A Descriptive Study of Workforce Availability and Human Resource Management in Rural Health Sector

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ABSTRACT

This study focuses on the role of training and development in the rural hospital. The objective is to find the actual role of public and private hospitals in the rural areas. Uttrakhand is a state of varied geographical conditions which put a challenges for the healthsector.

Government stated many policies to overcome the gap between actual services provided and demanded by the public.

This paper will bring lots of aspect of health services in the state of Uttrakhand.

Keywords: Training and Development, Health sector analysis, Service gap, Market assessment.

1. INTRODUCTION

Uttarakhand is the 27th state of republic India formed on 9th November 2000. There are 13 districts in Uttarakhand state which are divided into two regions .One is Garhwal division and another is kumoan division.

The Garhwal division includes the seven districts which are as followings:

1. Dehradun

2. Haridwar
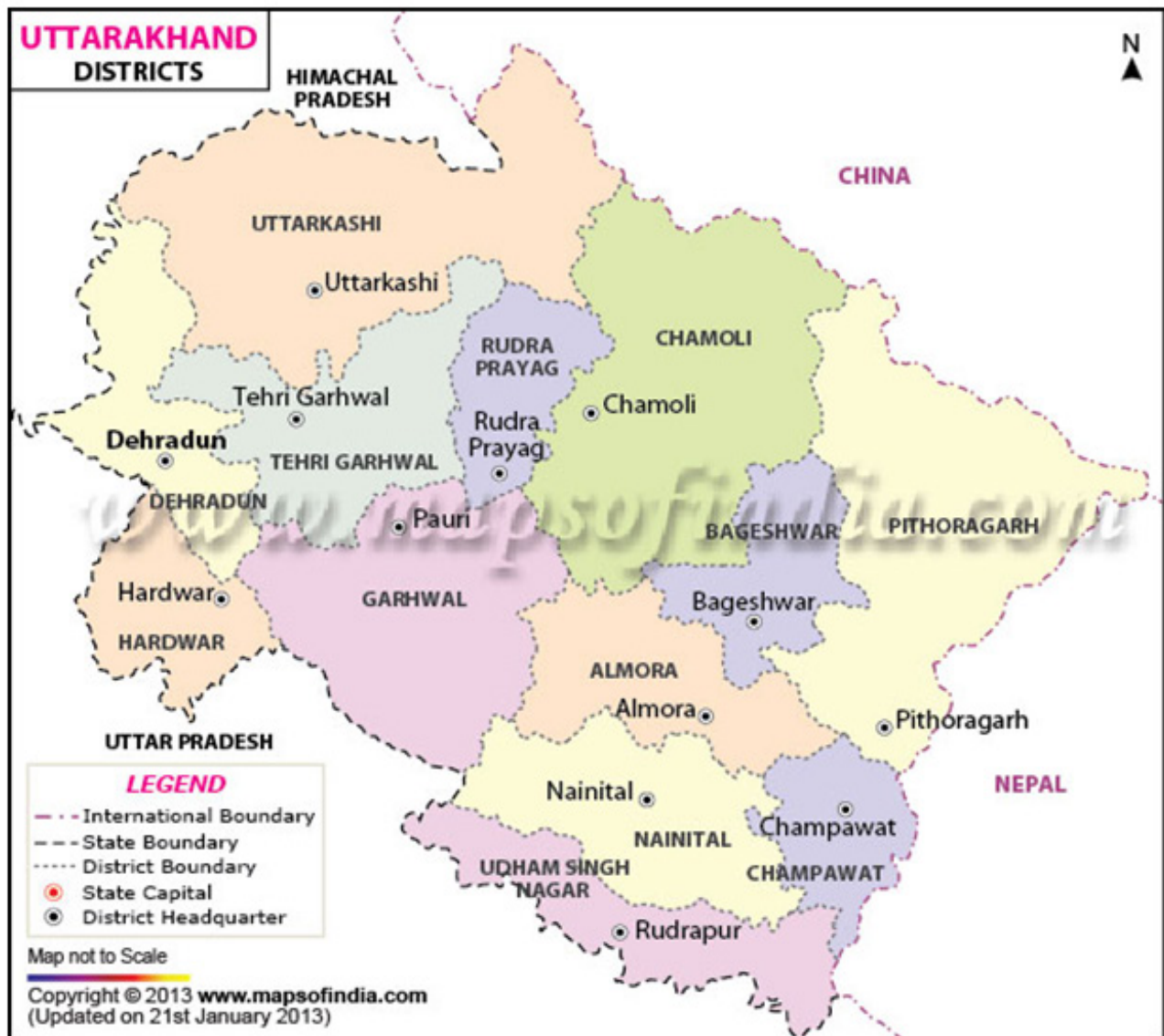
3. Tehri Garhwal

4. Uttarkashi

Figure 1

5.   Chamoli

6.   Pauri Garhwal (garhwal)

7.   Rudraprayag

The kumaon division includes the six districts which are as following:

1.   Almora
2.   Bageshwer
3.   Champawat
4.   Nainital
5.   Pithoragarh
6.   Udhamsingh nagar

1.1. Healthcare in Uttarakhand – A Perspective

Uttarakhand health sector is progressing towards Universal Health Coverage, as measured by improvement in access to and quality of health services and in providing health financial risk coverage. Specifically, this research would focus on improving access to healthcare services for the remote population of the state, by supporting public and private health-delivery systems; promoting greater efficiency and managerial capacity in the state directorate; improving information systems; enhancing monitoring and research; and extending coverage of RSBY(??) beyond hospitalization to include primary healthcare services. An important area of the study supports is innovative mechanisms for Uttarakhand to engage with private health care providers, expanding their role in meeting the unmet access needs of the state's population. A greater involvement of the private sector would provide additional human resource availability for the public health system as a whole, also providing an opportunity to use existing public staff in a more efficient and effective way.

This report thus will provide an analysis carried out with regard to analyze the role of the private partners in the selected District Hospitals and Community Health Centres (CHCs) in the Kumoan region of Uttarakhand.

1.2. Socio Demographic Profile of Uttarakhand

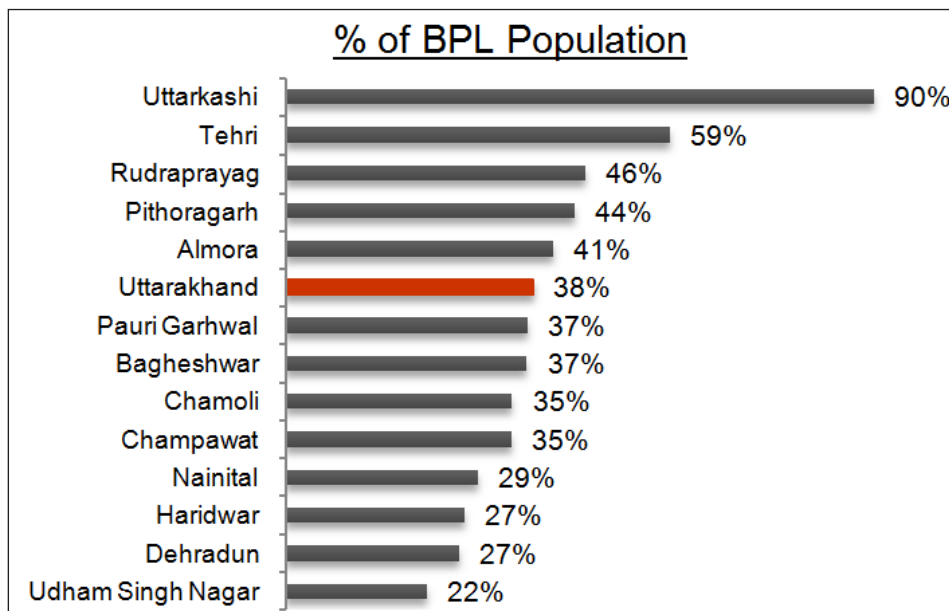### 1.2.1. Socio-Economic Profile of Uttarakhand

