

# An Analysis of Health Expenditure in Assam in Recent Decades

Dr Parag Dutta

Assistant Professor, Department of Economics, Dispur College

**Abstract:** India is far behind than other developed countries in terms of health care facilities. There has been growing concern in India in recent decades regarding poor health care facilities particularly in poor states. It is widely acknowledged that health is an important component of human development. The low level of public spending and resulting poor quality of preventive care and poor health facilities is a major concern for the state of Assam. The recent Make in India programme of the Government of India tries to attain inclusive growth and development by including all regions of the country. As Health care expenditure is a key determinant in overall development of the country, it is necessary to examine the health care expenditure of the poor states such as Assam. Based on Secondary data, this paper is an attempt to analyse the expenditure of the Government of Assam on health in recent decades. A time series regression analysis has been carried out to examine the relative expenditure of the state on Health by considering the variables such as GSDP and expenditure on health care. It has been found from the time series regression that the growth of health expenditure of the state is much lower than growth of GSDP.

**Keywords:** Health Expenditure, Time series regression, Assam

**JEL Classification:** H51, C23

## 1. Introduction

The Indian Constitution has made health care services largely a responsibility of the state governments and thus, it primarily becomes the responsibility of the state to provide health care to all the people in equal measure. Since health is influenced by a number of factors, such as adequate food, housing, basic sanitation, healthy lifestyles, protection against environmental hazards and communicable diseases, the term "health care" embraces a multitude of services provided to individuals or communities by agents of the health services or profession, for the purpose of promoting, maintaining, monitoring or restoring health.

It is well known that low economic growth and widespread poverty get reflected in poor social indicators of development such as low levels of achievement in health and education. Assam ranks 12 among 16 States when ordered in the descending order of Human Development Index (HDI) and Gender Development Index (GDI). Good health is important to keep the labour force productive and efficient. Frequent illnesses and inadequate nutrition will have adverse impact on the incomes of households making them vulnerable. Good health not only increases productivity and earnings of an individual but also improves the overall quality of life and the socio-economic development of the general population. Malnourishment and under-nourishment can be avoided not just by poverty reduction and higher food intake but also through good health that can be brought about through improved access to sanitation and drinking water facilities.

As Health care expenditure is a key determinant in overall development of the country, it is necessary to examine the health care expenditure of the poor states such as Assam. Based on Secondary data, this paper is an attempt to analyse the expenditure of the Government of Assam on health in recent decades. A time series regression analysis has been

carried out to examine the relative expenditure of the state on Health by considering the variables such as GSDP and total expenditure on health care.

## 2. Data Source and Methodology

The study is based on secondary data. Data pertaining to the study are collected from various reports and publications of different government and other organisations such as the Directorate of Economics and Statistics, Government of Assam; Central Statistical Organisation, Comptroller and Auditor General, Government of India; Reserve Bank of India; Ministry of Finance, Government of India and Budget Reports of the Government of Assam. While collecting secondary data, due attention has been given on reliability and authenticity of the data. Reliability of the data is tested by applying suitable statistical tools.

All the fiscal variables are converted into 2004-05 prices by using GSDP price deflators. Data on Gross Domestic Product at current and constant prices in the series 1980-81, 1993-94, 1999-00 and 2004-05 are obtained from the Central Statistical Organization. All the data are converted into 2004-05 prices by splicing to make it comparable with the above mentioned series. Mid-year population figures have been taken from CSO and price deflators have been computed from the ratio of current to constant price GSDP figures.

## 3. Growth of Expenditure on Medical and Public Health

The ratio of health expenditure to total expenditure has been computed to observe the relative growth of expenditure with respect to total expenditure of the state.

