

A study on the relationship between the expenditure of selected states in India and few health indicators

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Date of Submission: 01-11-2020

Date of Acceptance: 15-11-2020

ABSTRACT: Health has been a major concern for all major countries around the world. Developing countries like India have made considerable amount of progress in health sector, if compared with the situation some 50 years back. Still health infrastructure remains a major obstacle in overall development and progress of developing countries. Governments have been under immense pressure to improve the health indicators by investing a large proportion of their expenditure on health infrastructure but they are also rattled by the fact that they have to priorities other segments as well, like education. This paper was aimed at reading the relationship between the health expenditure of few states and their performance on selected health indicators. Findings suggests that there are various other factors which play an important role in shaping the health indicators. There was weak or no relationship between the expenditure of states on health indicators.

Keywords Health Infrastructure, State expenditure, Health indicators

I. INTRODUCTION

The spend on healthcare, as percentage of total expenditure, has remained flat at 5.3 percent in last two consecutive financial years, according to Economic Survey 2020.

The overall budgetary expenditure by Centre and states in FY20 budget estimates stood at Rs 60.72 lakh crores.

In terms of Gross Domestic Product (GDP) the government spend on healthcare is 1.6 percent in FY20 budget estimate a small rise from 1.5 percent in FY19.

Expenditure on health includes expenditure on medical and public health, family welfare and water supply and sanitation.

Primary healthcare accounts for 52.1 per cent of India's current public expenditure on health as per the National Health Estimates, 2016-17.

Out of pocket expenditure on health is one of the biggest reasons for people falling into

poverty in India. As per the latest National Health Accounts (NHA) 2016-17, the out of pocket expenditure (OoPE) as a percentage of total health expenditure has declined from 64.2 percent in 2013-14 to 58.7 per cent in 2016-17.

⁵ Household out-of-pocket health spending was 69.1 percent of total health expenditures, making this a major component of the financing system. In principle, government health services are available to all citizens under the tax-financed public system. In practice, bottlenecks in accessing such services compel households to seek private care, resulting in high out-of-pocket payments.

The doctor-population ratio in India is 1:1456 against the WHO recommendation of 1:1000. To address the shortage of doctors.

The government said it has embarked on an ambitious programme for upgradation of district hospitals into medical colleges.

In last 5 years, government said it has sanctioned 141 new medical colleges, and revised the norms for graduate and post graduate seats in medical colleges.

The maximum intake capacity at MBBS level has been increased from 150 to 250, the norms for setting up of Medical colleges in terms of requirement of land, faculty, staff bed strength etc have been rationalized. It is indeed a matter of jubilation and celebration! Now, the time has come to critically analyze the whole premise of doctor-population ratio and its value. Public health experts and policy makers now need to move forward from the fixation and excuse of scarcity of doctors. There is an urgent need to focus on augmenting the fiscal capacity as well as development of infrastructure both in public and private health sectors toward addressing pressing healthcare needs of the growing population. It is also an opportunity to call for change in the public health discourse in India in the background of aspirations of attaining sustainable development goals by 2030.

The Health Index highlights the progress reached by the individual States and UTs and is an important instrument in understanding the variations and complexity of the nation's performance in health. It highlights the areas each State should focus on to facilitate improvement in overall health outcomes. Overall, there is room for improvement in all States, even among the best-performing States there is substantial room for improvement. Among the least performing States/UTs, particularly, there is an urgent need to accelerate efforts to narrow the performance gap between States and UTs.

For doctors, nurses and pharmacists, the percentage in rural areas was close to the average for all health workers of about 40%. The urban-rural ratio for doctors was 1.48, and for nurses 1.52. Traditional and faith healers had an urban-rural ratio of 0.57 (with an

absolute number in rural areas of 8034, which is more than the number of dentists in rural areas). The absolute number of health workers in urban areas was greater than that in rural areas for every category of health worker except for traditional and faith healers. (Note that the urban-rural ratios here refer to the ratio of the absolute number of health workers in the two strata, and not to the ratio of urban density to rural density. Comparing the composition in the two strata, the percentage of each health worker category in all health workers in the stratum is quite similar. For example, all doctors accounted for 39.9% of urban health workers and for 39.2% of rural health workers; and nurses accounted for 31.1% of urban health workers and for 29.6% of rural health workers.

