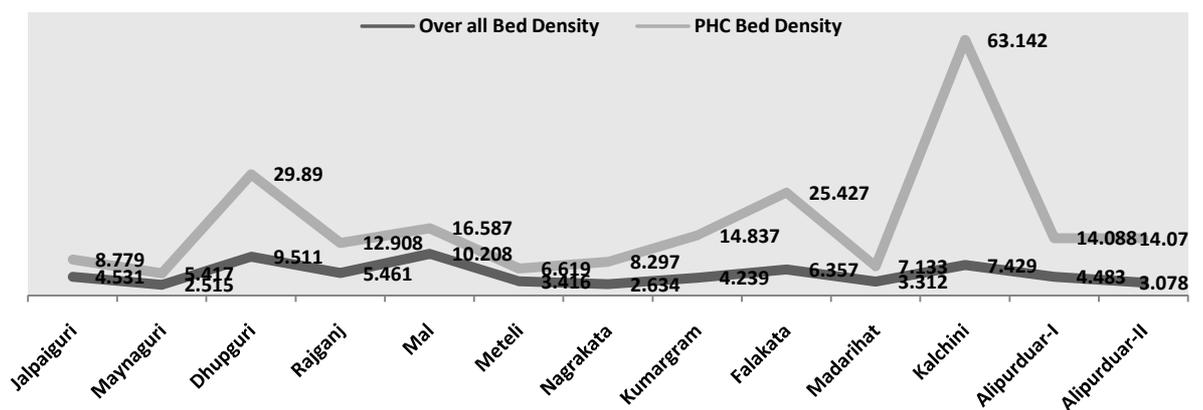
The geographical locations of the PHCs are significant factor to produce health output. In this regard our national figure shows that 19 percent of per lakh population are served by the PHCs in India, the corresponding figure for the state West Bengal is 13.4 percent. The national standard norms identifies that one PHC cater 12 Sub-

Centre (SC), where 30,000 populations are to be served (20,000 populations for hill areas). In case of Jalpaiguri district 38 PHCs for 2794291 rural populations and which cater 537 SCs. The disaggregate data in this regard shows that on average one PHC serve 73533 population and cater 14.13 SCs under itself, which establish quite significant figure in terms of our national norms. To identify the situation of bed density block wise, we can compare all levels of beds served by public hospitals like PHCs, BPHCs and RHs in each block and here we found the value of availability of beds sanctioned per 1000 population as a good indicator of bed density. In this respect of bed density Maynaguri, Nagrakata, Alipurduar-II, Madarihat block perform well. The bed densities of such blocks varied between 2 to 4. But if we drop the share of bed provided by BPHCs and RHs from the list and calculate the bed density in terms of PHCs only, the situation becomes seriously severe. Under such circumstances Kalchini is the worst performing blocks (where the bed density of PHCs is 63.142) followed by Dhupguri, Falakata, and Mal etc. The bed density of PHCs and the combined bed density of PHCs and BPHCs /RHs are shown in figure-2 for all the blocks of the district. The vertical differences of the two curves identify the discrepancies regarding bed distribution over the blocks in terms of beds of PHCs. The blocks like Dhupguri, Falakata, and Kalchini are situated in an extreme position in this regard.

**Internal Classification of Districts in terms of Distribution of PHCs**

To analyse further, it is rational to break up the district in terms of specific regions with similar geographical and social structure. From the stand point of Jalpaiguri district the regions are: Forest & Hilly area, Tea garden area and plain area. Out of 6245 sq km total area 1987 sq km are belongs to tea garden area. It is the second highest tea producing district in the country. The economy of this region is fully dependent on tea. The wages of the tea garden workers not only included the cash payment but also rations, fuel, housing, medical benefits, spot retirement benefits and different sundry benefits.

**Figure-2: Comparison of Bed Densities in PHCs and BPHCs/RHs in all Blocks of the district**



*Source: West Bengal ministry of health and family welfare web [www.wbhfw.gov.in](http://www.wbhfw.gov.in)*

Nearly 1, 20, 000 peoples directly and in terms of their dependence fully curve on tea garden in terms of food, cloth and housing. The tea garden areas are distributed unevenly over the district. But basically these tea gardens are located adjacent to

forest. The forest and hilly area are considered jointly, due to more or less same kind of geographical adversities faces by the inhabitants. The district comprises 1790 sq Km forest and hilly areas distributed over different parts of the blocks like Mal, Meteli, Nagrakata, Madarihat, Kalchini, and Kumargram. The forest and hilly areas of the district are basically concentrated in the northern and in some middle part of the district. The plain area with tea garden covering 4635 sq Km which are basically the middle and southern part of the district consisting of Rajganj, Jalpaiguri Sadar, Maynaguri, Dhupguri, Falakata, Alipurduar-I, and Alipurduar-II block. To consider the distribution of PHCs over these two regions an approximation based consideration can gives us the inequality in the distribution of PHCs over the district.

