

## **Socio-Economic Impact of BP Koirala Institute of Health Sciences on Dharan Town Over the last 20 Years**

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### **Abstract**

**Background:** Socio-economic changes are constantly occurring in various societies with multiple reasons. Sometimes, the initiation of an educational institution, especially colleges and universities, can have a profound impact on the economy of a town. B. P. Koirala institute of Health sciences (BPKIHS) has been in existence in Dharan since 1993 (a joint project of Government of Nepal and Government of India) and it has been more than its 25 successful years.

**Objectives:** To examine the role of BPKIHS in changing socio-economic status of Dharan town, and to compare health and economic indicators in various cities like Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj.

**Methodology:** Both quantitative and qualitative methods were used in this study to assess health and socioeconomic conditions. Information from Dharan was collected through Quantitative methods like Household Survey and Collection of Secondary Data, and Qualitative methods like Focus Group Discussion (FGD) and Interview with Key Informants. Similarly in Rajbiraj, Birganj, Pokhara and Nepalganj; secondary data and interview with key informants were used for gathering information.

**Results:** A total of 1500 households with 7198 population were surveyed in all 19 wards of Dharan. The rent of houses has increased significantly ( $p < 0.001$ ) along with the use of items like electricity, radio, television, telephone, motor vehicle, bicycle, computer and gas-stoves compared to 22 years back in Dharan, which is statistically significant. Most (85.6%) of the people of Dharan go to BPKIHS for treatment and about three quarters (73.1%) of the surveyed household reported improvement in health status. More than 70% household reported improvement in socio-economic status of the people of Dharan due to the establishment of the BPKIHS.

Comparing records and reports provided by various offices (secondary data) of Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj, remarkable progress is seen in the developmental indicators of Dharan. Likewise key informant interview revealed noteworthy development in Dharan compared to the other four towns, predominantly due to the presence of BPKIHS, while industry/business and tourism were responsible in other towns.

The participants of FGDs stated that the existence of the BPKIHS is one among the first three factors responsible for the socio-economic development of Dharan. They also reported that health, education and tourism of the town have been greatly influenced by the presence of the BPKIHS.

**Conclusion:** BPKIHS has made a great impact in the improvement of health and economic status of the people of Dharan. This survey revealed a positive attitude of the people towards BPKIHS. The future calls for a hand in hand approach with local population and dissemination of up to date and efficient services to further improve socioeconomic and health status of the people of Dharan.

**Keywords:** Development indicators, focus group discussion, key informant interview

### **Introduction**

Dharan is a town situated in Sunsari district of Province 1 of Nepal with both historical and religious significance. It is one of the three

municipalities of Sunsari district covering an area of 1223 Hectors. Municipality has 27,750 households with a population of approximately 1,16,181. The literacy status of this town is about 84.5%, which is remarkably higher than the national average of 65.9%.<sup>1</sup>

Historically, the town of Dharan was a business center till the end of late eighties. Amplified by

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the development of road connecting the hills in the north, Dharan became a business hub. With the migration of British Gurkhas and their families to Singapore and Hong Kong, and lack of attention in the overall development of the earthquake-torn town by the central government in Nepal, the local dwellers named the town as a 'dead city' and struggled for survival with a meager economy.

Nepal regained democracy from the Peoples Movement of the early nineties following which decentralization and concept of regional developments became the major political agenda of the ruling parties of Nepal. In line with these developments, a government owned medical institute was established outside the capital city of Kathmandu in the name of the Late B. P. Koirala. Following this, the town of Dharan entered into a new economic stratum.

B. P. Koirala institute of Health sciences (BPKIHS) is a joint project of Government of Nepal and Government of India, and has been in existence in Dharan since 1993AD as an 'autonomous Health Sciences University with the mandate to work towards developing socially accountable and competent health workforce to meet the health needs of the eastern region of Nepal'.<sup>2</sup> BPKIHS is a prominent educational Institute of Dharan that provides health care, conducts graduate, postgraduate and super-specialty degree programs in medicine, nursing, dentistry, public health and in many other allied-health disciplines. It also conducts research activities pertaining to these areas and other public health problems. The Institute has employees more than 1500 personnel majority of which are locals from Dharan.

