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An Analysis of Public Health Expenditure and Health Status for Major States in India

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Abstract:

This study is a preliminary analysis of public health expenditure for major states and observed health outcomes based on the Secondary data available from different government official website and reports. The main objective of this study is to examine the health sector in major states of India. The study focuses on the trend and pattern of public health expenditure and health outcomes for the major states from year 2000 till year 2015. Also this study measures interlinkage between health expenditure and its impact on major health outcomes using correlation analysis. The interlinkage between health status and health expenditure has been assessed using correlation analysis. The result shows that there have been wide variations in health expenditure among major states. There are also differences in the time trend, and worrying indications of declining government spending in crucial areas. The study suggests on further rigorous analysis for future research which require to cover not only women or children but also socially disadvantaged community so that clear scenario of the need, distribution and access of health care services can be measured for the population at large and among specific groups.

1. Introduction

Health is the most important indicator of human resource development of any country which is measured in terms of quality of life years of each person. With healthy population, a country can grow in more productive way as good health of the man power would increase productivity of the country. Mosby medical encyclopaedia (1992) defined health as a 'state of complete physical, mental and social well-being and not merely the absence of disease' (Rexford E Santere and Stephen P Neun 2007). Economists have a different perspective on health; they view it as a durable good that provide services through lifetime (Grossmass 1972), so good health becomes very important for any country, be it developed or developing. Many factors combine together to affect the health of individuals and communities. The World Health Organization has pointed out the health status of people are determined by their circumstances and environment which includes *income and social status*, higher income and social status are linked to better health; *education*, low education levels are linked with poor health, more stress and lower self-confidence; *physical environment*, safe drinking water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health; *employment and working conditions*, people in employment are healthier, particularly those who have more control over their working conditions; *social support network*, greater support from families, friends and communities is linked to better health; *culture*, customs and traditions, and beliefs of the family and community all affect health; *genetics*, inheritance plays a part in determining lifespan, healthiness and likelihood of developing certain illnesses; *personal behavior and coping skills*, balanced eating, keeping active, smoking, drinking, and how we deal with life's stresses and challenges all affect health and most importantly, *health services*, high quality, accessible health services and health promotion contributes to public health.

Improving health sector in an economy is very crucial for the economic and social development of the country in question. Healthy workforce means efficient human capital and hence rises individual's productivity. This would automatically enhance a country's economic growth. To have economic development and social development a country for example can invest in huge amount in improving infrastructure, roads, railways etc. but most important aspect of developing infrastructure of the country lies on the manpower and human capital. So investment should be made first in improving health status of human resource so that the workforce shall be engaged in developing other sectors of the economy. Good health would reduce days of absence of worker's; improve their capacity, ability to work and most importantly, their economic productivity. According to Lopez-Casanovas et al (2005) good health helps to forge improved levels of education by increasing levels of schooling and scholastic performance.

2. Objective of the Study

The main objective of this study is to examine the health sector in major states of India.

- i) To examine the current health status in major states of India
- ii) To analyse the trend and patterns of public health care expenditure in major states.
- iii) To assess the interlinkage between health status and health expenditure in major states

3. Data and Methodology

To conduct this study secondary data on health status and public health expenditure are used. Infant mortality rate, fertility rate, life expectancy rate, primary health centre, sub centre and community health centre during eleventh five-year plan and number of hospitals, manpower and beds represents health status for the major states in this study whereas public health expenditure is represented as composition social sector expenditure by centre and state, expenditure on medical and family welfare from year 2000 to 2015 and health expenditure by states from 2009 to 2015.

The data are represented in tabular form and also represented using graph. Linear regression method is used to analyse the trend and pattern of health status and health expenditure which has been represented using linear trend line. The interlinkage between health status and health expenditure has been assessed using correlation analysis.

3.1. Health Status in Major States of India

Population, health and development are interlinked. To attain development, it is necessary to have healthy population in the country as healthy population means effective manpower which would lead to maximum productivity hence attaining economic growth in the county. Population in India is divided into two groups poor and rich and it is obvious that the poor are more prone to illness due to lack of nutritious foods and work culture. So for these groups the burden of diseases is very high. To overcome the health challenges in the current scenario of chronic poverty and diversity of huge population is a big task for the government. The World Bank Report 2013 shows the infant mortality rate in year 2012 in India was 44 which was one of the highest as compared to respectively 2 in Japan, 6 in United States and 4 in United Kingdom etc. (World Development Indicator 2013, The World Bank).

Figure 1 below represents the Infant Mortality Rate across states of India. From the table 1, it can be clearly seen that the Infant Mortality rate has shown decreasing trend in India. It has been highest in Madhya Pradesh in 2009, 2010 and 2011 as 67, 62 and 59 persons whereas it has been lowest in Kerala in 2009, 2010 and 2011 as 12, 13 and 12 persons.