Figure 2: Percentage of BPL population of Uttarakhand Districts

Approximately 38% of the population of Uttarakhand is below poverty line (BPL)1. Among the thirteen districts of the state, Uttarkashi district has the highest proportion of BPL population, while Udham Singh Nagar district has the lowest BPL population. The district wise BPL population of Uttarakhand is shown in the adjustment figure.

The state has a per capita income of INR 82,193 and is higher than the national average of INR 60,6032.

1.3. Anthropo-geographic profile of Uttarakhand

Uttarakhand state located in northern part of India has a total area of 53,483 sq. km, of which 93% is mountainous and 65% is covered by forest. The total population of the state as per census 2011 is 10,086,292 showing a growth rate of 18.81% from census 2001. Of the total population, 51% are male, while remaining 49% are female. The state constitutes approximately 70% rural population and 30% urban population. The state is divided into 13 districts which are grouped into two divisions – Kumaon and Garhwal.

Table 1
Anthropo-geographic profile of Uttarakhand state

Characteristic	Number/ percent
Area (in sq.km)	53,483
Number &Size of villages	16,826
1 – 500 population/ village	13,460 (80%)
501 – 2,000 population/ village	2,679 (17%)
>2000 population/ village	426 (3%)
Number of towns	31
Total Population	1,00,86,292
Urban population	30,49,338 (69.77%)
Rural population	70,36,954 (30.23%)
Population Growth	18.81%
Sex Ratio	963
Total Literacy	78.82 %
Male literacy	87.40 %
Female literacy	67.06 %

Source: Census 2011

1.4. Public health facilities in Uttrakhand

Service utilization or acceptance is very low for different aspects of healthcare. There are significant differences between the urban and rural areas. This could also be attributed to the difficult geographical conditions, basically in the middle and upper hills & problems of transportation & mobility faced by the health service providers.

There are a large number of vacancies in the government hospitals. Appointments on contracts basis have been successful in filling the gap effectively. The lack of trained human resources, poverty and illiteracy impacts adversely on the utilisation of services. Practices tend to be preventing women from taking timely medical assistance, either during pregnancy or at the time of delivery. Increased life expectancy results to increase in degenerative diseases of ageing and life-style disease across the country including the state of Uttarakhand. During the last few years, there has been constant improvement in controlling the communicable diseases such as polio, leprosy and measles.

However, other communicable diseases are still prominent in the state. Tuberculosis poses a major challenge in the state with an estimated prevalence of 170/100,0003 population in comparison to the national average of 168/100,0004 population. Similarly, prevalence of HIV/AIDS in the state shows an increase in contrary to decline in the national level; though it's lower than the national average. The reported prevalence rate of HIV in the state has increased from 0% in the year 2007 to 0.1% in 20105. Besides, the prevalence of HIV among male (0.12%) has also been reported to be significantly higher than in women (0.08%). On the other side, the seasonal surge in communicable diseases in the state including gastroenteritis, typhoid and different types of hepatitis are common due to unhygienic practices and scarcity of safe drinking water in the rural areas.

The stress of non-communicable disease (NCD) is also increasing in the state, especially in rural areas which were earlier considered epicenter for communicable disease alone. A survey on NCD risk factors in Uttarakhand under integrated disease surveillance programme (IDSP) reported that the overall NCD risk factor is widespread across all the socio-demographic categories of population in Uttarakhand. It reported that 67% of the people are in low category of physical inactivity and nearly 52% of current drinkers were in high risk drinking zone (binge drinking). Tobacco consumption has also been reported to be high. The National Health Profile 2013 reported that 43.9% of adult male and 5.8% of adult female use tobacco daily. Accordingly, the increasing pattern of prevalence of hypertension was recorded with increasing age of people. Moreover, it was reported to be common in all education levels and occupational categories. 46% of the study population were detected with pre-hypertension stage, while one-fifth were in stage-I and stage-II hypertension[6].

In addition to the above mentioned disease pattern in the state, the need for trauma services in the state has also been highlighted by previous studies conducted. The economy of Uttarakhand is highly dependent on mountain agriculture. Moreover, it witnesses a high flux of transitory population for tourism. Injuries related to fall from height in hilly population and road traffic accidents (RTA) are quiet common in the state. Moreover, the area is also prone to natural calamities with mass causalities. A recent study revealed that the emergency and department of Orthopedics of a Government Medical College in Kumaon region reported that 31.24% of the injury cases were due to RTA and 27.84% were due to fall from height6. The study represents the increased burden of muscular-skeletal trauma patients for treatment in this part of the country.

1.5. Healthcare Institutions

The list of health facilities available in the state is mentioned in the table below.

Table 2
Health facilities in Uttarakhand state

Facility Type	Number
Urban Government Hospital	29
Rural Government Hospital*	666
Medical College	
Govt. Medical College	2
Private Medical College	2
Undergraduate AYUSH Institutes	6

Facility Type	Number
District Hospital	12
Female Hospital	6
Base Hospital	3
Combined Hospital	15
CHC	55
PHC	257
Sub Centre	1848
Licenced Blood Bank	
Govt. Blood Bank	13
Pvt. Blood Bank	10
AYUSH	
Hospitals	10
Dispensaries	533
No. of Beds Available *	
Urban Government Hospital	4219
Rural Government Hospital	3746
*Including CHCs	
Source: National Health Profile 2013	

Source: National Health Profile 2013

1.6. Human Resource-Medical and Paramedical

Uttarakhand is facing a big human resource crunch since its conception. The Uttarakhand state PIP 2014-15 highlights the shortage of doctors and specialists in the state. The availability of medical and paramedical staff in the state of Uttarakhand is shown in the table below. The state has high vacancy of human resource, mostly doctors wherein 48% of position of allopathic doctors and 75% of specialist's position are vacant. The vacancy for the position of technicians is also significantly high. However, availability of nursing staff is optimal in the state.