There has been an increase in the business turnover coinciding with the establishment of BPKIHS, with an increase in the number of shops, stores, office buildings and private vehicles and other amenities over the past few years. Faced with these facts, a need arises to study the socio-economic impact of BPKIHS and the effect of such transformation on the quality of life in Dharan.

Social and moral support of the people of Dharan is essential for this institute to flourish which is only possible when the town benefits from the institutional activities. Therefore, it is vital to study the cause and effects of this social and economic transformation. It is necessary not only to document the laudatory effects on the development, but also to look into the adverse effects if any. Documentation of these ill effects can also help the institute and town in alleviating some of the negative impacts of the developmental process as well.

This study was conducted with objectives to (1) examine the role of the BPKIHS in the changing socio-economic status of Dharan town and (2) compare socioeconomic indicators among Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj.

### **Material and Method**

An economic impact study aims at estimating the increase in the level of economic activity within a given region as a result of the presence of a higher education institution.<sup>3</sup> Similarly, the development indicators made available from various sources provide information on the improvement of the city in terms of health and socioeconomic status over a period of time.

This study uses both quantitative and qualitative methods to calculate the socioeconomic impact of the presence of an institution. The quantitative methods included 'Household Survey' and 'Collection of Secondary Data' from various sources. The qualitative method included 'Focus Group Discussion (FGD)' and 'Key Informant Interview'. These were the tools used in Dharan for collecting information. Likewise, secondary data and interview with key informants were the tools used in Rajbiraj, Birganj, Pokhara and Nepalganj. The absolute percentage of these developmental indicators were calculated by subtracting the past data from present data and dividing by past data and multiplied by 100. Data were compared between the time before establishment of BPKIHS (before 1993) and present day to know the socio-economic impacts. The analysis was completed in December 2007.

#### **A. Quantitative Survey**

##### **Household survey**

A household survey was conducted using a modified and shortened version of the household questionnaire (Annexure 1) previously used by the Nepal Living Standards Measurement Survey in 1996.<sup>4</sup> The study surveyed ten percent of the entire households of Dharan which has approximately 15,000 households. Hence, 1,500 households from all wards of the town were selected for the survey using Probability Proportionate to Size (PPS) method. The pre-tested household proforma were filled at each household level.

##### **Collection of secondary data**

The secondary data were collected using a questionnaire from various government and non-government organizations of Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj to compare the various developmental indicators of the time the study was conducted (2007) and the past (1990).

#### **B. Qualitative Survey**

##### **Interview with Key informants**

Interviews were conducted with 25 key informants staying in Dharan for more than 25 years. Similar interviews were also conducted in Rajbiraj, Birganj, Pokhara and Nepalganj using a questionnaire. These key informants included prominent business persons, formal and non-formal leaders of these towns. An attempt was made to explore some of the issues in depth and the discussions were analyzed to arrive at the outcome.

##### **Focus Group Discussion**

Focus group discussions (FGDs) were conducted in all the wards of the Dharan among diverse occupational groups like teachers, leaders, businessmen, shopkeepers, government employees and other professional groups. Of the total of 25 FGDs, nineteen were done in the 19 wards of Dharan municipality (one per ward) and six were done among various professional and occupational groups. Each FGD had 9- 19 participants and were conducted using the checklist. An investigator moderated all the focus group discussions which were then analyzed to arrive at an outcome.

## Results

### Household survey

A total of 1500 households with 7198 population were surveyed in various wards of Dharan for this study as depicted in Table 1.

**Table 1: Ward-wise distribution of Households in Dharan**

Ward No.	No. of HH	Percentage	Total No. of HH
1	32	2.1	320
2	22	1.5	220
3	71	4.7	710
4	41	2.7	410
5	16	1.1	160
6	25	1.7	250
7	58	3.9	580
8	172	11.5	1720
9	70	4.7	700
10	97	6.5	970
11	122	8.1	1220
12	46	3.1	460
13	95	6.3	950
14	49	3.3	490
15	215	14.3	2150
16	100	6.6	1000
17	109	7.3	1090
18	88	5.8	880
19	72	4.8	720
<b>Total</b>	<b>1500</b>	<b>100.0</b>	<b>15000</b>

Among the surveyed households, hill janjati ethnicity was the most common (46%) and Hindu was the religion of majority (72.3%) in Dharan. Regarding education, 31.9% of respondents had up to higher secondary level education, 24.9% primary level and 13.4% illiterate among the surveyed population and

half of the respondents had been staying in Dharan for more than 20 years.