**Table-3: Approximate Classification of the District and distribution of PHCs**

	Forest & Hilly Area	Plain Area with Tea Garden
Areas (Sq Km)	1790	4635
Block Coverage	Mal, Meteli, Nagrakata, Madarihat, Kalchini, Kumargarm	Rajganj, Jalpaiguri Sadar, Maynaguri, Dhupguri, Falakata, Alipurduar-I, Alipurduar-II
Approximate Population	1103293 (37%)	1913543(63%)
No of PHCs	14(36.8%)	24 (63.2%)
No of Beds of the PHCs	88(37.3%)	148 (62.7%)

*Source: Jalpaiguri CMOH office, 2011*

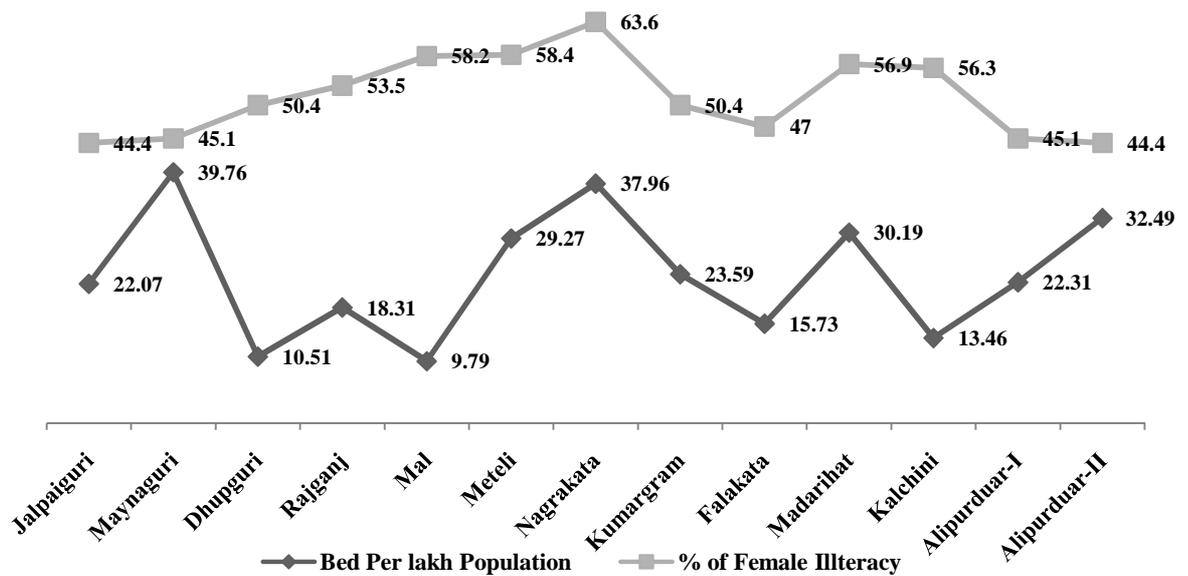
Surely like other parts of West Bengal, there appears a vast inequality within single district and usually the main sub-divisions, where bed density is highest and the proximate blocks which are located far from the sub-divisions always remain back benchers in terms of bed density. The study found that bed density is highest for the plain areas and severe for the forest and hilly areas. There are some PHCs in the forest area which are performing without inpatient provision or with some minimum bed. In this regard Meteli, Nagrakata, Kalchini and Kumargram blocks are performing at such a level that eight PHCs are performing with 46 beds for 917823 people. In aggregate, different blocks of the district are showing more or less even distribution of PHCs and their beds between forest-hilly areas and plain areas. Here, for forest and hilly areas 37 percent of total population are living and the health infrastructure in terms of PHCs availability both for inpatient and outpatient services shows out of total number 37 percent are available in this region. But according to our national norms, health service providing units of tough regions cover lower percentage of people in compare to plain area. So in that point of comparison a vast inequality exists in the distribution of health infrastructure in case of PHCs.