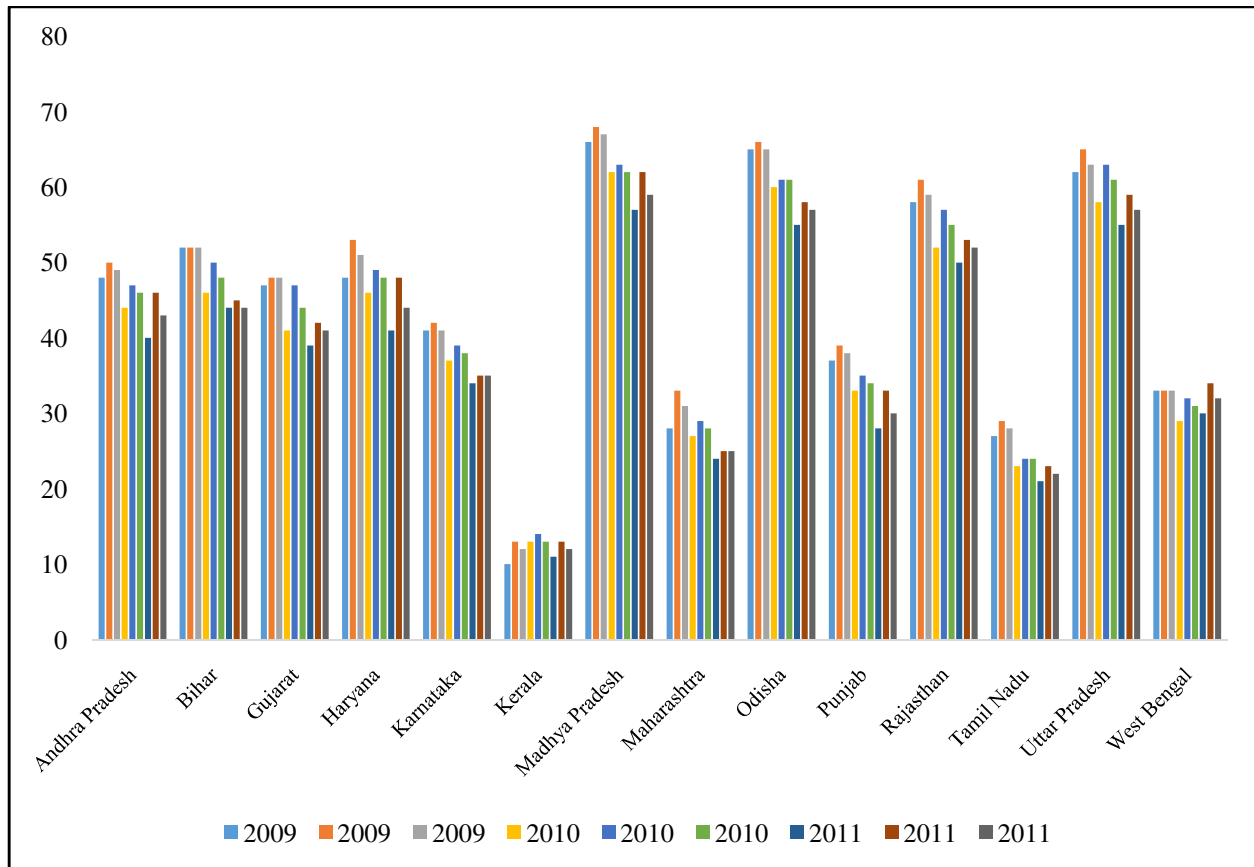


Figure 1: State-Wise Infant Mortality Rate

Source: Data Portal India, website: <http://indiabudget.nic.in>

Below Table 1 represents Life expectancy, Birth rate and Death rate for major states. From the table it is clear that Kerala has the highest life expectancy at birth followed by Maharashtra and West Bengal whereas Madhya Pradesh has the lowest at 62.4. Kerala has the lowest birth rate whereas Uttar Pradesh has the highest birth rate. Also Uttar Pradesh has the highest Death rate and West Bengal has the lowest Death rate.

Sl. No.	State	Life expectancy at birth (2006-10)			Birth rate 2011 (per 1000)	Death rate 2011 (per 1000)
		Male	Female	Total	Total	Total
1	Andhra Pradesh	63.5	68.2	65.8	17.5	7.5
3	Bihar	65.5	66.2	65.8	27.7	6.7
4	Gujarat	64.9	69.0	66.8	21.3	6.7
5	Haryana	67.0	69.5	67.0	21.8	6.5
6	Karnataka	64.9	69.7	67.2	18.8	7.1
7	Kerala	71.5	76.9	74.2	15.2	7.0
8	Madhya Pradesh	61.1	63.8	62.4	26.9	8.2
9	Maharashtra	67.9	71.9	69.9	16.7	6.3
10	Odisha	62.2	63.9	63.0	20.1	8.5
11	Punjab	67.4	71.6	69.3	16.2	6.8
12	Rajasthan	64.7	68.3	66.5	26.2	6.7
13	Tamil Nadu	67.1	70.9	68.9	15.9	7.4
14	Uttar Pradesh	61.8	63.7	62.7	27.8	7.9
15	West Bengal	67.4	71.0	69.0	16.3	6.2
	India	64.6	67.7	66.1	21.8	7.1

Table 1: Selected Indicators of Human Development for Major States

Source: Data Portal India, website: data.gov.in

In table 2, among all the states Uttar Pradesh with 20,521 numbers of Sub Centre, 3692 numbers of Primary Health Centre and 515 numbers of Community Health Centre stand as the highest state among all other states.

Also the detailed data on Primary health centre in 14 major from Sixth Five-year plan to Eleventh Five-year plan shows among the major states during Sixth plan, Maharashtra had highest number of PHC 1539 and from Seventh to Eleventh plan, Uttar Pradesh stood highest with 3000 in Seventh plan and 3692 During Eleventh Plan. Punjab scored lowest with 560 numbers of PHC during Sixth Plan and later Haryana from Seventh to Eleventh plan has least numbers at 366 and 444. Whereas the state-wise number of sub Centres. Among the states Uttar Pradesh attained highest number of sub centre from Sixth Plan to Eleventh Plan with 15,653 in Sixth Plan and 20,521 in Eleventh plan. Whereas Haryana has the lowest number of sub centre with 1591 during Sixth plan and 2508 during Eleventh plan.

S. No.	State/UT	SC	PHC	CHC
1	Andhra Pradesh	12,522	1,624	281
2	Bihar	9,696	1,863	70
3	Gujarat	7,274	1,123	305
4	Haryana	2,508	444	107
5	Karnataka	8,870	2,310	180
6	Kerala	4,575	809	224
7	Madhya Pradesh	8,869	1,156	333
8	Maharashtra	10,580	1,809	365
9	Orissa	6,688	1,228	377
10	Punjab	2,950	446	129
11	Rajasthan	11,487	1,517	376
12	Tamil Nadu	8,706	1,204	385
13	Uttar Pradesh	20,521	3,692	515
14	West Bengal	10,356	909	348
	All India Total	148,124	114	4,809

Table 2: State Wise Number of Sub Centre, Primary Health Centre and Community Health Centre during Eleventh Five Year Plan [2007-2012] (As On March 2011)