The comparison of the rent of the houses now and before 14 years is compared in table 2. The rent of houses has increased now (after the establishment of BPKIHS) than in the past, which is statistically significant. ( $p < 0.001$ )

**Table 2: Comparison of rent of houses in Dharan**

Rent of house	Mean	t value	p value
Amount of rent in 2007	2342.05	14.52	<0.001
Amount of rent before 1990	728.13		

The number of various items electricity, radio, television, telephone, motor-vehicle, bicycle, computer and gas chulho have significantly increased now (after the establishment of BPKIHS) than before 14 years back in Dharan (Table 3). These are also statistically significant.

This significant increase shows the socio economic development of Dharan town. There are many factors responsible for these developments among them one may be the establishment of BPKIHS. Because all happened after the establishment of BPKIHS.

**Table 3: Comparison of Presence of electricity, radio, television, telephone, motor-vehicle, bicycle, computer and gas chula 22 years before and presently in Dharan**

Present day (n= 1500)		In the past (%)		p value*
		Yes	No	
Electricity	Yes	937 (100.0)	521 (92.5)	0.00
	No		42 (7.5)	
Radio	Yes	942 (100.0)	396 (71.0)	0.00
	No		162 (29.0)	
Television	Yes	476 (100.0)	799 (78.0)	0.00
	No		225 (22.0)	
Telephone	Yes	204 (99.0)	762 (58.9)	0.00
	No	2 (1.0)	532 (41.1)	
Motor vehicle	Yes	65 (100.0)	240 (16.7)	0.00
	No		1195 (83.3)	
Bicycle	Yes	177 (100.0)	347 (26.2)	0.00
	No		976 (73.8)	
Computer	Yes	11 (100.0)	144 (9.7)	0.00
	No		1345 (90.3)	
Gas chula	Yes	161 (100.0)	875 (65.3)	0.00
	No		464 (34.7)	

\* *McNemar test*

Most (85.6%) of the people of Dharan go to BPKIHS for treatment than other places. About three quarters (73.1%) of the surveyed households have reported that there is

improvement in health status of the people of Dharan. More than 70% household reported that there is improvement in socio-economic status of Dharan due to BPKIHS.

The reasons for improvement in socio-economic status of Dharan town include employment (62.6%) and increase in different businesses like transportation, medicine shops, hotels, restaurants and other shops (29.2%) due to functioning of the BPKIHS as shown in Table 4.

This increase is probably due to increased flow of people for treatment, education and tourism. Maximum number (96.4%) of the respondents of Dharan expressed a positive attitude towards BPKIHS at the time of the study.

**Table 4: Place of treatment & improvement as mentioned by the people of Dharan**

		Frequency	Percentage
Place of treatment (multiple response)	BPKIHS	1284	85.6
	Private Hospitals	596	39.7
	Govt. Hospitals	26	1.7
Improvement in Health Status	Yes	1096	73.1
	No	394	26.2
	Don't Know	10	0.7
Improvement in Socio-economic status	Yes	1073	71.5
	No	409	27.3
	Don't Know	18	1.2
Reason for improvement	Employment	789	52.6
	Increase in different Businesses	438	29.2
	Increase in tourism	447	29.8
	Don't know	130	8.7

### Collection of Secondary Data

Based on the records and reports provided by various offices in Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj, most of the developmental indicators of Dharan town have shown remarkable progress compared to other surveyed towns of Nepal (Table 5). The absolute percentage of these developmental indicators was calculated by subtracting the past data from the present data and dividing by past data. There is remarkable increase in Tar roads (228%), the average rent of houses (350.5%),

income tax (240.1%), vehicles (210.7%), coaching centers (100.5%), private schools (173.5%), banks (110.7%), telephone lines (200.5%), various shops and hotels (100% – 300%), medicine shops (278.5%), computer training institutes (185.9%) in Dharan town after the establishment of BPKIHS. Nevertheless, these developmental indicators have shown less increase in other surveyed towns of Rajbiraj, Birgunj, Pokhara and Nepalganj as compared to Dharan.