### **Bed density and Female Illiteracy relation for PHCs**

The blocks like Kalchini, Falakata, Kumargram, Nagrakata, and Dhupguri have extremely low availability of beds in PHCs. For example in Kalchini four beds are found in the PHCs at functioning position. But simultaneously the second tier health support from BPHCs and RHs can also have significant role to cover the service gap created by the PHCs. Now the study discusses the bed per lakh of population at PHCs, BPHCs and RHs jointly for the population of the different blocks. Considering all the PHCs and all second tier health facilities, the blocks like Mal, Dhupguri and Kalchini are have poor availability of beds and possibly these blocks are in severe condition in respect of bed availability. To understand the distribution of health facilities (lower or primary level) properly we have to understand the crux relation between health needs

and health provisions. When provision of equal treatment to all those with equal needs is termed as 'horizontal equity' law, while 'vertical equity' refers to provision of unequal treatment for all with unequal needs (H Jerehiah, 2000). If we consider female illiteracy as a proxy of backwardness of any block, and try to correlate the block level beds per lakh of population with female illiteracy of that block, it will provide us significant result. The correlation coefficient between female illiteracy and beds per lakh population of the blocks shows -0.00062, which is significant at 5 percent level. The negative value of correlation coefficient shows that as the level of female illiteracy increases the bed availability also reduces in the block.

**Figure-3: Relation between Bed densities and Female Illiteracies of all Blocks**



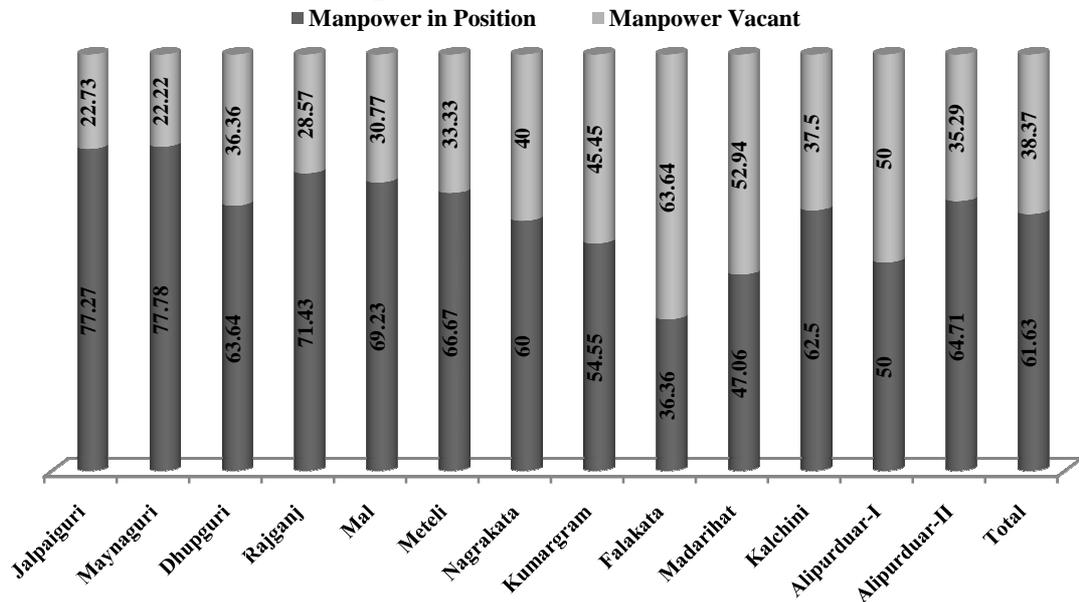
Source: West Bengal ministry of health and family welfare web [www.wbhf.gov.in](http://www.wbhf.gov.in)