State/U.T.	Number of Government Hospitals 2010	Number of Government Hospitals 2011	Number of Doctors 2010	Number of Doctors 2011	Number of beds of Government Hospitals (in 000) 2010	Number of beds of Government Hospitals (in 000) 2011
Andhra Pradesh	475	475	320	320	38	38
Bihar	230	230	809	NULL	19	19
Gujarat	445	445	2173	1795	193	193
Haryana	154	154	824	361	8	8
Karnataka	919	919	4557	3727	64	64
Kerala	446	446	NULL	NULL	32	32
Madhya Pradesh	457	457	1007	947	29	29
Maharashtra	1366	1366	23444	53139	68	68
Orissa	1750	1750	52	NULL	16	16
Punjab	213	213	451	485	11	10
Rajasthan	826	826	1143	1145	26	26
Tamil Nadu	581	581	3388	2815	47	47
Uttar Pradesh	861	861	2813	2081	56	56
West Bengal	654	654	813	1230	71	71

Table 3: State Wise Number of Govt. Hospitals, Doctors and Beds Per 1000 Patients during Year 2010 and 2011 Source: Data Portal India, website: data.gov.in

Table 3 above represents number of hospitals, doctors and beds in position in year 2010 and 2011 per 1000 patients. From the table it is evident that Orissa have highest numbers of hospitals in year 2010 and 2011 with 1750 numbers, Maharashtra have highest numbers of doctors in position with 23444 numbers in 2010 and 53139 numbers in 2011 and Gujarat have highest number of Govt. hospital beds as 193 numbers among all other states.

3.2. Health Expenditure in Major States of India

India's total healthcare expenditure as a percentage of GDP is still one of the lowest in the world, 4.1 percent of GDP compared to global average 10.4 percent (World Bank Report 2012). The public sector accounts for only around 31 percent of the total healthcare expenditure. So majority of the population is dependent on private health care services which require huge amount of out of pocket expenditure. As per the World Development Indicator the out of pocket expenditure on health accounts for 86 percent in India in the year 2011 which is very high.

In India the health expenditure comes under the social services expenditure which are planned and incurred by the Central government along with the State government. Expenditure on social services including education, sports, art and culture, medical and public health, family welfare, water supply and sanitation, housing, urban development; welfare of SCs, STs and OBCs, labour and labour welfare, social security and welfare, nutrition, relief for natural calamities etc. by the Centre and State has shown increased trend which can be seen in the below table.

ITEMS	2003-04 ACTUAL	2004-05 ACTUAL	2005-06 ACTUAL	2006-07 ACTUAL	2007-08 ACTUAL	2008-09 ACTUAL	2010-11 ACTUAL
Total Expenditure	7,96,384	8,69,757	9,59,855	11,09,174	1316246	1595110	2145145
Expenditure on Social Services of which:	1,53,454	1,72,812	2,02,672	2,39,340	294584	380269	529398
i) Education	75,607	84,111	96,365	1,14,744	129366	161360	244156
ii) Health	34,066	37,535	45,428	52,126	63226	73898	100576
iii) Others	43,781	51,166	60,879	72,470	101992	145011	184666
As percentage of GDP							
Total Expenditure	28.91	27.62	26.76	26.86	26.40	28.57	27.52
Expenditure on Social Services of which:	5.57	5.49	5.65	5.80	5.91	6.81	6.79
i) Education	2.74	2.67	2.69	2.78	2.59	2.89	3.13
ii) Health	1.24	1.19	1.27	1.28	1.27	1.32	1.29
iii) Others	1.59	1.62	1.70	1.76	2.05	2.60	2.37
As a percentage of total expenditure							
Expenditure on Social Services of which:	19.3	19.9	21.1	21.6	22.4	23.8	24.7
i) Education	9.5	9.7	10.0	10.3	9.8	10.1	11.4
ii) Health	4.3	4.3	4.7	4.7	4.8	4.6	4.7
iii) Others	5.5	5.9	6.3	6.5	7.7	9.1	8.6
As a percentage of social service expenditure							
i) Education	49.3	48.7	47.5	47.9	43.9	42.4	46.1
ii) Health	22.2	21.7	22.4	21.8	21.5	19.4	19.0
iii) Others	28.5	29.6	30.0	30.3	34.6	38.1	34.9

Table 4: Social Services Expenditure (Centre and State Governments Combined)

Source: Economic Survey 2008-09, 2010-11 and 2012-13 website: <http://indiabudget.nic.in>

In Table 4, 'Education' and 'Health' has been shown separately whereas the rest of the items of Social Services are combined as 'Others'. From the above table it is very much clear that Education has been given more importance than that of health. Expenditure incurred on education is 46.1 percent compared to 19.0 percent expenditure incurred on health in 2010-11 which is very low. Hence it shows the need to boost the investment on health by both the Centre and State governments which would help in improve the productivity of the manpower of the country.

The state-wise social sector expenditure for the year 2000 to 2014 as published in State Finance Report 2015 where 14 major states has been considered. Among the major states from 2000-01 to 2006-07 with 154 and 283 billion rupees highest Social Services expenditure was incurred by Maharashtra whereas Uttar Pradesh incurred highest expenditure with 300 and 385 billion rupees in the year 2007-2008 and 2009-2010. Again from 2009-2010 to 2012-2013 Maharashtra incurred highest expenditure with 474 and 825 billion rupees. The social sector expenditure has been lowest in Haryana since 2000 till 2004-05 which has shown improvement in the later period whereas in Punjab social sector expenditure is one of the lowest since 2005-06 till 2014-15. The State finance report of the Reserve bank of India clearly depicts the differentiated expenditure in the social sectors among all the States.

Also the State Finance Report on the expenditure on medical and public health and family welfare- as ratio to aggregate expenditure for 14 major States from year 2000-01 till 2014-15 depicts that among the major states Bihar had highest expenditure on medical and public health as a ratio of aggregate expenditure at 5.9 in year 2000-01 whereas it kept on reducing till recent year 2013-14 to 3.2 becoming the lowest in this year however it increased to 4.1 in year 2014-15 still being the lowest among other major states in the same year. Haryana has incurred least expenditure at 3.3 in 2000-01 which reduced to 2.4 in year 2003-04 and stayed in same position

in year 2005-06,2006-07,2007-08, 2008-09, 2010-11 till 2013. Kerala incurred highest expenditure in year 2003-04, 2004-05,2010-11,2011-12,2012-13 at 4.3,4.5,5.1,5.4 and 5.2. Uttar Pradesh shows highest expenditure during 2005-06 to 2009-10.