**Table 5: Absolute increase in the percentage of developmental indicators from records provided by various offices in the surveyed towns of Nepal**

Characteristics	Towns				
	Rajbiraj	Birganj	Nepalganj	Pokhara	Dharan
Tar road	100.7	115.0	105.0	140.9	228.0
Price of residential land	50.0	90.0	70.0	100.0	110.0
Electricity	46.9	155.1	143.2	56.5	76.8
Street lights	66.7	85.8	100.6	100.1	100.2
Average rent of house	100.0	300.0	175.0	200.4	350.6
Water supply	46.2	82.6	65.4	77.9	73.0
Types of Sewage systems	60.5	90.2	70.1	85.4	100.9
Income tax paid	50.0	125.6	160.9	180.5	240.1
Vehicle dealers	90.0	220.2	110.0	180.5	200.8
Vehicle	90.6	217.8	150.9	227.5	210.7
Buss	45.7	110.5	80.3	75.5	90.7
Tempos	50.7	90.8	75.1	80.1	110.6
Truck/tractor	33.5	60.0	55.4	72.5	85.6
Car	110.5	159.0	140.8	200.7	220.7
Two Wheels	66.7	110.9	96.2	125.3	160.9
Coaching centers	150.0	260.0	200.6	222.7	100.6
Govt. school	33.3	27.7	94.8	56.0	66.2
Pvt. School	80.0	141.1	104.4	204.5	173.5
Banks	50.0	180.5	175.0	150.7	110.7
Small scale industries	25.4	143.4	115.5	130.7	66.8
Large scale industries	0.00	111.5	96.3	89.3	12.7
Telephone line	297.2	360.5	325.3	350.8	200.5
Departmental stores	10.1	60.3	40.3	80.5	75.4
Jewelers shop	45.2	76.0	65.3	89.5	91.2
Cloth shops	86.5	158.8	150.2	155.5	170.5
Hardware shops	123.5	166.7	140.5	156.2	191.2
Utensils	60.1	100.0	78.5	88.5	92.6
Vegetables shops	100.0	176.7	133.2	100.9	188.0
Dairy shops	25.5	65.2	78.6	89.6	99.5
Meat shops	55.2	200.9	210.8	245.5	285.9
Hotel/ Restaurant	36.9	110.0	130.5	150.3	145.8
Medicine shops	59.4	183.8	250.0	141.1	278.5
Workshops	33.3	98.1	100.0	78.6	100.5
Computer training institute	100.5	133.3	160.8	176.9	185.9
Household with sanitary toilets	147.7	228.9	210.5	225.3	310.5
Pucca house	123.7	165.8	155.9	210.6	250.5
Employment rate	16.0	86.5	72.7	81.7	66.5
Health facility	55.5	150.0	135.0	164.6	110.8

### Key informants

As reported by key informants in Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj, most of the developmental indicators of Dharan town shows remarkable progress compared to other surveyed towns of Nepal (Table 6). The absolute percentages of these developmental indicators were calculated by subtracting the past data from present data and dividing by past data and multiplied by 100. There is remarkable increase in Tar roads (240.3%), the average rent of houses (255.5%), income tax (267.1%), vehicles (210.8%), coaching centers (125.6%), private schools (200.1%), banks (125.7%), telephone lines (220.4%), various shops and hotels (100%- 300%), medicine shops (287.2%), computer training institutes (215.3%) in Dharan town after the establishment of BPKIHS. But these developmental indicators have shown relatively lesser increment in other surveyed towns of Rajbiraj, Birganj, Pokhara and Nepalganj as compared to Dharan.

Although Dharan and Rajbiraj are similar towns, at a distance away from the 'East West Highway' and equally effected in all aspects 22 years back, development in Dharan is higher than in Rajbiraj which could be due to the establishment of BPKIHS as reported by the people of Dharan and Rajbiraj respectively. Birganj and Nepalganj being Industrial towns and Pokhara being the tourist hub of Nepal, development of these towns ensued before the introduction of private medical colleges unlike Dharan.

