

Medical Education and its Impact on Nation's Economy

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ABSTRACT

Introduction: Nepal has seen a rapid increase in the number of medical colleges in recent years. It has impacts on various sectors of nation and economic impact is one of them. Private colleges also provide scholarship seats to government. Tax, jobs and local economy are also important aspects of the economic impact. In contrast to other institutions and authoritative bodies, the capacity of regulating medical colleges has remained same despite increasing demand in workflow. So, the regulating bodies such as Nepal Medical Council, concerned Universities, Ministries and other concerned authorities should be strengthened and expanded to accommodate ever increasing workload to achieve quality assurance and standardization.

Objective: The objective of the study was to compare the economic impact of medical colleges on nation's economy with existing regulatory mechanism.

Materials and Method: Economic impact of medical colleges and other companies were compared. Financial details of medical colleges were taken from concerned authorities. Other secondary data were collected from published reports.

Result: A total of 24 public and private medical colleges were established till 2015. Total valuation of a medical college was NRs. 2660 million with annual transaction of NRs. 704 million from colleges and NRs. 217 million from hospital.

Conclusion: The number of medical colleges are increasing day by day. Their social as well as economic impact is multidimensional. Strengthening of medical council is vital for the proper functioning of medical colleges. The government should give a high priority to the medical council for organising the current turmoil in the field of medical education.

Keywords: Economic impact; medical college; medical council; medical education; regulating bodies.

INTRODUCTION

The history of modern medical education in Nepal is very short. Only few qualified doctors were present in Nepal before pre-democracy era (February 19, 1951; Falgun 07, 2007). Few enthusiastic Nepalese doctors established Nepal Medical Association (NMA) on March 4, 1951 to unite all the practicing doctors.¹ They strongly raised voice to have medical council to regulate the medical practice in Nepal. Nepal Medical Council (NMC) was established in 1964 Feb 28 (Falgun 16, 2020 BS).¹ However due to legal reasons, NMC started its regular functioning only after approval of “NMC-Rules” which was approved by His Majesty’s Government on 1968 Jan 1 (Poush 17, 2024).² Today, one of the important functions of Medical Council is to regulate medical education in Nepal. In recent years, medical education has seen a rapid growth, especially after the 1990s.³ Now there are more medical colleges in the private sectors than in government sector.⁴ This surge of medical education has numerous impacts in various sectors of the country. Concerns are being raised regarding quality education, patient safety, economics, etc.⁴ Economic impact is more than it seems to be. In

this article, important issues regarding the economy of medical education in Nepal are analysed.

There are no uniform study designs to study economic impact. The basic objective of an economic impact study is relatively straightforward: to measure the increase in a region’s economic activity attributable to the presence of the college.⁵

MATERIALS AND METHOD

The study was performed to analyse the economic impact of medical colleges on nation’s economy. Primary data regarding medical college was collected from concerned authorities through proforma and focused interview. Nation’s economic indicator and other business companies’ indicators were collected from officially published reports.

Components of economic impact were capital assets, operational spending, number of employees, salary and benefits, taxes, local expenditures by students/employees and patient and visitors. The data collected were analysed.