	2009-10 (Actual)	(%)	2010-11 (Actual)	(%)	2011-12 (Actual)	(%)	2012-13 (Actual)	%	2013-14 (RE)	2014-15 (BE)
Andhra Pradesh	431,82,499	9.3	499,04,429	9.27	64884663	10.4	73835779	10.1	89196266	50279855
Bihar	167,77,612	3.61	179,73,897	3.34	22835703	3.7	25656985	3.5	38823710	51312605
Gujarat	231,81,508	4.99	304,15,972	5.65	33595402	5.4	46748137	6.4	51681919	72005247
Haryana	116,37,317	2.51	116,32,069	2.16	13456244	2.2	17214127	2.4	22700381	30040731
Karnataka	226,64,433	4.88	282,51,914	5.25	33610048	5.4	40421373	5.5	50485175	60908594
Kerala	172,15,533	3.71	206,37,544	3.83	28983015	4.6	32436671	4.4	36289750	45589803
Madhya Pradesh	168,79,824	3.64	218,52,645	4.06	26028268	4.2	33416897	4.6	40528308	61646567
Maharashtra	391,13,200	8.43	468,21,748	8.7	54396126	8.7	64325731	8.8	79245642	79029067
Odisha	126,21,175	2.72	130,82,348	2.43	13888629	2.2	18102834	2.5	22598509	39176721
Punjab	108,45,494	2.34	135,65,075	2.52	17228750	2.8	20473605	2.8	28846843	28743895
Rajasthan	242,94,422	5.23	261,39,925	4.86	34305827	5.5	39394875	5.4	53568038	87534668
Tamil Nadu	360,49,574	7.77	458,02,923	8.51	45873762	7.4	54842222	7.5	63989723	69197199
Uttar Pradesh	608,98,625	13.1	655,31,922	12.17	68264865	10.9	87980918	12.1	103144791	144931492
West Bengal	333,62,336	7.19	384,58,523	7.14	40750989	6.5	40955252	5.6	57620727	58758316
All States	4641,14,983	100	5383,22,352	100	623620017	100	729159954	100	921411424	1115525529

Table 5: Public Expenditure in Health by States (Rs. in 000)

Source: Ministry of Health & Family Welfare, Government of India, 2009,2015.

Table 5 depicts public expenditure on health by 14 major States (in Rs. 000). Among the States Uttar Pradesh incurred highest public expenditure on health during 2009-10 till 2014-15 (BE) whereas Punjab and Orissa being the lowest during the same year.

4. Result and Analysis

Social Sector expenditure data from State finance report 2015 for 14 major states from year 2000-01 to 2014-15 (BE) has been taken and are represented in individual graph to clearly understand their trend and pattern using regression analysis and R² is shown to identify if trend line follows the data.

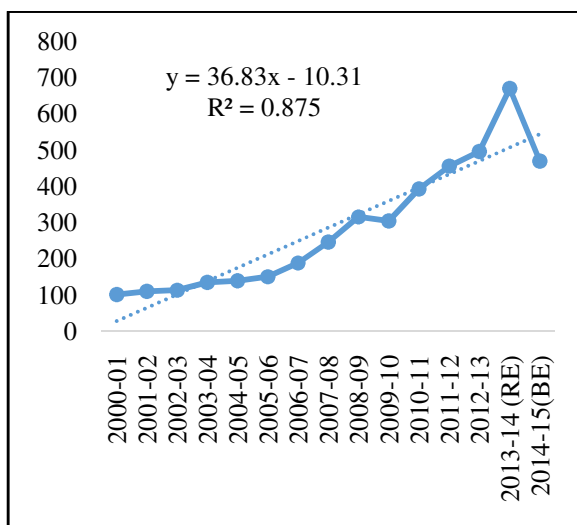


Figure 2: State-wise Social Sector Expenditure Andhra Pradesh

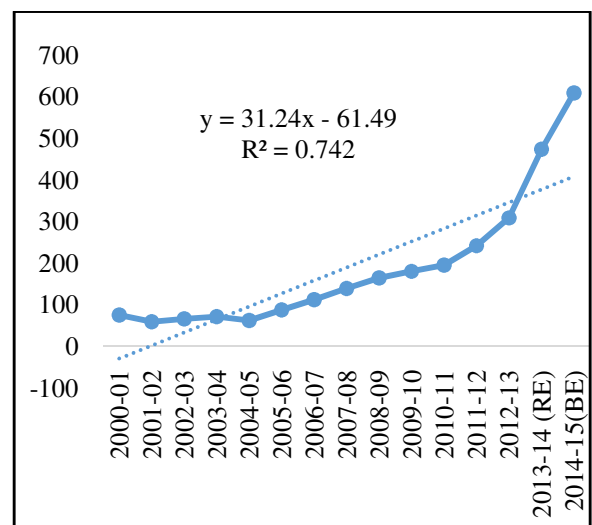


Figure 3: State-wise Social Sector Expenditure Bihar

In figure 2. Andhra Pradesh follows rapid increase in social sector expenditure and reaches its peak until 2013-14 (RE) then it quickly dropped in 2014-15 (BE). Whereas in figure 3 Bihar shows fluctuation till year 2006-07 as initially in year 2000 it initiated more expenditure which dropped suddenly in the next year again it increases and followed the same pattern but from year 2007-08 it rises over the period.