### Equipment solidity at PHCs

The density of diagnostic and treatment technologies can be taken as a proxy of access of good treatment with technological complexities across PHCs. The availability of these instruments for all PHCs in the district is investigated thoroughly and the data also collected from those units regarding their stock and in use position. Then the aggregate of those equipments numbers available per block shows two things. One, the aggregate stock of equipments identified policy directions, and the other, the aggregate number of equipments in use position shows the effectiveness (ineffectiveness) of the blocks compare to their availability. Thus density of stock of equipments and density of use of equipments identify properly the distorted regional distribution. The study found that equipment density in stock and in use separately for 10,000 populations. The correlation coefficient between female illiteracy and equipment in stock and in use both the result produces negative value of correlation coefficient ( in case of stock -0.0463 and for in use -0.269). This negative value of correlation coefficient also means as the female illiteracy increases the equipment density in the PHCs increases. Here also female illiteracy also considered as the indicator of backwardness of the respective block. On an average the study found 17.65 to 50.00 percent of the equipments lying unutilised due to various reasons. Such level of incomplete utilisation of equipments surely is the targets of policy makers for further developments in future. The value of equipment density per 10,000

populations (in stock) varies between 0.741 to 2.644, whereas equipment density per 10,000 populations (in use) varies between 0.454 to 2.059.

**Figure-4: Distribution of Manpower in Position and Vacant in PHCs over Blocks**



Source: West Bengal ministry of health and family welfare web [www.wbhf.w.gov.in](http://www.wbhf.w.gov.in)

**Table-4: Density of Manpower across different blocks**

Block	Doctors	Nurse	Health assistant	Gr D
Total	27	21	36	33
Max-Value	5	4	6	6
Min-Value	1	1	1	1
Average	2.076923077	1.615384615	2.769230769	2.538461538
S.D	1.255755978	0.960768923	1.3634421	1.450022104
C.V	60.46	59.48	49.23	57.12

Source:CMOH office Jalpaiguri District, 2012

**Manpower solidity at PHCs**

Earlier we have considered the district in three geographical strata like tea garden belt, forest and hill area, and plain area to understand the physical infrastructure regarding beds and equipments of the PHCs in different blocks. Besides this the study considers manpower which includes doctors, nurses, health assistant (LHV, MHA, ANM), Group-D staff and also it calculates the densities of respective manpower staff in PHCs. Table-4 shows the blocks as per their geographical position in a particular block. The blocks like Meteli, Nagrakata, Kalchini, Falakata and Kumargram are showing a typical scarcity in terms of doctors. The situation like coverage by one doctor from BPHC or RH is very common for the blocks like Falakata, Dhupguri, Mal, Meteli and, Kumargram. Similarly scarcity of doctors can visible from the gap between sanctioned and in position difference. Only in case of Group-D the PHCs are performing at satisfactory level. The statistical result in table-4 shows these discrepancies more properly. The inequality in all respect can be calculated by Coefficient of Variance (C.V.). The highest value of C.V. indicates the highest divergence. The figure-4 shows the distribution of manpower in position and the manpower shortage in terms of sanctioned strength. In terms of aggregate figure the

study found that 38 percent of the total sanctioned manpower remains vacant in the PHCs of the district. The disaggregate picture of the blocks found that the position of blocks like Nagrakata, Kumargram, Falakata, Madarihat, and Alipurduar-I are in very much crucial, since there the vacant position is at least equal or more than 40 percent. The better results are shown for the blocks like Jalpaiguri, Maynaguri and Rajganj where the vacant positions are not more than 29 percent.

### **Conclusions**

The study describes that how prepared or constrained are the local public health facilities to address the barriers of health attention. Data collected from 15 block level facilities (including 9 BPHC, 5RH and 2SDH) reveal that almost all facilities were functioning with basic services such as general OPD, IPD, and labour room. Ambulances were available and functional. All of them had required capacity to provide basic maternal and child health care such as normal birth deliveries, or treatment of diarrhoea-affected children. Basic pathological test services were also available in only 35.14% and management of animal attack or snake bite which constitutes an important part of emergency care in the Western Dooars is present in 4.15 PHCs of the total functioning PHCs in the district. Notwithstanding a visibly enabled environment in the block level facilities, it is hard to overlook several caveats in the system. First, the translation of capacity into effective utilisation in case of some services is seriously constrained by inadequacy of some critical and complementary inputs. For example, equipment for provisioning of critical services like resuscitation and thermal protection (baby warmer) is available in almost all the blocks but in absence of steady power supply its utilisation is highly restrained. In many cases equipments are non-functional implying sheer negligence on maintenance. Almost 97 percent of the PHCs did not have facility to conduct caesarean section and / or basic emergency obstetric care (EMOC) services. Even the three first referral units (FRUs), facilities designated to provide 24X7 comprehensive EMOC services, were found lacking in several critical inputs. For example, the SDH situated in Alipurduar-I block reported shortage of equipment for resuscitation and baby warmer. The rural hospital in Falakata block, another designated FRU, is running without any blood storage unit. About half of the facilities were found deficient in providing basic neo-natal services. The radiology and imaging services were conspicuously weak; for example, only three district level facilities were found to have an USG machine and only eight could provide X-ray facilities to the users. The public health care network in the Western Dooars symbolises a system with serious constraints, yet deemed to deal with extraordinary challenges of meeting the health care need of the Western Dooars. The constraints manifests lower level facilities the PHCs and sub-centers- operating far below the potential, and the block level facilities able to meet only a small part of the need. Hence, the necessary steps will be taken to strengthening the block level facilities being able to meet only a small part of the need. Strengthening the block level facilities is extremely crucial since they not only act as the first point of inpatient care, but also operate as a hub for all public health programmes carried out by their lower level counterparts including those located in hard-to-reach locations.