RESULT

Current status of medical schools of Nepal

Table 1: Medical/ Dental colleges of Nepal^{2,6}

S.N	College	Year	Public/ Private	MBBS	Dental	Post graduate
1	Institute of Medicine (IOM)	1978	Public	*	-	*
2	BP Koirala Institute of Health Sciences (BPKIHS)	1994	Public	*	*	*
3	Manipal College of Medical Sciences	1994	Private	*	-	*
4	College of Medical Sciences	1995	Private	*	*	*
5	Kathmandu Medical College	1997	Private	*	*	*
6	Nepalgunj Medical College	1997	Private	*	-	*
7	Nepal Medical College	1997	Private	*	*	*
8	Peoples Dental College	1997	Private	-	*	*
9	Universal College of Medical Sciences	1998	Private	*	*	*
10	Kathmandu University School of Medical Sciences (KUSMS)	2001	Public	*	*	*
11	National Medical College	2001	Private	*	-	*
12	Janaki Medical College	2003	Private	*	-	-
13	National Academy of Medical Sciences	2004	Public	-	-	*
14	Kantipur Dental College	2007	Private	-	*	*
15	Nobel Medical College	2007	Private	*	-	*
16	KIST Medical College	2008	Private	*	*	-
17	Chitwan Medical College	2009	Private	*	*	-
18	Lumbini Medical College	2009	Private	*	-	-
19	MB Kedia Dental College	2000	Private	-	*	-
20	Gandaki Medical College	2010	Private	*	-	-
21	Patan Academy of Health Science (PAHS)	2010	Public	*	-	*
22	Nepal Army Institute of Health Sciences	2011	Private	*	-	-
23	Birat Medical College	2015	Private	*	-	-
24	Devdaha Medical College	2015	Private	*	-	-

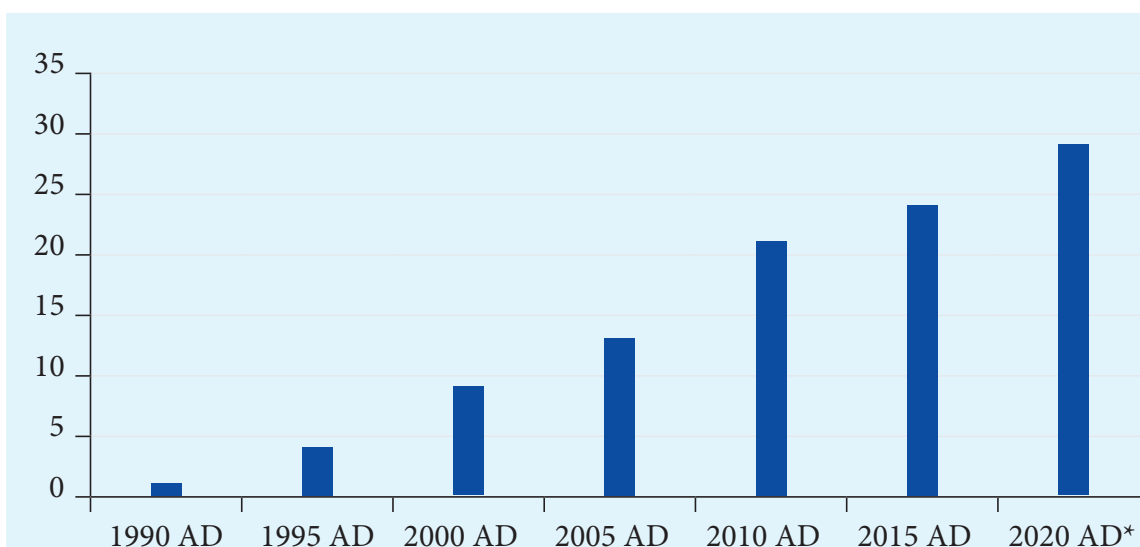


Figure 1: Cumulative number of Medical Colleges in five-year interval.

** Estimated using power trendline*

Out of all private medical college, six medical colleges responded to our questionnaire regarding valuation, transactions, taxes and poor patient fund expenditure during the 2071/72 fiscal year (FY) (Table 2).

Table 2: Valuation, transaction and expenditure.

Particulars	Amount (in NRs. Million) Mean $\pm$ SD
Total valuation	2660 $\pm$ 1250
College transaction	704.8 $\pm$ 176.4
Hospital transaction	217.6 $\pm$ 76.3
Taxes paid	79 $\pm$ 21.1
Poor patient fund expenditure	25 $\pm$ 9

Table 3: The Breakdown of fixed assets.

Particulars	%	Valuation in figures (in NRs. Million)*
Land and Buildings	78.13	1953.2
Hospital and scientific equipments	3.86	346.4
Furniture	3.53	88.2
Office equipments and electronics	1.4	34.9
Vehicles	1.16	28.9
Books	0.55	13.8
Machinery and others	1.38	34.6

*Assuming 2500 million as a total valuation

Table 4. Number of students under full and subsidized fee schemes.