Private sectors medical colleges are present also in Birgunj, Pokhara and Nepalganj, yet they lag behind Dharan in developmental indicators. Birgunj and Nepalganj being industrial towns and Pokhara a tourist hub of Nepal, is probably the reason for development rather than presence of medical colleges. Various people reported these facts during key informant interview in Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj.

**Table 6: Absolute increase in the percentage of developmental indicators as reported by key informants of surveyed towns of Nepal**

Characteristics	Towns				
	Rajbiraj	Birganj	Nepalganj	Pokhara	Dharan
Tar road	107.4	122.0	109.9	150.2	240.3
Price of residential land	59.6	110.4	87.6	115.8	180.5
Electricity	56.3	161.1	155.2	78.5	85.8
Street lights	70.7	91.8	113.6	112.1	119.1
Average rent of house	109.5	225.3	119.8	210.4	255.5
Water supply	56.7	82.5	85.4	97.9	99.0
Types of Sewage systems	64.5	98.2	78.1	91.4	102.9
Income tax paid	68.6	245.3	240.9	220.5	267.1
Vehicle dealers	100.5	250.3	117.5	200.5	225.8
Vehicle	100.6	225.8	175.9	260.4	210.9
Bus	50.3	125.5	100.3	100.5	115.7
Tempos	60.7	98.5	86.2	92.7	128.8



Truck/tractor	50.5	75.4	65.5	82.5	100.6
Car	125.5	175.5	150.8	225.7	250.2
Two Wheels	75.8	125.9	100.2	140.3	175.9
Coaching centers	175.3	268.3	250.6	225.8	125.7
Govt. school	50.3	36.7	100.8	75.3	100.2
Pvt. School	110.5	150.2	125.4	225.5	200.1
Banks	60.3	200.5	195.6	160.7	125.7
Small scale industries	30.4	150.4	125.6	140.7	85.8
Large scale industries	0.0	119.5	110.3	96.3	15.3
Telephone line	110.4	380.3	355.3	385.8	220.5
Departmental stores	20.1	70.3	50.3	90.5	85.4
Jewelers shop	50.2	82.0	74.3	96.3	98.2
Cloth shops	92.5	166.5	158.2	161.5	185.5
Hardware shops	134.5	176.7	156.5	161.2	198.5
Utensils	72.1	108.2	81.3	94.9	98.5
Vegetables shops	110.1	185.7	144.3	112.5	198.0
Dairy shops	38.2	76.2	88.6	98.6	105.3
Meat shops	61.5	210.9	218.8	256.0	291.0
Hotel/ Restaurant	46.9	116.2	144.5	166.3	151.8
Medicine shops	66.4	197.8	261.2	155.1	287.2
Workshops	41.3	102.1	106.0	88.6	109.5
Computer training institute	110.5	143.3	166.3	186.5	215.3
Household with sanitary toilets	157.2	235.6	221.4	232.3	320.5
Pucca house	133.6	175.8	165.9	218.5	258.7
Employment rate	21.0	100.5	82.7	91.3	76.5
Health facility	66.5	155.0	141.7	173.0	118.5

### Focus Group Discussion

The FGDs were done in all 19 wards of Dharan with eager and interested participants engaged in active discussions. During discussions, they unanimously agreed Dharan has changed significantly in the past 22 years after the establishment of BPKIHS. The people of the ward No. 2, 5, 13 and 15 were of the opinion that the development in Dharan is not only due to the presence of BPKIHS but also due to citizen awareness, foreign employment

opportunities, increased business and changes in national politics. However, the presence of BPKIHS remained third among the five most important factors responsible for the overall development of Dharan in these wards.

The participants in few wards were of the opinion that the major development in Dharan was due to Ex-British Army. A business person of ward 5 said, 'Change is a natural phenomenon and the foundation of Dharan was good from the beginning. Therefore, Dharan

would have been changed even if the BPKIHS was not established. But we have to say, due to BPKIHS, the changes occurred more rapidly.'