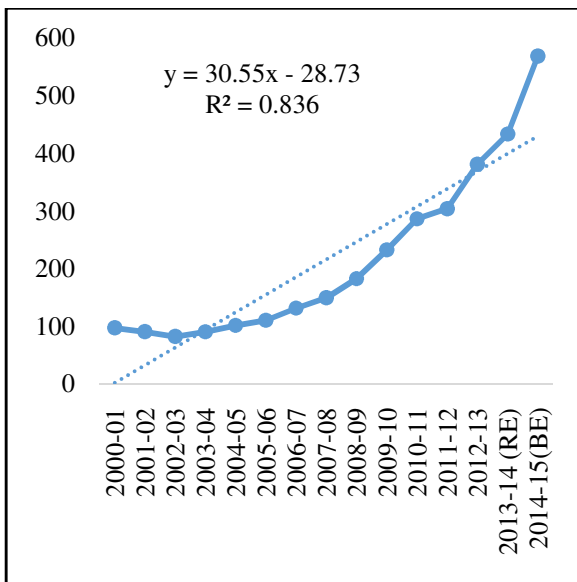


Figure 4: State-wise Social Sector Expenditure Gujarat

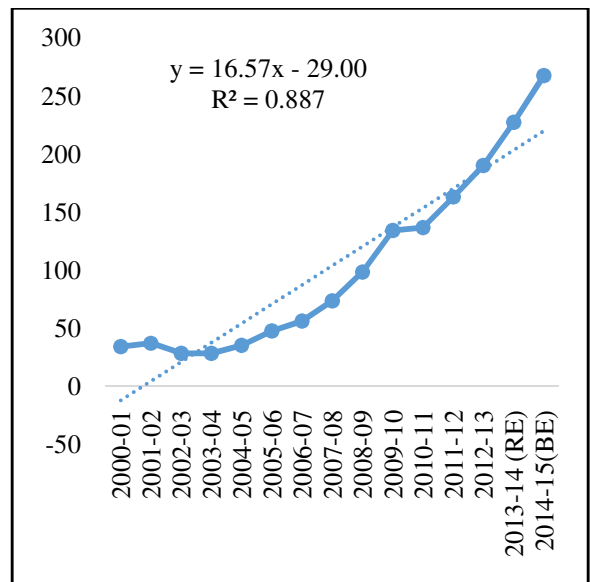


Figure 5: State-wise Social Sector Expenditure Haryana

In figure 4 Gujarat also started with increase in initial expenditure which dropped in the next year but later followed steady growth over the period. Haryana in figure 5 follows same pattern as Bihar over the year shows fluctuation.

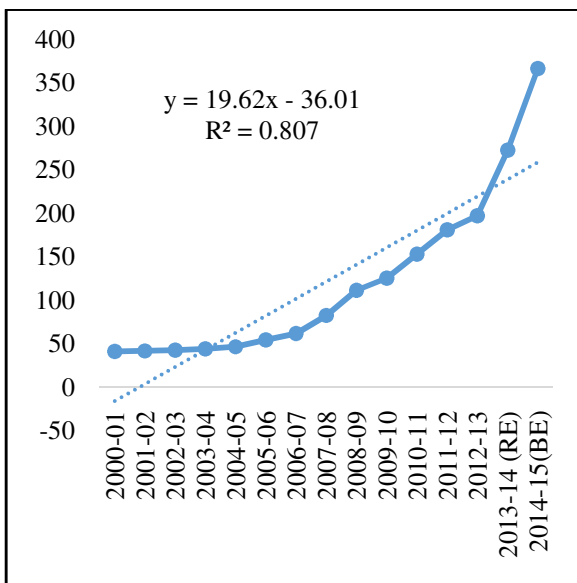


Figure 6: State-wise Social Sector Expenditure Odisha

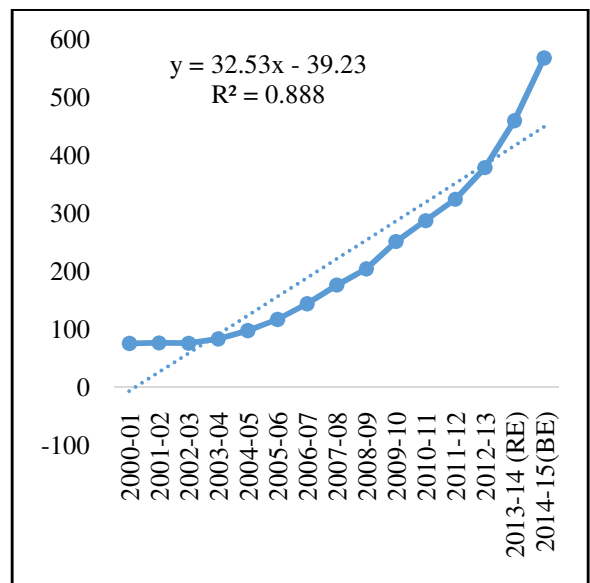


Figure 7: State-wise Social Sector Expenditure Karnataka

In figure 6 and 7 Odisha and Karnataka follows same trend pattern as both increases steadily over the period. Whereas in figure 8, Kerala shows fluctuation till 2007-08 as it increases then falls sharply again increases later it rises steadily and in figure 9, Madhya Pradesh fluctuates till 2005-06 then it follows steady growth till 2013-14 but in 2014-15 rises sharply.