Table 3
Human Resource availability in Uttarakhand state

Position	Sanctioned	In position	Vacant	Vacant (%)
Doctors (Allopathic)	2429	1259	1170	48%
Specialist	1209	304	905	75%
Physiotherapist	46	37	06	13%
Staff Nurse	975	871 + 305(NRHM)	+201	0%
X-Ray Technician	132	63	69	52%
Pharmacist	772	762	10	01%
Lab technician	303	199	104	34%
OT Technician	06	03	03	50%
MPW (Male)	-	195	0	0%
ANMs	2251	2480 (214 2nd ANM)	0	0%

Source: Uttarakhand State PIP 2014-15

According to the Rural Health Statistics 2012, there is a significant shortage of specialists in the state with a shortfall of nearly 85% in surgeons, 76% in obstetricians &gynecologists, 86% in physician and 66% in pediatricians in the CHCs. As per the report, only 10 CHCs in the state has all the four specialists have available. Besides, there also exists a shortfall of 71% for the position radiologists in the CHCs and 74% for the position of lab technicians across the PHCs and CHCs.

2. OBJECTIVE OF THE RESEARCH

The objective of the study is

1.   To study the role of private and public healthcare in Almora and Bageshwar districts of Uttarakhand.

2.   Analysis of quality health care services and facilities for patients.

3. RESEARCH METHODOLOGY

This study has been carried out by doing the supply, demand and then gap analysis between the health facilities provided in the two districts *i.e.* Chamoli and Bageshwar. The analysis of availability and utilisation of various facilities

4. ANALYSIS

4.1. Profile of Almora and Bageswar

4.1.1. Almora District

Introduction : Almora district is situated in Kumaon division of Uttarakhand and is categorised into two parts on the basis of natural structure – hill area and river valley. The total area of the district is 3,141sq. kms.It is surrounded by other districts of Uttarakhand including Bageshwar and Chamoli on Northern side, Pauri on western side, Nainital on southern and Champawat on the eastern side. It comprises of 11 blocks and one municipality.

The total population of the district as per census 2011 is 622,506 of which approximately 10% is urban while remaining is rural. It constitutes of 47% male and 53% female. The district has recorded a negative population growth of (-1.28%) in the 2011 census highlighting the trend of migration from the hills. The average literacy rate in the district is 80%. Of the total population of the district, nearly 41% is BPL.

4.1.2. Bageshwar District

 Bageshwar district is situated in Kumaon division of Uttarakhand lies in the upper hills of Himalayas and has total area of 2,241 sq. kms. It is surrounded on the west and northwest by Chamoli district, on the northeast and east by Pithoragarh district, and on the south by Almora district. The district comprises of 11 blocks and one municipality.

The total population of the district as per census 2011 is 259,898 of which approximately 97% is rural urban while only 3% is urban. It is the third least populous district of the state and is 569th

most densely populated district out of total 640 districts in India. It constitutes of 48% male and 52% female. The population growth of the district has declined from 9.28% in 2001 to only 4.18% in 2011 census. The average literacy rate in the district is 80%. Of the total population of the district, nearly 37% is BPL.

4.1.3. Health Facilities in District

The rural health care system is a three tier structure. It has "Sub-center" at the most peripheral level, "Primary Health Centre" at the intermediate level and "Community Health Centre" at the secondary level. The population covered by a "Sub Centre", "Primary Health Centre" and "Community Health Centre" are "3,000-5,000", "20,000-30,000" and "100,000", respectively. In addition, there are Private Voluntary Healthy Facilities, also. As per Uttarakhand government organizational set up, the District is headed by a District Magistrate, who is also the chair person of the Integrated District Health Society of Pithoragarh district. The District health set up of Uttarakhand government is headed by the Chief Medical Officer followed by a Deputy CMO as second-in-command. Chief Medical Superintendent looks after the Uttarakhand government hospitals in the district.

Table 4
Anthropo-geographic profile of Almora and Bageshwar

Characteristic	Almora	Bageshwar
Area (in sq.km)	3,141	2,241
Number of villages	2,149	863
Total Population	6,22,506	2,59,898
Urban population	62,314 (10.01%)	9,079 (3.49%)
Rural population	5,60,192 (89.99%)	2,50,819 (96.51%)
Population Growth	-1.28%	4.18%
Sex Ratio	1139	1090
Total Literacy	80.47%	80.01%
Male literacy	92.86%	92.33%
Female literacy	69.93%	69.03%

Source: Census 2011

4.2. Requirement for Healthcare provisions in Almora and Tehri districts

MARKET Analysis - Almora/Bageshwar : This part of the study presents the existing supply details in Almora district and estimates the demand of secondary level health services in district of Almora in Uttarakhand. The estimated demand is compared with the supply of secondary level health services to reach at the demand and supply variance in the district. The inference from the section show the gaps in health service availability at secondary level and will help in ascertaining the service basket at District Hospital (DH) and identified Community Health Centres (CHCs) at Bhikyasain and Baijnath by private provider.

The area covered for study has important health care facilities. A gist of the facilities visited and key observations are mentioned below to set the context.

1. At Almora town, the District Hospital (Male), District Hospital (Female) and Government Base Hospital were visited. The bed strength is 59, 38 and 144 respectively.

2. The private facilities visited in Almora town are Anjali Hospital (12 beds) and Jeevan Jyothi Hospital (20 beds).

3. Ranikhet town, 38 kms away from Almora town, has Government Civil Hospital a 102 bed facility

4. The private facilities visited in Ranikhet are Ranikhet Polyclinic (4 beds), M N Srivastav Hospital (35 beds), S N Srivastav Heart Centre (30 beds), Sri Baba Haidakhan Hospital (18 beds)

5. Within Almora district, CHC Bhikyasain was visited and in Bageswar district, CHC Baijnath was covered.

6. Since main referral points of CHC Baijnath is District Hospital Almora and Government Base Hospital in Almora, separate demand and supply estimation for Bageshwar district has not been undertaken.

4.3. Supply Analysis

4.3.1. Bed Availability

The total number of beds available in Almora is 773 out of which only 26% is in private sector. At present, a total of 25436 IPD cases have been reported yearly in Almora. At an Antibiotic length of stay(ALOS) of 3 days as reported on the present data, it can be concluded that a total of 76308 bed days have been utilized in a year. Hence the actual number of beds used is 209 out of total 773, at a BOR of 27%.
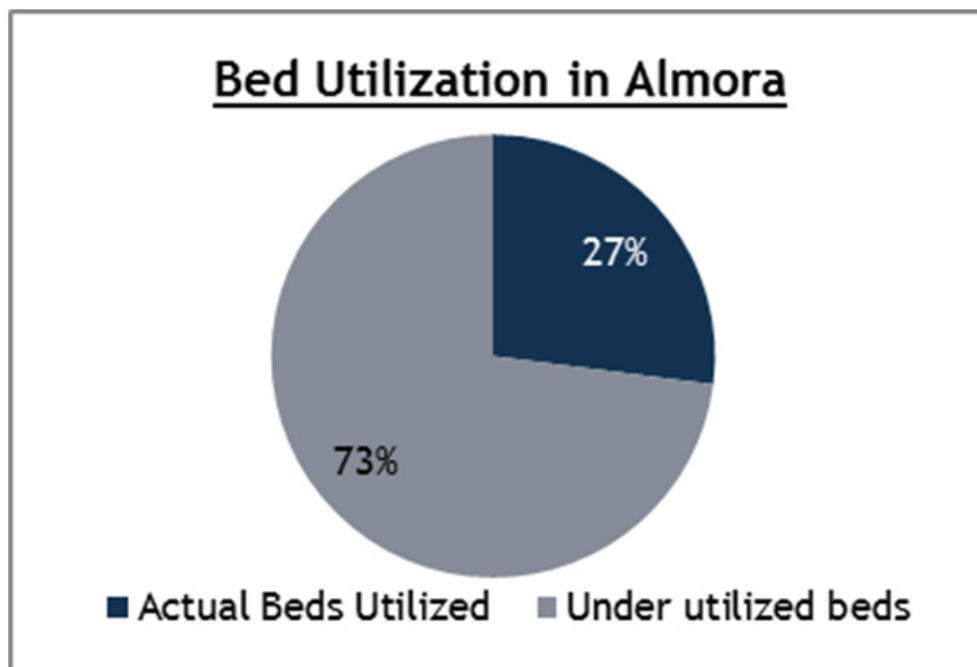