To begin with, presence of government offices and British Camp, led to the establishment of the town of Dharan. However, after the earthquake in 1988 AD, Dharan had become dead city. After the establishment of BPKIHS, development took place rapidly according to the opinion of a citizen of ward No. 17.

Citizens of majority of the wards agreed that BPKIHS has played a significant role in the development of Dharan. After its establishment, the cost of land in periphery of Dharan town has increased along with the business transactions and transportation, in particular the tempo-business providing employment for many. Many (30%) of Dharan citizens are employed in BPKIHS from which we can infer that BPKIHS has significantly contributed to the per capita income of citizens of Dharan.

An agriculture specialist of ward No. 9 was of the opinion that 50% of development of Dharan was due to the presence of BPKIHS. Similarly, a social worker from ward No. 7 opined that after the establishment of BPKIHS, hotels, cloth shops, departmental stores, medicine shops and transportation business are running smoothly in Dharan. He further added that many people have come to Dharan from outside for study, treatment and as tourists.

A housewife from ward No. 8 was of a view that tempo business, daily supply of consumable goods and pharmacies have increased after the establishment of BPKIHS, in comparison to the past. Social worker of ward 13 had an understanding that all types of businesses were lesser in number before establishment of

BPKIHS, which was also the opinion of another participant of ward No. 2.

Almost all of the participants in all 19 wards agreed on the fact that the increase in developmental indicators of health and education in Dharan are solely credited to BPKIHS establishment. This has brought about health awareness in the people. The former ward president of ward number 5 was of the opinion that BPKIHS has made a significant impact on the development of socio-economic aspects and health status of citizens of Dharan.

A teacher from ward No. 16 was of the opinion, 'Dharan is proud to have BPKIHS and it has to and will continue to grow further.' Agricultural expert of ward No. 16 added that there is an increase in health awareness among the people of Dharan and they were lucky generation to get opportunities to study medicine in their hometown, and get quality treatment easily due to the presence of BPKIHS. A housewife opined that 'we are proud to be staying in the city, which is the prime center of health for eastern Nepal.'

BPKIHS has directly and indirectly made impact on the development of socio-economic aspects and health status of people of Dharan. However, there were also many comments about the weaker aspects of its service with suggestions for improvement:

1. Long queue for OPD ticket and doctor visit resulting in loss of whole working day.
2. Re-opening of old Hospital in the Chhata Chowk as General OPD, to decrease pressure on BPKIHS ensuing overall benefit to the people of Dharan.
3. Re-initiation of Social Health Insurance scheme.

4. BPKIHS should appoint excellent and experienced doctors permanently.
5. Free treatment facilities for poor and handicap patients should be introduced.
6. Local people of Dharan should receive priority for employment in BPKIHS.
7. Establish a unit to report complaints and problems of patient/ staff in BPKIHS.
8. Expert and timely service of doctors and staff should be available, especially in the emergency and laboratories.
9. Hostels for patient party should be made available.
10. There should be special priority for local people from Dharan for MBBS seats.
11. Dharan community and BPKIHS should be closer with re-activation of "Friendship of BPKIHS".
12. BPKIHS should go for super specialty services (Cardiology & Neurology etc.) with all services at cheaper, affordable costs.
13. Doctors, Nurses and all the staff of BPKIHS should show good civilized behavior towards patients and relatives.
14. The institute should involve local businessmen for the various contract works (printing, cleanness and security etc.) to support the local economy.

### **Discussion**

Universities use economic, financial and labour resources of the area in which they are located. They also produce other externalities such as generating cultural activities, location advantages for firms, environmental effects.<sup>5</sup> Goldstein, Maier, and Luger (1995)<sup>6</sup>

summarized and classified all the activities, not mutually exclusive, through which universities generate economic impacts: 1) knowledge creation and its infrastructure; 2) creation of human capital, 3) transfer of technology and know-how, 4) technological innovation; 5) investment in capital goods and increased local demand; 6) regional leadership, and 7) influence on the regional environment. Establishment of BPKIHS in Dharan has also generated economic and social impacts in the aforesaid activities. This is evident from the findings of this study which is in accordance with findings of a study done in Spain<sup>7</sup> which highlighted roles that an institute plays in the development of the local economy.