Particulars	Private medical college			Public medical college		
	Subsidized fee	Full tuition fee	Total	Subsidized fee	Full tuition fee	Total
MBBS students	259	1341	1600	91	249	340
BDS Students	47	412	420	8	52	60

Table 5: Fee structure for MBBS course.

Institute	Subsidized fee (NRs.)	Full fee (NRs.)	Increment /year
IOM	273521	3200000	7.3%
BPKIHS	744000	3500000	10%
PAHS	50000	3800000	
KUSMS		3298000	
Private Colleges			
TU affiliated	125000	3500000	revised 2 yearly
KU affiliated	280000	3500000	revised 2 yearly

The annual transaction of medical college is 705±176 million. The transaction of hospital is different from college. There is a wide variation of transaction in hospital as compared to college. Hospital transaction is only 10-47% of college transaction. The average annual transaction is 308±432 million. This wide variation is probably due to lack of uniformity in hospital charges and variable number of patients at hospital.⁷

Table 6: Comparison of a medical college with other companies.^{8,9}

Industry	Assets	Employees	Annual transaction	Annual tax
Average of a Medical college	NRs. 2660 million	1123	NRs. 922.4 million	NRs. 79 million
Buddha Air	44 million USD	702	4.4 billion	58.05 million
Standard Chartered Bank	NRs. 43811 million	429	-	NRs. 479 million
Chilime Hydropower*	NRs. 13.1 billion	-	NRs. 1.16 billion	NRs. 22 million
Soaltee Hotel**	NRs. 121 million	700	NRs. 124 million	NRs. 31 million

*Chilime hydropower company limited. Annual Report 2072/73.

**42nd Annual Report. Soaltee Hotel Limited, Tahachal, Kathmandu, Nepal.

DISCUSSION

History of medical schools of Nepal

The history of modern medical education in Nepal is not so long. The institute of medicine (IOM) under Tribhuvan University was established in 1972.^{6,10} Initially, it was established to train various grades of health workers. In 1978, the first batch of medical students i.e. Bachelor of Medicine and Bachelor of Surgery (MBBS) were enrolled and graduated in 1984.^{6,10} Nepal has seen further growth of medical education only after democratic movement of 1990.¹⁰ It took another two decades to start another medical school after IOM.¹¹ BP Koirala Institute of Health Sciences (BPKIHS) was established in Dharan with the help of Government of India in 1993 as an autonomous body and was registered with NMC in 1994.⁶ The first batch of MBBS was enrolled in 1994 after 14 years of the first batch of IOM. At the same time, Government of Nepal has adopted an open market policy in various fields. As a result, medical education also did not remain untouched for long.¹² A number of private medical colleges were started thereafter and is continued till recent date. There is increase of medical college from one to 24 in the last 25 years (Table 1). In India, it has increased from 19 to 271 from a period of British India to 2009.¹³

Assets of medical schools

Each medical college needs a lot of investments. NMC has guidelines to have 75 ropanis of land for MBBS program and 40 Ropanis of land for Dental program.^{14,15} Ucca Siksha has different guideline. Medical colleges need 100 Ropanis in Kathmandu valley and 20 Bigaha outside Kathmandu valley.^{14,15} Fixed assets of a medical college can be divided into lands, buildings (College and Hospital),

medical equipment, vehicles and others. Medical equipment of hospitals and laboratory equipment also need heavy investments. The value of land keeps increasing and equipment have depreciation in values. The estimated valuation of a Medical College running for 100-150 medical students ranges from 1250 million to 4000 million. The lowest valuation is for the colleges established outside Kathmandu valley. The highest value is for those colleges established within Kathmandu valley. The difference is due to differences in price of land. The value of Government College is not included in this study because they have multipurpose land and buildings (Table 2,3).