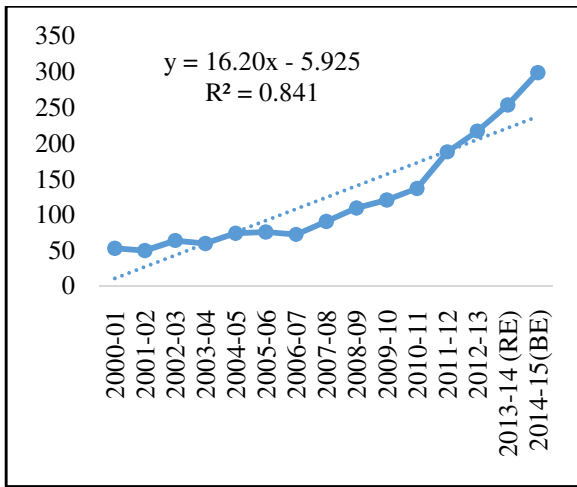


Figure 8: State-wise Social Sector Expenditure Kerala

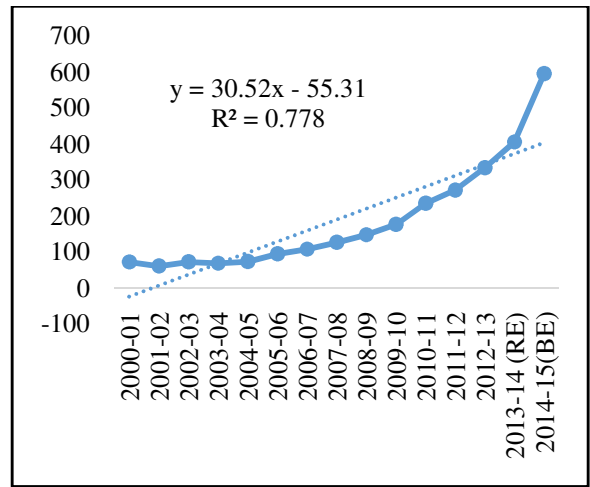


Figure 9: State-wise Social Sector Expenditure Madhya Pradesh

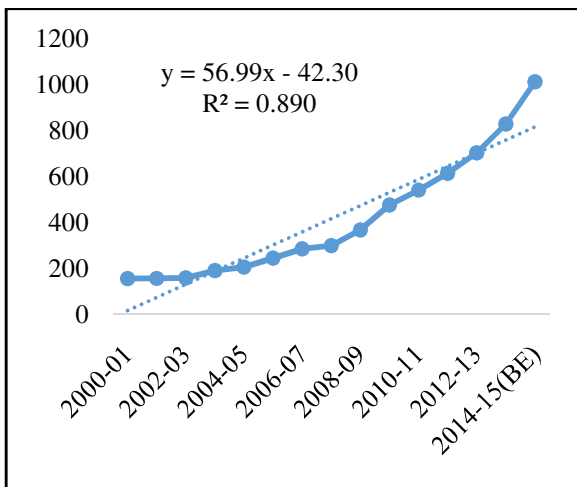


Figure 10: State-wise Social Sector Expenditure Maharashtra

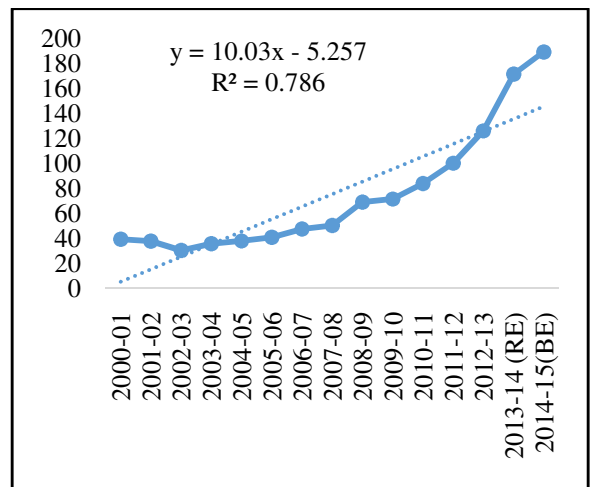


Figure 11: State-wise Social Sector Expenditure Punjab

In figure 10 Maharashtra on the other hand shows strong steady growth over the period. Figure 11 Punjab follows same pattern as Madhya Pradesh as it fluctuates till 2005-06 then shown steady increase.

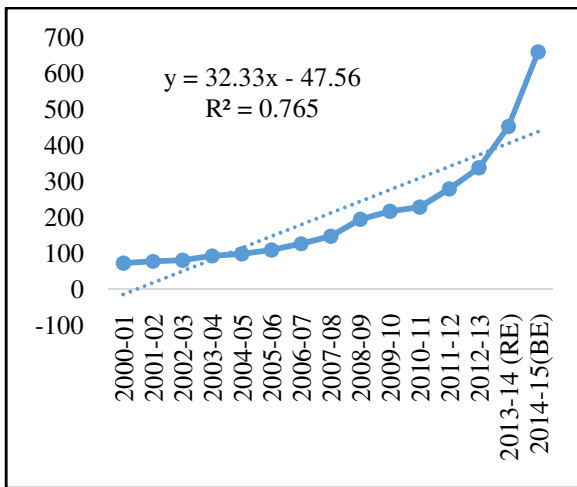


Figure 12: State-wise Social Sector Expenditure Rajasthan

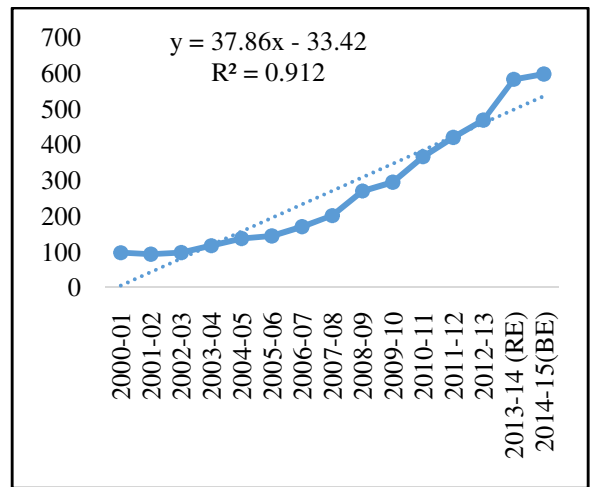


Figure 13: State-wise Social Sector Expenditure Tamil Nadu

Figure 12 Rajasthan follows strong steady growth over the period where as figure 13 Tamil Nadu shows fluctuation till 2003-04 then it rises steadily.