The generation of local businesses volume as a result of the university's activity and the generation of jobs in the location are the direct consequences of introduction of a new institute. The spending patterns of the individuals and businesses in the region form the basis for the Input/ Output (I/O) model where expenditures by University on equipment and supplies occur within the region and elsewhere, while University faculty and staff tend to spend the majority of their income locally. Economists generally categorize the economic impacts from these expenditures into two types of effects: direct and secondary.<sup>8</sup>

Direct effects represent those expenditures within the region of the institution, that is, BPKIHS. Direct effects lead to secondary effects in the form of business-to-business transactions in the region (e.g., to restore inventory) and also to new income in the form of wages and salaries, rent and interest payments.

A report on America's Community Colleges' economic impact<sup>9</sup> (Economic Modelling Specialist Intl., 2014) emphasizes that educational institutions, beyond their principal aim of education and training, provide external benefits that improve society as whole, namely the improvement of the skills of the workforce, increased income, improved health, reduced unemployment, enhanced cultural activities and, consequently, improved social cohesion. Additionally, the presence of educational institutions tend to promote an increase in economic activity, inducing innovative activities, which require more skilled workers.<sup>10</sup>

All these benefits can also be observed in Dharan, where this study was conducted. Respondents indicated that the University and its community was an asset to their business, while a number of business persons stated that their success was based solely on the University.

Thus, along with the Input/output methods to estimate the local economy, secondary data analysis revealed a significant increase in room rents over the 22 years duration along with presence of other commodities in households like electricity, radio, television, telephone and other modern necessities. According to Godfrey and Clarke (2000)<sup>11</sup>, socio-cultural change relate to local quality of life and sense of place. Positive change in the quality of life helps to improve living standards for those more directly involved. The social aspects of life of the people like their living standard, livelihood, gender issues, education, and occupation have improved. The change has also been observed in the housing pattern, attitude, manner etc. These changes, in one or another part, have been brought about by development of the place as observed in a study in western Nepal.<sup>12</sup> Trend of

resource utilization, type of fuel used, and daily subsistence phenomenon has been drastically altered as people are now inclined to alternative source like the use of LPG gas. These facts point towards an overall improvement of socioeconomic profile of Dharan as a consequence of the establishment of BPKIHS.

The people are becoming more conscious to the knowledge, information and news through the access of electricity, communication facilities like mobile phones, internet, television and newspaper and the transportation sector. The provision of safe drinking water and access to health care have facilitated for the health and well being of the people.

Along with the perception of improvement in socioeconomic status by 71.5% of locals of Dharan, more than 50% credited this to better employment opportunities in this study. Above all, around 86% of the local people preferred BPKIHS as a place of treatment. These facts highlight the change brought about by the establishment of this Institute.

The literacy status of the eastern terai region was 43.8% in 1991 census<sup>13</sup> and is currently 68.5%<sup>1</sup>. Similarly, economically active population in the 1991 census was 47.45%<sup>13</sup> in this region, while this has significantly risen to 73.1% (NDHS2011)<sup>14</sup>. These facts point towards a progressive improvement in the status of the population in terms of socioeconomic and health benefits.

Comparison of the secondary data of various cities and key informant interviews shows that Dharan is way ahead with better development indicators than Rajbiraj. Development in other cities like Pokhara, Nepalgunj and Birgunj, although having Medical Colleges, can be

credited to the tourism/industrial hub already present before the establishment of Medical Colleges.

### **Conclusion**

A total of 1500 households with 7198 population were surveyed in all 19 wards of Dharan for this study. The rent of houses and the use of various items like electricity, radio, television, telephone, motor-vehicle, bicycle, computer and gas chulho have increased considerably compared to 22 years ago with statistical significance. Most (85.6%) of the people of Dharan prefer BPKIHS for treatment than other places.

About three quarter (73.1%) of the surveyed household reported improvement in health status of the people of Dharan and more than 70% reported improvement in socio-economic situation of Dharan due to the presence of BPKIHS.

Based on the records and reports provided by various offices in Dharan, Rajbiraj, Birganj, Pokhara and Nepalganj, most of the developmental indicators of Dharan have shown remarkable progress compared to other surveyed towns of Nepal.