Figure 3: Bed Utilization - Almora

District Level : The total number of beds available at district level is 343. At present, a total of 11477 IPD cases have been reported yearly at district level. At an ALOS of 3 days as reported on the present data, it can be concluded that a total of 34431 bed days have been utilized in a year. Hence the actual number of beds used is 294 out of total 343, at a BOR of 28%.

CHC Level : The total number of beds available at CHC level is 110. At present, a total of 3300 IPD cases have been reported yearly at CHC level. At an ALOS of 3 days as reported on the present data, it can be concluded that a total of 9900 bed days have been utilized in a year. Hence the actual number of beds used is 27 out of total 100, at a BOR of 27%.

PHV Level : The total number of beds available at PHC level is 106. At present, a total of 4380 IPD cases have been reported yearly at district level. At an ALOS of 3 days as reported on the present data, it can be concluded that a total of 13140 bed days have been utilized in a year. Hence the actual number of beds used is 36 out of total 106, at a BOR of 34%.

Table 5
Facility type wise actual Bed utilization - Almora

Parameter	District Level	CHC Level	PHC Level	Almora
Total Beds Available	343	100	106	773
Beds utilized at present	94	24	30	209
Underutilized beds	249	76	76	564

Figure 4: Facility type wise Bed Utilization rate – Almora

Source : Uttarakhand Health System Development Projects

4.3.2. *Present service availability and Case Mix*

Service Availability: The matrix below mention the availability of different specialty across the study facilities and the private facilities visited to collect the data for supply.

1. The currently running District hospital Male, District Hospital Female and Government Base Hospital collectively provides basic secondary care such as general medicine, general surgery, OBG, Orthopaedics, Dental, ENT and Ophthalmology as per IPHS guidelines.

2. According to observation on field, Government Base Hospital and District Hospital has a trend to share resources. The General Medicine specialist and General Surgery specialist of Base hospital does thrice a week OPD at District Hospital.

3. In reality, the District Hospital does not have enough resources to meet the secondary care level of IPHS

4. Patients are referred for higher secondary and tertiary care to Shushila Tiwari Medical College in Haldwani.

5. Civil Hospital in Ranikhet also provides basic secondary care and refers patients to Shushila Tiwari Medical College in Haldwani.

6. The only prominent private health care providers are S N Srivastava Heart Center and M N Srivastava Hospital which are small 30-40 bedded facilities akin to Nursing homes providing basic secondary level health care. Cardiac diagnostics is done at S N Srivastava Heart Center

7. Serious patients from private facilities are referred to Delhi or Bareilly.

Table 6
Specialties available across the health facilities visited

Specialties Available	Base Hospital	District Hospital (Male + Female)	Civil Hospital	CHC Bhikbasian	CHC Baijnath	SN Heart Centre	MN Srivastav	Jeevan Jyoti Hospital	Anjali Hospital	Ranikhet Hospital	Shree Baba Haidakehan Hospital
		District Hospital	SDH		CHC				Private Hospital		
Bed Strength	144	97	102	30	30	30	35	20	12	4	18
Anaesthesia	√	√	√	-	-	-	√	√	√	√	√
Gen. Medicine	√	√	√	√	√	√	√	√	√	√	√
Gen. Surgery	√	-	√	-	-	-	√	√	√	√	√
OBG	√	√	√	√	√	-	√	√	√	-	-
Orthopaedics	√	-	√	-	-	-	-	-	-	√	-
ENT	√	-	√	-	-	-	-	-	-	-	-
Paediatrics	√	√	√	-	√	-	-	√	√	-	-
Ophthalmology	√	√	√	-	-	-	-	-	-	-	√
Cardiology	-	-	-	-	-	√	-	-	-	-	-
Urology	-	-	-	-	-	-	√	√	-	-	-
Dentistry	√	√	√	√	√	-	-	-	-	-	√
Radiology	√	√	√	√	√	√	√	√	√	-	-
Pathology	√	√	√	√	√	√	-	√	√	-	√

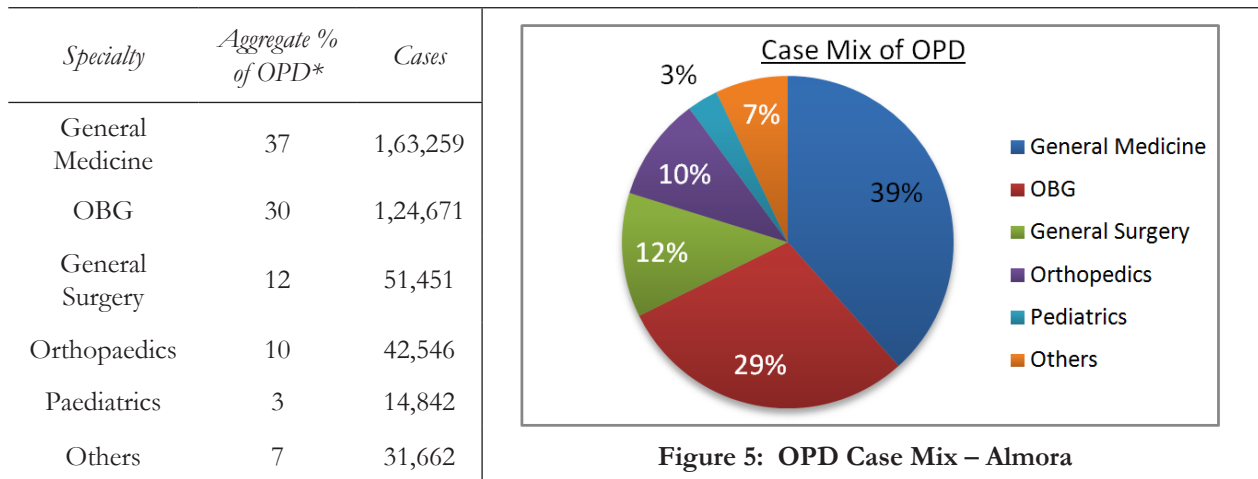*Source :* Uttarakhand Health System Development Projects

Case Mix: The medical doctors practicing in public hospitals of District Hospital, Base Hospital and Civil Hospital were interviewed to understand the case mix of kind of cases visiting OPD. Based on the present supply of manpower and availability of infrastructure, the case mix is as follows:

4.3.3. Hospital Utilization

The utilization of major health facilities is shown in the Table below.