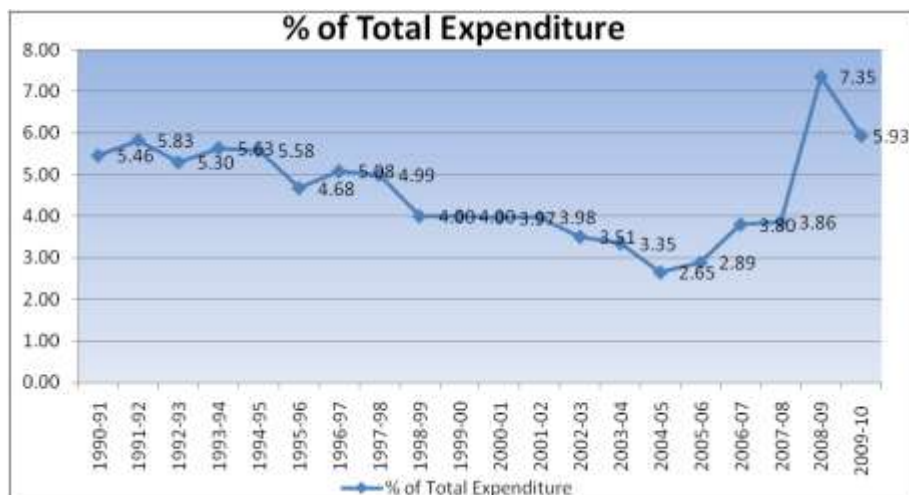


Figure 1: Health Expenditure as a percentage of Total Expenditure

The health expenditure has increased from ` 12824 lakh in 1990-91 to ` 142195 lakh in 2009-10 and thus registered a compound growth rate of 4.23 percent during that period. Similarly, the ratio of health expenditure to total expenditure of the state has increased from 5.46 in 1990-91 to 5.93 in 2009-10.

#### 4. 1 Per-capita Expenditure on Health Services

The growth in the absolute value of health expenditure itself is not enough to explain the process of development, as population is also on the rise. As such, it is necessary to analyse the per-capita development expenditure in terms of per-capita health services. The classification of the expenditure on per-capita basis actually reflects the quality of expenditure (Shariff et al. 2002; Choudhury, 2002). Here, real per-capita expenditure is used. For doing this, the variables are converted into constant 2004-05 prices by splicing to make it comparable for the whole time period taken for the analysis. Mid-year population figures have been taken from CSO and price deflators have been computed from the ratio of current to constant price GSDP figures. The per-capita expenditure on social and health services of the state has been provided in table 1.

Table 1: Per-capita Expenditure on Social Services and Health Services (In `)

Year	Per-capita Expenditure on Social Services	Per-capita Expenditure on Health Services
1	2	3
1990-91	955	285
1991-92	1052	295
1992-93	978	232
1993-94	1095	239
1994-95	1032	231
1995-96	1047	235
1996-97	1025	225
1997-98	1061	25
1998-99	1054	195
1999-00	1135	224
2000-01	1276	258
2001-02	1185	234
2002-03	1176	212
2003-04	1313	226
2004-05	1533	297
2005-06	1315	272
2006-07	1432	278
2007-08	1520	282
2008-09	1632	334
2009-10	2100	481
CAGR	4.23	2.79

Source: A Handbook of Statistics of State Government Finances, Reserve Bank of India, various issues

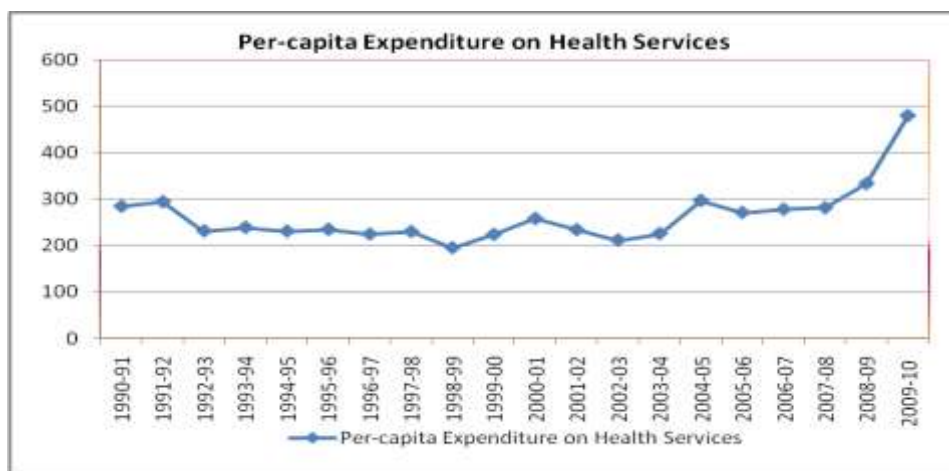


Figure 2: Per-capita Expenditure on Health Services of Assam

It is evident from table 1 that per-capita social expenditure has increased from `955 in 1990-91 to ` 2100 in 2009-10 and thus registered a compound growth rate of 4.23 percent during that period. Similarly, per-capita expenditure on health services has increased from ` 285 in 1990-91 to ` 481 in 2009-10 respectively. The compound growth rate of these two components of expenditure is found to be 2.79 percent during the above mentioned period.