### **References:**

- Arrow KJ. (1963): "Uncertainty and the welfare economics for medical care". American Economic Review. Vol. 53(5), pp 921-969.

- Alderman H. & Gertler (1989): “The substitutability of public and private healthcare for the treatment of children in Pakistan” Living Standard Measurement Survey, Working paper No. 57, World Bank, Washington D.C.
- Alderman H & Levy V. (1996): “Household responses to public health services: Cost and quality tradeoffs”. World Bank Research Observer, Vol. 11, No. 1, pp 3-22.
- Amooti-Kaguna B, Nuwaha F. (2000): "Factors influencing choice of delivery sites in Rakai district of Uganda". Social Science and Medicine, Vol 50, pp 203–13.
- Amrith S (2007): “Political Culture of Health in India A Historical Perspective”. Economic and Political Weekly, January 13, 2007.
- Audibert M, He Y, Mathonnat J, Xie Zhe Huang Fu. (2010): “Income growth, Price variation and Healthcare demand: A mixed Logit model applied to two-period comparison in rural China”. CERDI, Etudes et Documents, 2010.
- Baru R, Acharya A, Acharya S, Shiv Kumar, Nagraj K. (2010): “Inequalities in access to health services in India: Caste, Class and region”. Economic Political Weekly, Vol. XLV, No. 38.
- Bhattacharya K (2007): Book, "Silent Departure", Papyrus Publication, Kolkata.
- Bloom G, Kanjilal B and Peters DH (2008): “Regulating Health Care Markets in China And India”. Health Affairs, Vol. 27, No. 4 (2008), pp 952-963.
- Census Report, (2001): "Census Report of India, 2001" Source: [www.censusindia.gov.in](http://www.censusindia.gov.in)
- Dreze & Sen. (1995): “India: Economic Development and Social Opportunity” Clarendon Press, Oxford.
- Ensor T, Witter S (2001): “Health economics in low income countries: adapting to the reality of the unofficial economy”. Health Policy, Vol. 57, pp 1–13.
- Evans B. David, Tandon A, Murray JL, & Lauer J. (2000): “The comparative efficiency of National health systems in producing health: An analysis of 191 countries”. GPE Discussion Paper series. No 29. Geneva, World Health Organisation.
- Farrell M J. (1957): "The measurement of productive efficiency", Journal of the Royal Statistical Society Series, Vol. 120, pp 253-281.
- Gupta I (2007): “Health Coverage for All: Strategies and Choices for India”, Published by GTZ, Germany, March 2007.

- Gupta I. & Dasgupta P. (2002): “Demand for curative healthcare in rural India: Choosing between private, public and no-care”. NCAER Working Paper No. 82, National Council of Applied Economic Research, New Delhi.
- Gertler P, Van der Gaag J. (1990). “The willingness to pay for medical care: Evidence from two developing countries”, UDAID sponsored Project Report, www.popline.org, John Hopkins University Press, Baltimore.
- Gertler, P. and Van der Gaag J (1988), “Measuring the Willingness to Pay for Social Services in Developing Countries”, Living Standards Measurement Study Working Paper No. 45, World Bank, Washington D.C.
- Milligan J A (1919): "Final Report on the Survey and Settlement Operations in the Jalpaiguri District", District Gazetteer, Jalpaiguri
- Soman, Krishna (2002): “Rural Health Care in West Bengal”. Economic and Political Weekly, Vol. XXXVII, No.26, June 29, 2002.