1. The average occupancy of Health facilities available in private and public sectors in Almora district is around 25% which may be concluded very low. This can be due to shortage of doctors.

2. The facilities in private sector are underutilized and average occupancy is around 35%. This can be due to shortage of Anesthetists in private sector to assists specialists in doing procedures. Moreover, the private hospitals are very similar to nursing homes run by local doctors.

3. In comparison, public facilities have an average of 40% BOR. The referral secondary care facilities at district hospital shows lesser occupancy than CHCs and can be inferred that availability of services at district level facilities needs to be strengthened

4. The higher biology of reproduction(BOR) in CHCs and district level facilities can be mostly attributed to deliveries taking place in the facilities and highly subsidized cost of seeking care.

Table 6
OPD Case Mix - Almora

Specialty	Aggregate % of OPD*	Cases
General Medicine	37	1,63,259
OBG	30	1,24,671
General Surgery	12	51,451
Orthopaedics	10	42,546
Paediatrics	3	14,842
Others	7	31,662

Figure 5: OPD Case Mix – Almora

*Based on doctors interview conducted

Table 7
Utilization of major health facilities of Almora district

Name of the Health Facility	No. of Beds	BOR (%)	OPD (Annual)	IPD (Annual)	OP to IP Conversion (%)
Almora					
Private & Trust Hospitals					
The Leprosy Misson Hospital and Home	45	15	3130	60	2
M.N Srivastav Hospital Ltd	35	50	13500	3000	22
S.N Hospital and Heart Center	30	50	15650	3496	22
Jeevan Jyoti Hospital	20	40	9390	480	5

Name of the Health Facility	No. of Beds	BOR (%)	OPD (Annual)	IPD (Annual)	OP to IP Conversion (%)
Shree Baba Haidakhan Charitable and Research Hospital	18	20	21910	1200	5
Anjali Hospital	12	60	18780	360	2
Ranikhet Polyclinic	4	60	10500	120	1
Govt. Facilities					
Govardhan Tiwari,Govt Base Hospital	144	30	62600	5321	9
Govind Singh Mehera, Govt Hospital Ranikhet	102	55	117375	1252	1
Pt.haragovind Pant Dist Hospital, Male	59	35	93900	2504	3
Wictor Mohan Joshi Female Hospital	38	45	29735	2400	8
CHC, Dwarhat	30	60	21910	1200	5
CHC, Chaukhutia	30	40	34430	840	2
CHC, Bhikhyasen	30	30	31300	1000	3
CHC, Jainti	10	20	6260	240	4
Bageshwar					
Shyamlal Gangola District Hospital	60	60	156500	9600	6
CHC, Baijnath	30	40	35995	3600	10
CHC, Kapkote	10	100	26605	1800	7
Additional PHC, Kanda	6	70	12520	480	4

4.3.4. Out patient department (OPD)and IPD in Study facilities

The supply data for IPD has been collected during field visit to the district and the study facilities. The supply data contains both the public and private data for supply of health services in the district of Almora.

Table 8
OP & IP Utilization - Almora

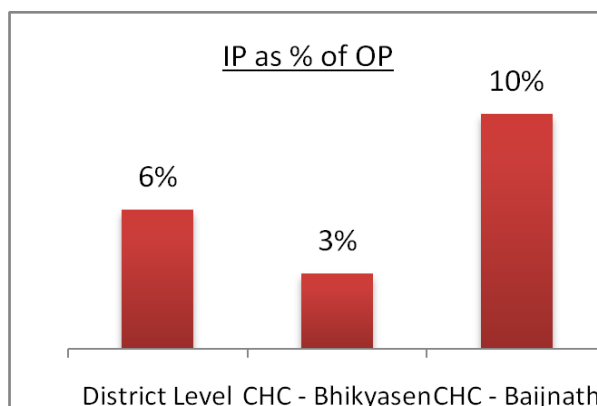| Level of Care	Facilities	Supply*		IP as % of OP
		OP	IP	
Secondary Care Level (At District level)	Base Hospital District Hospital Civil Hospital	428432	25436	6%
Primary Care Level	CHC Bhikyasain	31300	1000	3%
	CHC Baijnath	35995	3600	10%

Figure 6: IP as % of OP

Source : Uttarakhand Health System Development Projects Including private sector data

4.3.5. OT Utilizations

1. The private facility M N Srivastava Hospital in Ranikhet utilizes OTs to the maximum extent in comparison to other Hospitals in the region. The reason behind availability of three specialty services of Surgery, OBG and Urology along with an Anesthetist.

2. The Government Civil Hospital in Ranikhet has maximum utilization among the government counterparts following availability of Surgeon, Orthopedic Surgeon, OBG specialist and Anesthetist.

3. In Almora, Jeevan Jyoti Hospital run by Surgeon of Government Civil Hospital, Ranikhet, follows in terms of utilization of OT.

4. The data establishes a need for availability of specialist doctors and anesthetists across all government facilities to ensure more utilization of OTs vis-à-vis the existing demand for surgical procedures in the population.

Table 9
OT Utilization - Almora

Name of Hospital	No. of OT	Number of Surgeries in a year		No. of Surgeries / OT in a year	No of Surgeries per OT per Day
		Minor	Major		
Base Hospital	4	918	422	335	1.00
Civil Hospital	2	335	625	480	1.31
District Hospital (Male)	3	939	Referred to Base Hospital	313	0.85
District Hospital (Female)	1	-	228 (OBG)	228	0.62
MN Srivastav Hospital	1	-	1152	1152	3.15
Ranikhet Polyclinic	1	120	180	300	0.82
Anjali Hospital	1	-	240 (OBG)	240	0.65
Jeevan Jyoti Hospital	1	70	350	403	1.15
Shree Baba Haidakhan Hospital	1	200 (Cataracts)	-	200	0.54

*Source :*Uttarakhand Health System Development Projects

4.3.6. Utilization of Diagnostics

The present utilization of diagnostics is reported in the adjacent table. It should be noted that the supply figure herein are closest estimates of the universe based on consultations.

4.4. Structrual Analysis for healthFacilities

Need for health facilities have been calculated by ascertaining the catchment population of the health facilities. To understand the catchment area, interviews were conducted with identified health facility in-charges, doctors and other medical manpower in the facilities.