Annual transactions

One of the criteria for calculating economic impact of a company is annual transaction. The annual transaction of undergraduate (MBBS and BDS) is discussed below. Transaction of MD/MS students are not discussed here. MD/MS students pay fees but at the same time they receive stipend and are directly involved in hospital care which also generates revenue. The revenue from undergraduate students is directly related to number of students. The number of students in private and public colleges in subsidised and full tuition fee approved for 2015/2016 is shown in Table 4.

Fee structures

When MBBS was started in IOM, the fee was minimal (NRs) for entire course. In the initial years, in BPKIHS, all seats were in subsidised fee category. There was provision of 10% increment every year. From fourth batch 1998, paying fee was started. The present fee structure for entire course for 2015/2016 is described Table 5.

Taxation

Medical colleges pay government taxes in considerable amount. It is paid under different headings. It is estimated that annual payment to government is 88 crores from existing medical colleges. Medical colleges have highly skilled human resources. Their salary is higher than any government officials. So their income tax is fairly high. As per our study, one third of employee earn more than exempted amount for income tax. At least they fall within 15% tax range. The rest two third pay 1% as social security tax. All medical equipment also attract 13% value-added tax (VAT) at the time of procurement, though there is a provision of VAT return. Private hospitals other than medical colleges need to pay 5% health services tax. Medical colleges are exempted to this.^{14,15} There are other forms of direct and indirect taxes also.

Financial Beneficiaries (direct and indirect)

The jobs created by medical colleges have great impact on societal economy. The natures of jobs are many fold from highly skilled human resources to unskilled ones. In a medical college with 100 seats of MBBS students, there is a need of about 850 employees. Out of them, 150 are teaching faculties, 250 are other technical and 450 non-technical employees. NMC has a guideline to have at least 96 teaching faculties in different departments for 100 MBBS seats.^{14,15} The number is high because many medical colleges have multiple academic programs and number may be more for hospital requirement. As a calculation of one employee serve five people on his/her family, more than 4000 people are benefited. This estimation is only calculated for direct employment. Other indirect employments are multifold. Thus, medical colleges with such huge amount of contribution can be considered as a big industry.

The average number of employees in academic posts were 499 ± 205 and non-academic posts 624 ± 310 in this study. The nature of post-graduate student is to get training and education as well as to provide services. This helps to generate revenue to hospital and government tax at lower cost than a fully qualified specialist. The amount generated by them is difficult to calculate.⁷

Local expenditures

For the medical colleges that are established outside main cities, the students, employees, patients and their relatives spend significant amount in local market. This helps in the viability and expansion of local market. Expenditures include rent for housing, food, transportation, books, clothing, utilities, entertainment, medicines, services and other expenses. The amount is estimated to be NRs 8000 to 12000 per month per student. This adds to the decentralisation of economy of country.

Comparison with other industries

Medical colleges are emerged as big industries in Nepal. A single medical college is a more than 200 crores project. The Table 6 shows a comparison of different leading industries of Nepal.

Role of regulating bodies

Medical colleges have multi-dimensional impact in society. In Nepal, establishing a medical college is a complicated process. It has to pass through at least eight steps from Ministry of Education, Ministry of Health and Population, NMC and University.¹¹

After establishment, it is monitored basically by two governing bodies i.e. University in which it is affiliated to and the medical council (NMC). There is no direct monitoring by government. University has a limited role. It monitors only educational or academic aspects such as: student intake, training process and examination and its requirements.³ NMC has major responsibility to monitor a wider aspect.^{11,12,16} At present, the structure and human resources of NMC is same as it was 20 years back. But the work load has expanded a lot. The medical council should have sufficient as well as efficient human resources.

CONCLUSION

Medical education has emerged as a big industry of Nepal. The numbers of medical colleges are increasing day by day. Their social impact is multidimensional. The economic implications has been discussed briefly in this study. The economic impact is broad as well as equivalent to other major industries of Nepal. Nepal Medical Council has a huge responsibility for the proper functioning of

Medical Colleges. Strengthening of medical council is vital. Government should give a high priority to the regulatory bodies like Nepal Medical Council

for streamlining the current turmoil in the field of medical education.

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