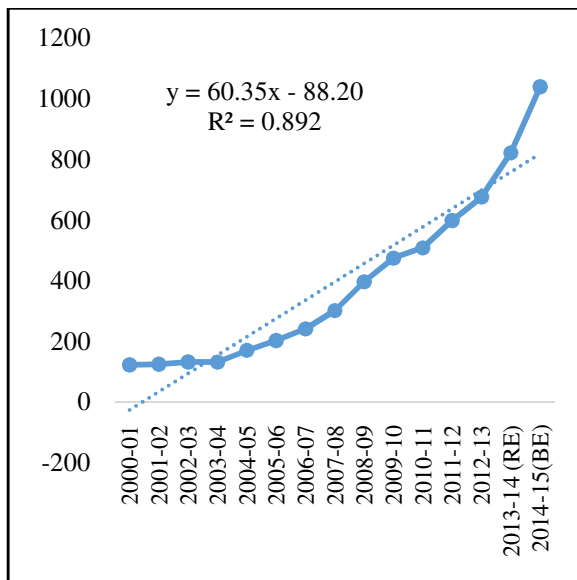


Figure 14: State-wise Social Sector Expenditure Uttar Pradesh

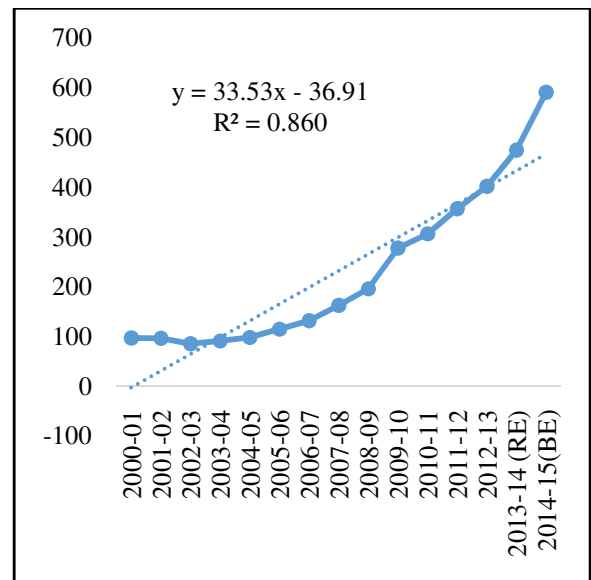


Figure 15: State-wise Social Sector Expenditure West Bengal

In figure 14 Uttar Pradesh follows steady increase over the period where as West Bengal in figure 15 shows fluctuation till 2003-04 then follows steady growth.

4.1. Correlation between Health Expenditure and Health Status

In the above sections, we have seen the trend and pattern both health expenditure and health status follows over a period of time for the States. Now it is important to know if these pattern of health expenditure have any impact on health status of people in these states and union territories. For this correlation technique is used to check health expenditure correlation to health status. Below public expenditure and PHC, SC and CHC are taken as part of health status.

Major States	Public Expenditure	Primary Health Centre	Sub Centre	Community Health Centre
Andhra Pradesh	64884663	1,624	12,522	281
Bihar	22835703	1,863	9,696	70
Gujarat	33595402	1,123	7,274	305
Haryana	13456244	444	2,508	107
Odisha	33610048	2,310	8,870	180
Karnataka	28983015	809	4,575	224
Kerala	26028268	1,156	8,869	333
Madhya Pradesh	54396126	1,809	10,580	365
Maharashtra	13888629	1,228	6,688	377
Punjab	17228750	446	2,950	129
Rajasthan	34305827	1,517	11,487	376
Tamil Nadu	45873762	1,204	8,706	385
Uttar Pradesh	68264865	3,692	20,521	515
West Bengal	40750989	909	10,356	348

Correlation between Public Expenditure and Health Status

	Public Expenditure
Public Expenditure	1
Primary Health Centre	0.657798773
Sub Centre	0.817737369
Community Health Centre	0.613287299

Table 6: Public expenditure and PHC, SC and CHC (base year 2011)

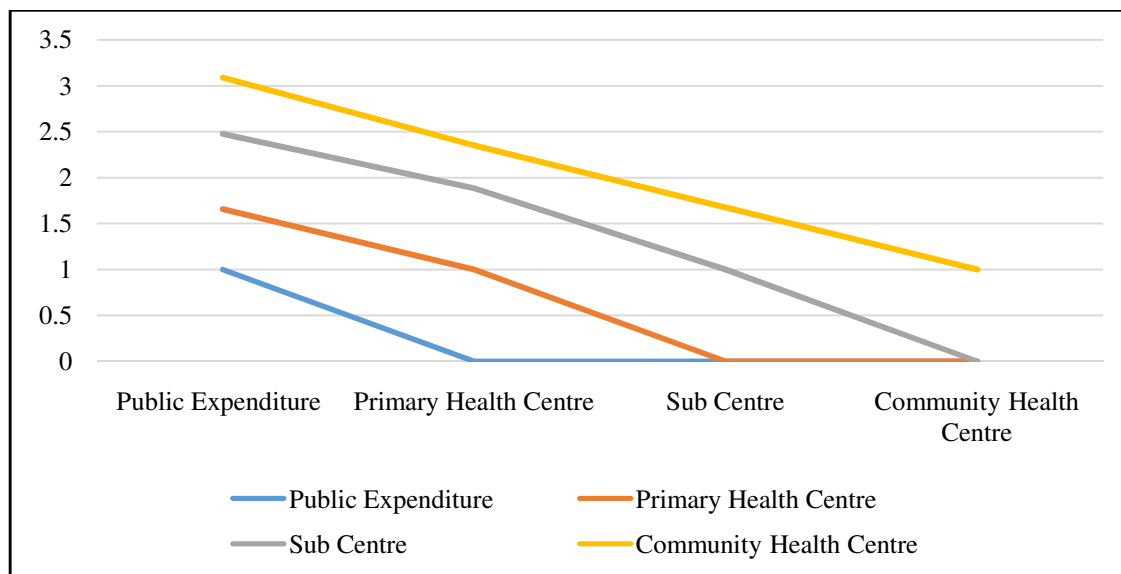


Figure 16: Correlation between Public expenditure on health & PHC, SC and CHC

From the correlation table it can be seen that correlation between public expenditure and primary health centre is 0.657798773 which shows *moderately positive relationship*. Public expenditure and sub centre shows *strong positive relationship* with r value as 0.817737369 whereas with r value 0.613287299 public expenditure and community health centre shows *moderately positive relationship*. The correlation values indicate that there is positive relationship between public expenditure in health and health infrastructure, the more the expenditure the more improvement can be seen in health infrastructure.