Table 10
Catchment Area and its proximity with the facilities – Almora/ Bageshwar

Levels		District Level		CHC Bikhyasen		CHC Baijnath	
		Catchment Pop. %	Dist. (km)	Catchment Pop. %	Dist. (km)	Catchment Pop. %	Dist. (km)
Almora District	Almora	18%	-	-	104	-	67.6
	Someshwar	10%	40.2	-	82.1	5%	28.3
	Ranikhet	3%	46.5	-	56.7	-	76.2
	Dwarahat	9%	74.7	5%	47.7	-	62.6
	Bhikyasain	5%	104	70%	-	-	110
	Sult	-	154	20%	50.5	-	125
	Chaukutia	15%	91.7	5%	30.7	-	79.6
	Chamoli	-	75.6	-	72.6	5%	43.5
Outside Almora	Bageshwar	20%	67.5	-	132	90%	-
	Pithoragarh	20%	113	-	216	-	177
Total % of Patients from	Within District/ Block	60%	-	70%	-	90%	-
	Outside District/ Block	40%	-	30%	-	10%	-

Source : Uttarakhand Health System Development Projects

Facts and assumptions for catchment analysis of District Hospital/Government Base Hospital/ Ranikhet Civil Hospital:

1. District Hospital, Almora gets a high percentage of patients from Bageshwar and Pithoragarh, since both these districts surrounding north east and east of Almora do not have adequate health facilities delivering comprehensive secondary care. It has been ascertained , through consultation with health service providers that, apart from district Almora 40% of population of Bageshwar and Pithoragarh are coming to Almora town seeking secondary care and this is the secondary catchment population served by district level facilities of Almora

2. Though Baijnath is in Bageswar district, it has been found out that the next referral point of Baijnath is District Headquarter Almora, hence, an integrated approach has been taken for assessing the demand.

3. District Headquarter Almora also has Government Base Hospital, which has been identified to be a Medical College Hospital. District Hospital Almora and Almora Base Hospital has same catchment areas.

4. Ranikhet town, 38kms from Almora town, has a civil hospital which acts as a referral point for blocks West, North West and North of Ranikhet, namely Sult, Bhikiasain, Chaukhutiya and Dwarahat. Hence, the district level demand of secondary care is distributed in between Ranikhet and Almora towns.

5. The supply side assessment for secondary care at district level has been done considering supply for secondary care in Ranikhet town and Almora town, the two semi urban conglomerate of Almora district.

Facts and assumptions for catchment analysis of Bhikiasian Community Health Centre:

1.   The primary catchment population of Bhikiasian is 37286 spreading across 50 kms diameter. The facility receives significant proportion of its patients from northern areas of Sult, western areas of Chaukhutiya and Dwarahat.

2.   It has been ascertained, through consutation with health service providers that 30% of population of Sult, Chaukhutiya and Dwarahat is coming to seek health services in CHC Bhikhiasian and this is the secondary catchment population served by the facility

Facts and assumptions for catchment analysis of Baijnath Community Health Centre:

1.   The primary catchment population of Baijnath is 72000 spreading across a diameter of 100kms. The facility receives most of its patient from catchment and a small percentage from other blocks in and around Baijnath. Hence, it was ascertained through consultation that 10% of population of Someshwar and Chamoli are coming to Baijnath for treatment and this is the secondary catchment population served by the facility.

Based on the above assumptions, the catchment population of the study facilities is as below:
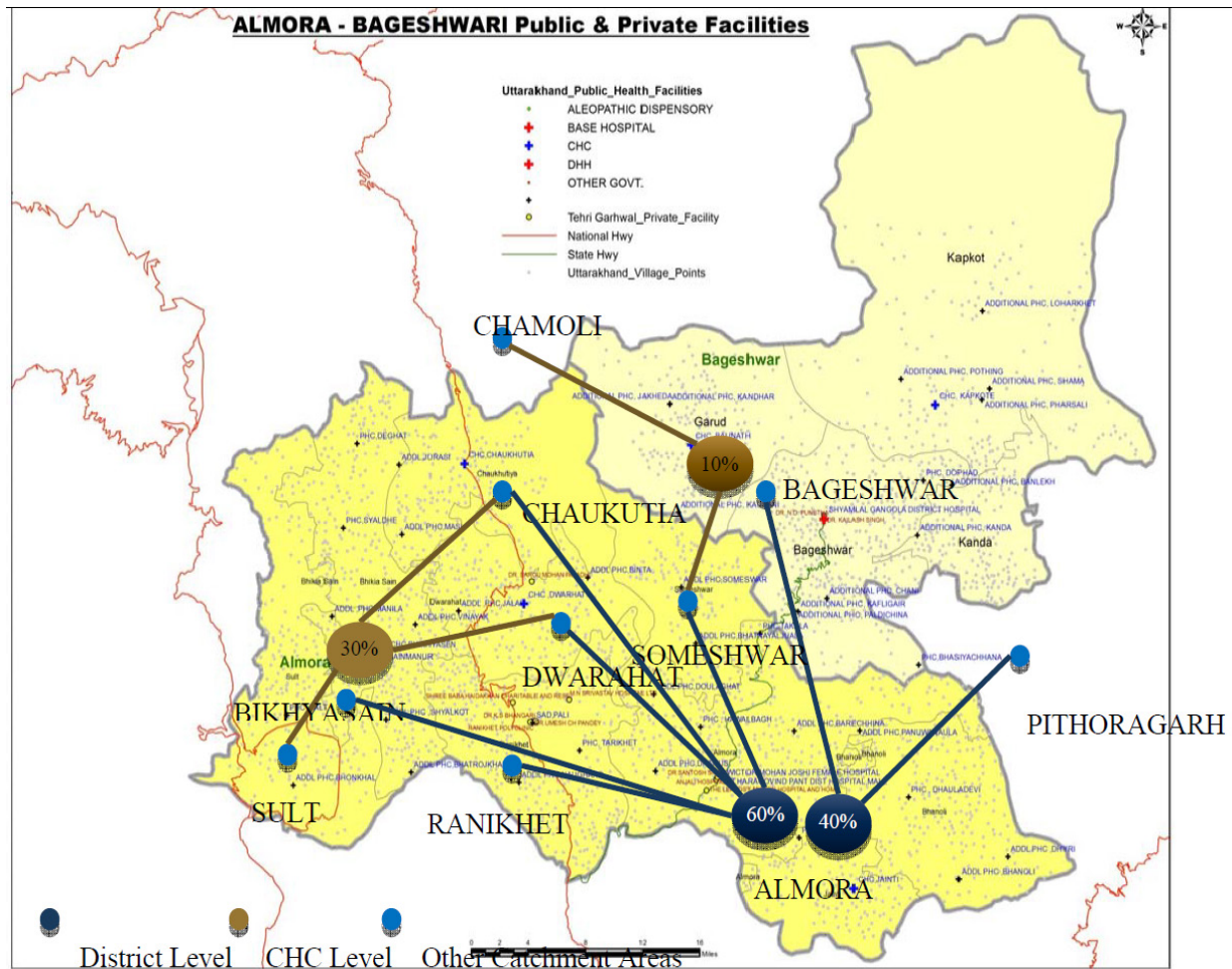

Figure 7

Table 11
Catchment population of the health facilities – Almor/ Bageshwar

Level	Facilities	Primary	Secondary	Total
Secondary Care Level	Base Hospital,District Hospital, Civil Hospital	6,37,756	2,96,935	9,34,691
Primary Care Level	CHC – Bhikiasain	37,286	59,991	97,277
	CHC – Baijnath	72,000	48,896	1,20,896

4.5. Demand Assessment

Out Patient: The NSSO 60th round data of 2006 provides the details of spells of ailment in Uttarakhand population and percentage of the spells of aliment seeking non-institutional treatment *i.e.*, ambulatory care. The same estimate if applied to the catchment population gives estimates of OP demand in the population. The data covers the old and repeat visits as OP in public and private institutions in Uttarakhand. The spells of ailment data do not consider pregnancy data as per NSSO. Hence, to the OP estimates, the estimates for pregnant women in a population have been added to cover ANC visits as OP in health facilities.