Likewise, most of the developmental indicators of Dharan town as reported by the key informants have shown remarkable progress than the other surveyed towns of Nepal (Rajbiraj, Birganj, Pokhara and Nepalganj).

The participants of FGD's in all 19 wards were of the opinion that BPKIHS is one among the first three factors responsible for the socio-economic development of Dharan along with education and tourism. Evidently, BPKIHS has made a great effect on the improvement of health status of the people of Dharan and should

bring more programs related to development in the social, economic and health arena along with the overall development of Dharan.

### **Recommendations**

Following recommendations are made based on this project for the BPKIHS.

BPKIHS should improve its hospital services along with reopening of the previous hospital at Chhata Chowk of Dharan town for the benefit of the local people.

Super specialty services (Cardiology and Neurosurgery etc.) should be started along with re-establishment of the social health insurance scheme.

Similarly, the initiative for the formation of 'Friends of BPKIHS' should be initiated to gather social support from the local people and medical professionals should assist in the Mother and Child Health Clinics with the coordination of Dharan Municipality.

Use of local resources and manpower should be encouraged, providing ample opportunities for the qualified locals to improve socio economic status of Dharan.

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### **References**

1. Central Bureau of Statistics, Nepal. National Population and Housing Census 2011 available at [http://cbs.gov.np/sectoral\\_statistics/population/national\\_report](http://cbs.gov.np/sectoral_statistics/population/national_report) (accessed on 15/12/2016)

2. B. P. Koirala Institute of Health Sciences. Annual Report 2005-2006 and Plan of Actions 2006-2007.
3. Elliot D, Levin S, Meisel J. Measuring the economic impact of institutions of higher education. *Res Higher Educ* 1988; 28(1): 17-33.
4. Central Bureau of Statistics, Nepal. Nepal Living Standards Survey. 1995-1996 available from: <http://cbs.gov.np/nada/index.php/catalog/7> [Accessed 8 Nov 2016]
5. Pastor JM. Measuring the local economic impact of universities: an approach that considers uncertainty. Instituto Valenciano de Investigaciones Económicas 2008 available from <http://2010.economicsofeducation.com/user/pdfsesiones/048.pdf> (Accessed 15 Dec 2016)
6. Goldstein HA, Maier G and Lueger MI. The university as an instrument for economic and business development: US and European comparisons, 1995 en D.D. Dill and B. Sporn, *Emerging patterns of social demand and university reform: Through a glass darkly*, 105-133, Elmsford, NY: Pergamon.
7. Yserte RG, Gallo-Rivera MT. The impact of the university upon local economy: three methods to estimate demand-side effects. *Ann Reg Sci*. 2010; 44: 39-67
8. Ewing BT. The Economic Impacts of Angelo State University. 2010 available from [https://www.angelo.edu/asu\\_facts/documents/economic\\_impact.pdf](https://www.angelo.edu/asu_facts/documents/economic_impact.pdf) (Accessed 15 Dec 2016)
9. American Association of Community Colleges and Economic Modeling Specialist Intl. (2014). Where Value Meets Values: The Economic Impact of Community Colleges – Analysis of the Economic Impact and Return on Investment of Education available at <http://www.economicmodeling.com> (accessed on 15 Dec 2016)
10. Alves J, Carvalho L, Carvalho R, Correia F, Cunha J, Farinha L et al. The impact of polytechnic institutes on local economy. *Tertiary Education and Management*. 2015; 21(2): 81-98.
11. Godfrey K and Clarke J. *The tourism development handbook: A practical approach to planning and marketing*. New Delhi: Orient Publications. 2000.
12. Upadhyay P. Suitably Altering Amid Predicaments in Rural Nepal. *Himalayan Journal of Sociology & Anthropology*. 2014; 6: 187-202.
13. Central Bureau of Statistics, Nepal; National Population Census 1991 available at <http://cbs.gov.np/nada/index.php/catalog/55> (accessed on 15/12/2016)
14. Ministry of Health and Population; Nepal Demographic and Health Survey 2011 available at <http://dhsprogram.com/pubs/pdf/fr257/fr257%5B13april2012%5D.pdf> (accessed on 15/12/2016).