## 5. Time series regression of Health Expenditure of the state

It is evident from the above discussion that the state has experienced an increase in per-capita health expenditure in recent years. To be able to draw inferences in a more rigorous manner, some sophisticated statistical tools should be incorporated. Keeping this fact in mind, two regression analyses have been carried out to observe the relative growth of development expenditure with respect to both total and aggregate expenditure of the state. The time period from 1990-91 to 2009-10 is considered to carry out this analysis. As the variables are in current prices, they are converted into constant prices by using appropriate price deflator. The GSDP price deflator is calculated as a ratio of current to constant prices as done in chapter 3. Gross domestic product data at current and constant prices in the series 1980-81, 1993-94, 1999-00 and 2004-05 are obtained from the Central Statistical Organization. All the data are converted into 2004-05 prices by splicing to make it comparable with the above mentioned series. All the variables are found to be integrated of order 1. The Dickey Fuller and Philips-Perron unit root test are applied to determine the order of integration. The regression diagnosis test, called Ljung-Box or Portmanteau test is also used to test if the residuals of the regression are white noise or it has some autocorrelation still left. The variables have been transformed in to stationary state before carrying out the regression analyses. The results of the regression have been provided in table 3 and table 4

**Table 2:** Results of the Regression Analysis of Impact of Health Expenditure on Total Expenditure

Variable	Coefficient	t statistic
Total Expenditure	.9661108 (.0532362)	11.08
Constant	-34.53817 (85.13003)	-0.41
R <sup>2</sup>	0.8009	LB statistic = 7.9126
F( 1, 18)	122.77***	

Figures in parentheses represent standard error of the estimated coefficients

**Table 3:** Results of the Regression Analysis of Impact of GSDP on Developmental Expenditure

Variable	Coefficient	t statistic
GSDP	3.300365*** (.0611564)	8.27
Constant	21.61483 (107.0635)	0.20
R <sup>2</sup>	0.8009	LB statistic = 6.0167
F( 1,17)	68.49***	

Figures in parentheses represent standard error of the estimated coefficients

\*\*\*, \*\* and \* indicate significant at 0.01, 0.05 and 0.10 level respectively

From table 2 and 3, the values of the F-statistic for overall significance are found to be highly significant. No auto-correlation has been found in the residuals of the regression models. Thus, on the whole, the results obtained from the regression analyses are credible. The coefficients of both total expenditure and GSDP are found to be positive and significant at 1 percent level implying that increase in total expenditure and GSDP of the state has led to increase in health expenditure of the state. The coefficient of the regression of health expenditure on total expenditure is found to be .9661108 which implies that 1 percent increase in total expenditure has led to less than proportionate increase in health expenditure of the state. Similarly, 1 percent increase in GSDP has led to 3.300365 percent increase in health expenditure of the state.

## 6. Conclusion

From the above discussion, it is quite clear that there has been significant increase in health expenditure of the state during the period of study. The health expenditure-total expenditure ratio of the state is found to increase during the period of study with the increase in total expenditure. The regression results show less than proportionate growth of health expenditure with respect to both total expenditure of the state.

## References

- [1] Bhakta, Runu (2014), *Impact of Public Spending on Health and Education of Children in India: A Panel Data Simultaneous Equation Model*, Working Paper No- 49, Indira Gandhi Institute of Development Research, Mumbai
- [2] Bhat, Ramesh and Nishant Jain(2004), *Analysis of public expenditure on health using state level data*, Indian Institute of Management, Ahmadabad
- [3] Choudhury, Mita and H.K. Amar Nath(2012), *An Estimate of Public Expenditure on Health in India*, National Institute of Public Finance and Policy (NIPFP), 18/2 Satsang Vihar Marg, New Delhi
- [4] Government of India (2014), *Health Sector Financing By Centre And States/Uts In India [2009-10 to 2012-13]*, National Health Accounts Cell Ministry of Health & Family Welfare
- [5] Jha, Raghendra, Bagala Biswal and Urvashi D. Biswal, "An Empirical Analysis of the Impact of Public Expenditures on Education and Health on Poverty in Indian States" Australia South Asia Research Centre, RSPAS, Australian National University
- [6] Rajeshkumar1, N. and P. Nalraj (2014), *Public Expenditure on Health and Economic Growth in Selected Indian States*, ISSN: 2319-7064, Volume 3 Issue 3
- [7] Rao, Govinda M. and Mita Choudhury (2012), *Health Care Financing Reforms in India*, Working paper no -100, National Institute of Public Finance and Policy, 18/2 Satsang Vihar Marg, New Delhi
- [8] Shailender Kumar Hooda (2013), *Changing Pattern of Public Expenditure on Health in India*, Issues and Challenges, ISID-PHFI Collaborative Research Centre Institute for Studies in Industrial Development
- [9] Suryanarayana, M.H., Ankush Agrawal and K. Seeta Prabhu(2011), *Inequality adjusted Human Development Index for India's States*, United Nations Development Programme, 55, Lodi Estate, New Delhi – 110003