In patient: The OP to IP conversion rate is taken on an average to be at 6% based on the OP to IP conversion data collected from field. If compared to industry estimates of secondary care hospitals the conversion rate is on conservative side. The conversion rate applied on OP estimates generates IP demand estimates.

Table 12
Estimated Demand for OP & IP – Almora/ Bageshwar

Level	Facilities	Demand Assessment	
		OP	IP
Secondary Care Level (At District level)	Base Hospital District Hospital Civil Hospital	732742	43965
Primary Care Level	CHC – Bhikyasen	110521	6631
	CHC – Baijnath	137356	8241

*Source :*Uttarakhand Health System Development Projects

On the existing OP demand of secondary care at district level, application of estimates derived from the case mix aggregate seen in the district will enable to distribute the demand specialty wise. The estimated demand for allied diagnostics as represented in the table below:

Table 13
Estimated Case Mix Demand for OP & IP - Almora/ Bageshwar

Specialty	Demand			
	OPD%	OP Cases	IP cases (@6% Conversion)	Total Cases
GeneralMedicine	38%	2,79,221	16,753	2,95,974
OBG	29%	2,13,223	12,793	2,26,016
General Surgery	12%	87,997	5,280	93,277
Ortho	10%	72,767	4,366	77,133

Specialty	OPD%	OP Cases	Demand IP cases (@6% Conversion)	Total Cases
Pediatrics	3%	25,383	1,523	26,907
Others (Dental, Opthal, ENT etc.)	7%	54,152	3,249	57,401
TOTAL	100%	7,32,742	43,965	7,76,707

Source : Uttarakhand Health System Development Projects

The estimated demand for allied diagnostics as represented in the table below:

Table 14
Estimated Demand for Diagnostic Services - Almora/ Bageshwar

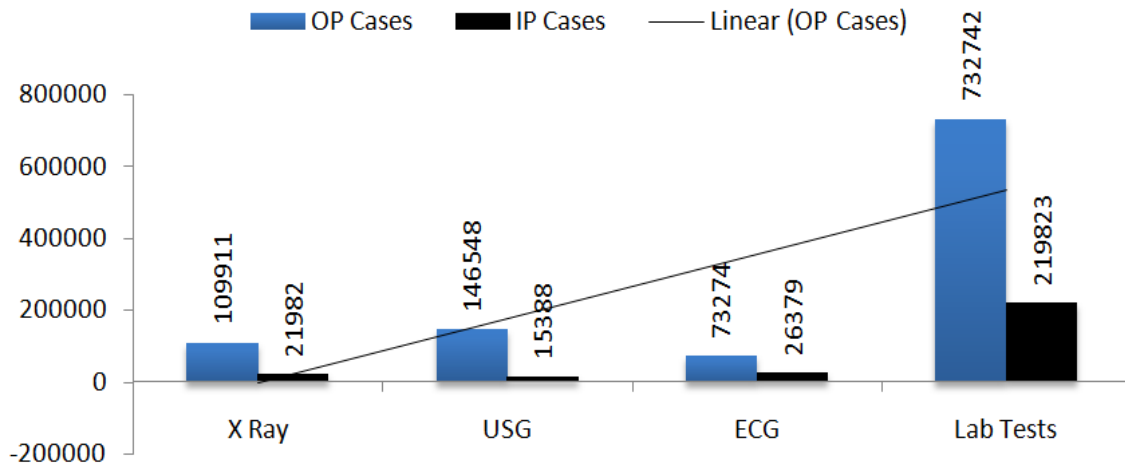| Diagnostics	Demand % of OP	OP Cases	% of IP	Cases	Total Cases
X Ray	15%	1,09,911	50%	21,982	1,31,894
USG	20%	1,46,548	35%	15,388	1,61,936
ECG	10%	73,274	60%	26,379	99,653
Lab Tests	1 per OP	7,32,742	5 per IP	2,19,823	9,52,565

Figure 8: Estimated Demand for Diagnostic Services - Almora/ Bageshwar

4.6. Demand and Supply Variance

Bed Requirement: The WHO standard is of 3.5 beds per 1000 population. It can be assume that to reach the WHO standards an additional 1459 beds are needed in Almora district considering presence of only 773 beds. However, the features of the district are the sparse population spread across a hilly area is a challenge in itself to meet the WHO standard.

The table below shows the existing gap in health service delivery. The present infrastructure is unable to fulfill the existing demand. It can be understand that at secondary care level only 58% of the existing demand is being met and the other is seeking care outside the district. At primary care level, only 30% of the present demand is being fulfilled and remaining are referred to higher referral centers.

Table 15
Estimated Gap in OP & IP - - Almora/ Bageshwar

Level	Facilities	Gap			
		OP	Gap %	IP	Gap %
Secondary Care Level (At District level)	Base Hospital, District Hospital, Civil Hospital	304310	42%	18529	42%
Primary Care Level	CHC Bikhyasen	79221	72%	5631	85%
	CHC Baijnath	101361	74%	4641	56%

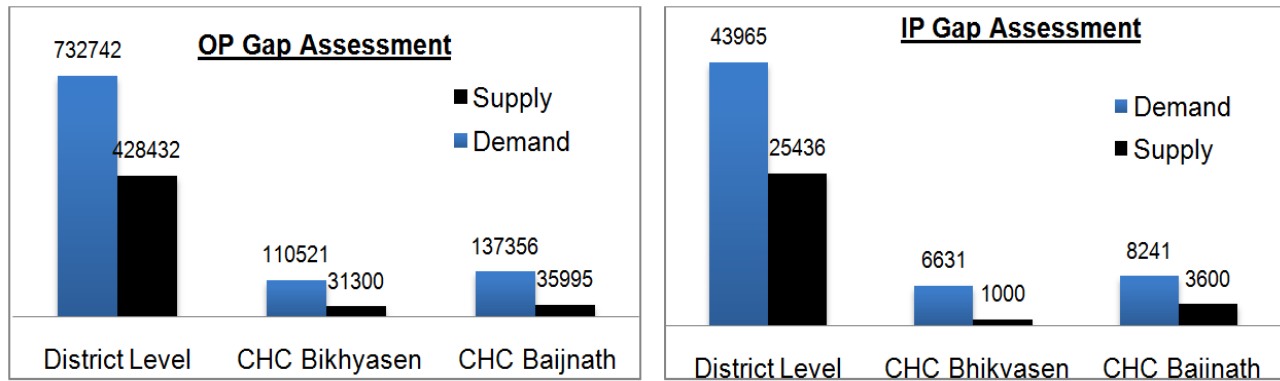*Source :* Uttarakhand Health System Development Projects