Major States	Expenditure on Medical, public health and family welfare	Life expectancy at birth
Andhra Pradesh	4.4	65.8
Bihar	3.5	65.8
Gujarat	4.2	66.8
Haryana	3.1	67.0
Odisha	3.9	67.2
Karnataka	5.4	74.2
Kerala	3.2	62.4
Madhya Pradesh	3.6	69.9
Maharashtra	3.2	63.0
Punjab	4.3	69.3
Rajasthan	5.1	66.5
Tamil Nadu	4.4	68.9
Uttar Pradesh	4.4	62.7
West Bengal	4.8	69.0

Correlation between Public expenditure and Life expectancy at birth in 2010

	Exp. On Med, Pub health and Family Welfare
Exp. On Med, Pub health and Family Welfare	1
Life expect. At Birth	0.554890667

Table 7: Public Expenditure and Number of Govt. Hospital, Doctors and Hospital Beds (Base Year 2011)

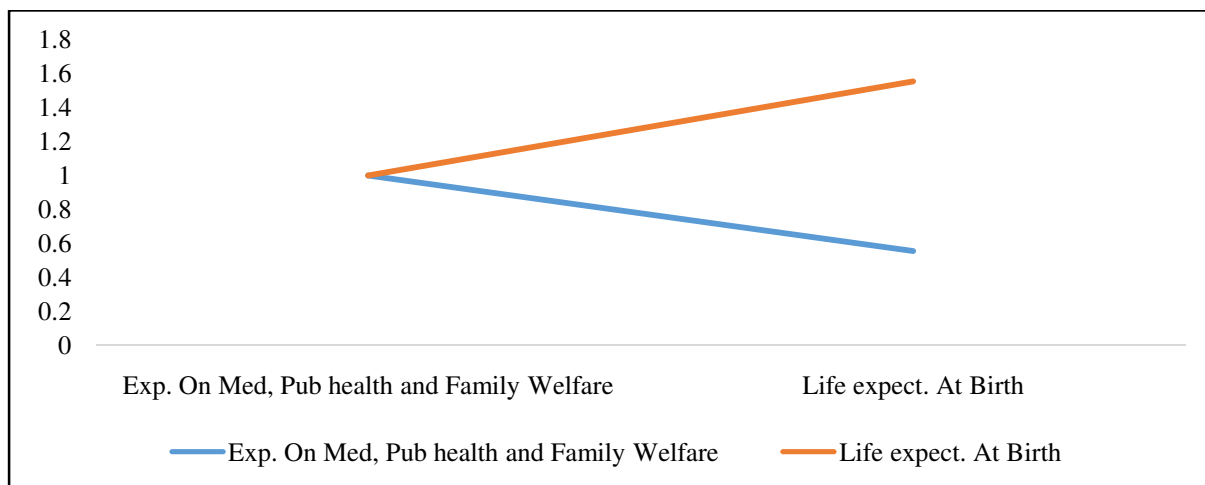


Figure 17: Correlation between health exp and life expect. at birth (as base year 2010)

From the correlation table it can be seen that correlation between public expenditure and life expectancy at birth is 0.554890667 which shows *moderate positive relationship*. The correlation values indicate that there is positive relationship between public expenditure in health and health infrastructure, the more the expenditure the more improvement can be seen in health infrastructure.

5. Conclusion

Healthy population is very much essential for any countries economic growth. The negative impact of illness is experienced more by the poor and vulnerable group due to their economic condition. When the breadwinners suffer serious illness, it is not only him, but his whole family who suffers due to loss of pay and the most difficult impact is the burden of disease that he has to borne due to lack of government health expenditure. The protection and improvement of the health of poor and vulnerable populations is central to the entire process of poverty reduction and human development. As such, it should be a goal of development policy shared by all sectors — social and economic. The 11th Five Year Plan was framed to achieve several objectives to improve the healthcare system which includes reducing mortality rate, providing clean drinking water, reducing anemia among women by 50 percent but all these were not achieved due to low public spending and high out-of-pocket payment (80 percent). In absence of adequate public spending on providing medical facilities, it is the poor who suffer the most. Cost incurred on treating diseases is widely known to be one of the foremost reasons for families slipping into the poverty trap. There are several important issues in the health care system some of which are the inadequate quantity of healthcare service providers i.e., the number of doctors per lakh of population was only 45, whereas, the desirable number is 85 per lakh, Auxiliary Nurse and Midwives (ANMs) available was only 75 per lakh population whereas the desirable number is 225. Also the quality of the health care providers is very poor as many doctors very not qualified and regulatory standards of the hospitals are not adequately defined (12th Five Year Plan Report).

This study focuses on the trend and patterns of government spending on health for major states in India and link them to observed health outcomes. The analysis has been conducted for 14 major states. From the analysis it has emerged that in case of infant mortality rate, fertility rate and life expectancy rate shows similar trend whereas there is huge difference in the health outcomes of major states in terms of number of PHC, Sub centre and CHC. Also number of hospitals and staff shows variation among the states. The analysis on health expenditure depicts clearly that government spending on health for major states has wide variations. There are also differences in the time trend, and worrying indications of declining government spending in crucial areas. Social sector expenditure shows government spending has been concentrated in few states whereas for other major states expenditure has been minimal. Expenditure on medical, public health and family welfare shows huge difference among the states. overall health spending declined over the decade 2000-01 to 2013-14. Within the overall spending, family welfare showed the greatest fluctuation over time in most states. Health expenditure incurred by states actuals also shows disappointing picture whereas since 2009 till 2014-15 only 4 to 5 states has been given more importance and others have low expenditure.

In terms of interlinkage between health expenditure by government and health outcomes, direct relation could not be measured but the results depict that correlation between public expenditure and primary health centre shows moderately positive relationship, also public expenditure and sub centre shows strong positive relationship whereas public expenditure and community health centre shows moderately positive relationship. The correlation between public expenditure and life expectancy at birth shows *moderate positive relationship*. The correlation values indicate that there is positive relationship between public expenditure in health and health outcomes.

This study provides preliminary conclusions which require further rigorous empirical analysis of the relevant indicators. Relevance research involves exploring the disaggregated pattern of health spending both at central government and state government levels. This is very important to analyse the expenditure incurred to reduce the level of infant mortality rate, maternal mortality etc. as even though government have increased its overall expenditures it has important effects on both quality and quantity of public health services provided both in rural and urban population of the country. Access to public health care is another important issue as people due to problems in public health care access depends on private health care providers

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