Figure 9: Estimated Gap in OP & IP - Almora/ Bageshwar

Only 40% of the demand is met for specialty wise through the present supply of services. The gap as per the case mix in district Almora is presented below:
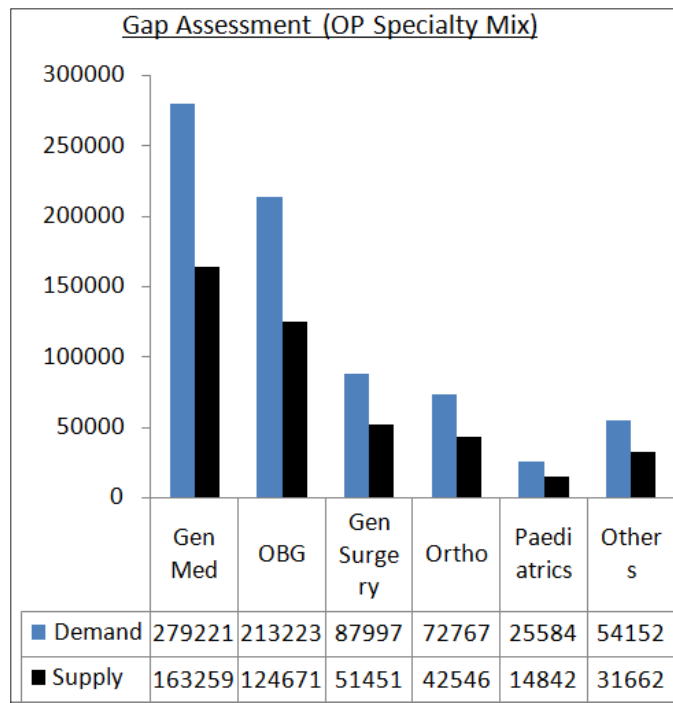

	Gen Med	OBG	Gen Surgery	Ortho	Paediatrics	Others
Demand	279221	213223	87997	72767	25584	54152
Supply	163259	124671	51451	42546	14842	31662

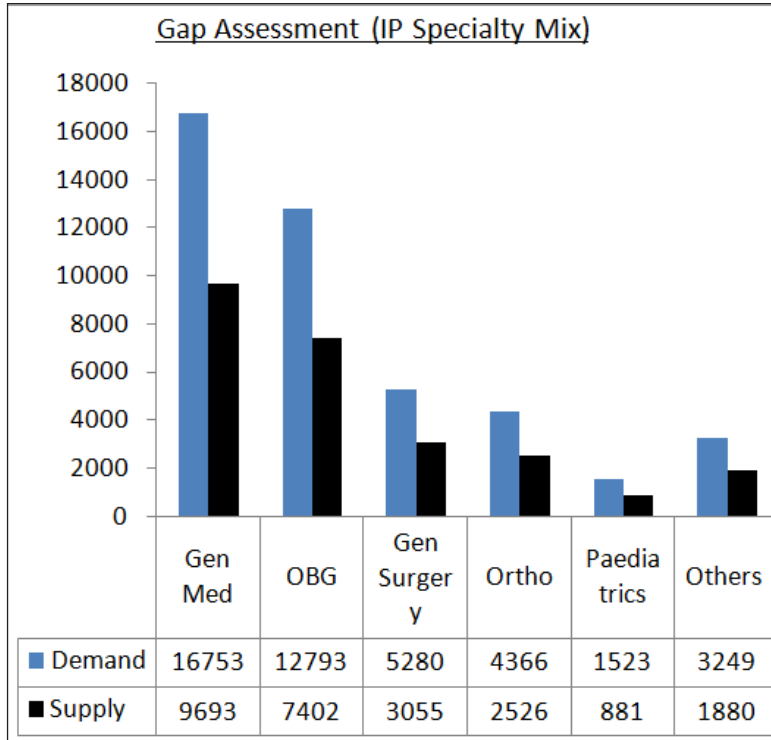**Figure 10: Gap as per case mix for OP in Almora/ Bageshwar**

Figure 11: Gap as per case mix for IP in Almora/ Bageshwar

Table 16
Estimated Gap in Diagnostic Services - Almora/ Bageshwar

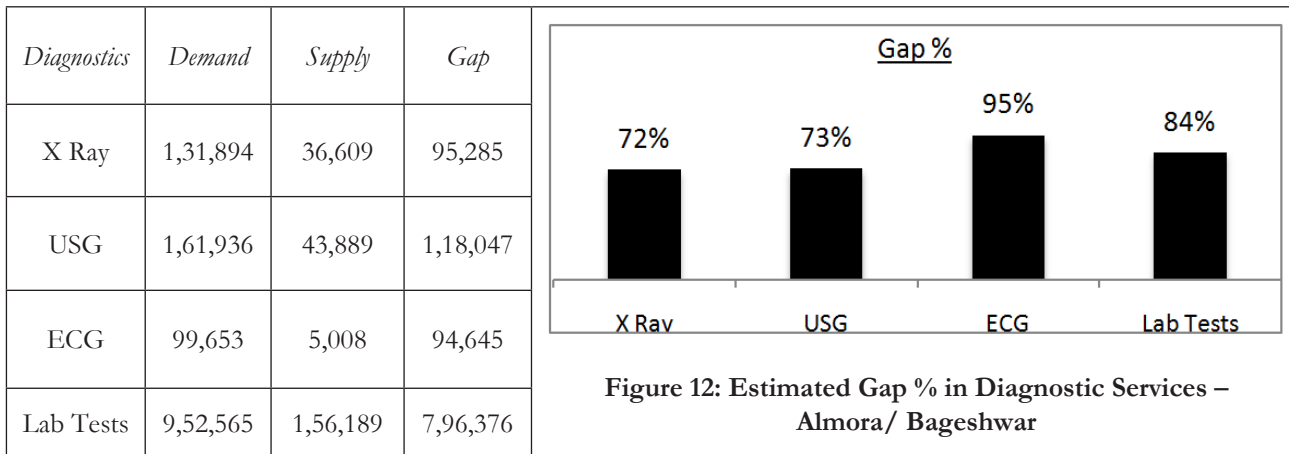| Diagnostics	Demand	Supply	Gap
X Ray	1,31,894	36,609	95,285
USG	1,61,936	43,889	1,18,047
ECG	99,653	5,008	94,645
Lab Tests	9,52,565	1,56,189	7,96,376

Figure 12: Estimated Gap % in Diagnostic Services – Almora/ Bageshwar

Source : Uttarakhand Health System Development Projects

5. CONCLUSION

Uttarakhand has completed a decade of its existence but it seems that the state is still having its troubles. Since the state was carved out from Uttar Pradesh, all the departments in the government, including peripheral health facilities were inherited as a part of an inefficient large system. This unique topography in terms of a difficult geography and more than 90% of villages having a population of less than 1000

added to the challenge of managing the public health system of Uttrakhand. Government must focus on the better human resource policy and timely training to the healthcare provider.

This study shows the shortage of employees and specialist in the hospitals of hilly areas which results lots of problems for the people residing in the remote areas of state. Proper recruitment and transfer policy with less political interference can resolve the problem. Lastly the role of private healthcare provider cannot be ignored at any level because they are assisting the public hospitals to cater the needs of patients.

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