The urban density of health workers is defined as the number of urban health workers divided by the urban population in lakhs; the rural density is defined as the number of rural health workers divided by the rural population in lakhs. The urban health worker density was 428.3 per lakh and the rural health worker density was 113.7; the ratio of urban density to rural density for all health workers was 3.8. Thus, there were almost 4 times as many health workers per person in urban areas compared to rural areas.

Ideally, contemporary legislation should clearly provide both the trigger and the caveats in empowering the state to curtail or restrict certain rights of the citizens like to liberty, privacy, movement, and property. This would then lead to predictable and transparent decision-making. India's EDA fails in this regard; similarly, it fails to address the human aspect of healthcare. In a recent discussion on the COVID-19 pandemic in the Lok

Sabha, some members raised the legal "anomaly" with regard to the pandemic, urging the government to rectify the situation and bring about emergency legislation while Parliament is in session. The suggestion has not been heeded. With little or no legal backing for the government's actions, it has had to resort to the much-maligned Section 144 of the Indian Penal Code, curfews, and other draconian measures to limit the spread of the disease.

II. LITERATURE REVIEW

(Pilla, 2020)The spending on healthcare has remained flat at 5.3 percent in FY17 & FY18. In terms of GDP, the government spending on healthcare is 1.6 percent in FY20, a small rise from 1.5 percent in FY19.**(Gupta, INTERNATIONAL HEALTHCARE SYSTEM PROFILES, 2020)** The National Health Protection Scheme is for individuals in the bottom two income quintiles, which provides INR 500,000 (USD 7,007) per family per year to cover secondary and tertiary health services, from inpatient to post-hospitalization care. The scheme extends coverage to approximately 100 million poor and vulnerable families. **(Sharma, 2020)**In India, as in most nations, not all available ventilators can be plugged out from the intensive care units and deployed elsewhere. the central and the state agencies have worked in tandem to add new health assets, something that is indispensable to minimise the impact of a potential catastrophe. But the key problem is that India's health facility indicators are below par in any global parameter.

(Sudhir Anand & Victoria fan, 2016) a lot of variation was observed in the district density of health workers (calculated as the number of health workers in the district divided by the district population in lakhs). As the districts are of different population sizes, the density in a district is weighted by the population size of the district in calculating inter-district inequality in health worker availability per person.

(Indrani Gupta & Arup Mitra, 2004)Though economic growth tends to reduce poverty, significant improvements in health status are also necessary for poverty to decrease. Also, economic growth and health status are positively correlated and have a two-way relationship, Health expenditure is an important determinant of both higher growth and better health status, and is therefore a key tool available to policy-makers.**(Ashok Vikhe Patil & R.C. Goyal, 2002)**About 75% of health infrastructure, medical man power and other health resources are

concentrated in urban areas where 27% of the population live. A paradigm shift from the current ‘biomedical model’ to a ‘sociocultural model’, which should bridge the gaps and improve quality of rural life, is the current need. (Lincoln Chen & Mita Choudhury, 2011) Financial protection against medical expenditures is far from universal with only 10% of the population having medical insurance.

(Tito Yepes & Marianne Fay, 2005) The findings suggest that apart from traditional variables (income, assets, education, and direct health interventions), better access to basic infrastructure services has an important role to play in improving child-health outcomes. (Anil Deolalikar & Prabhat Jha, 2008) if focused on the key interventions, public expenditures of an additional US\$6–US\$7 per person per year would provide universal access to those interventions and have a favourable affect on population health. (PTI, 2019) Rs 249.96 crore has been allocated for setting up Ayushman Bharat Health and Wellness Centres while Rs 1,349.97 crore has been earmarked for setting up health and wellness centres under the National Rural Health Mission. 1.5 lakh sub-centres and primary health centres will be transformed as health and wellness centres by 2022.

Research Objectives

1. Defining a relationship between a state’s individual expenditure on healthcare against the performance of health indicators in those states.

2. Finding out the critical factors which can be analyzed to determine the Performance of a State in Healthcare Sector.

RESEARCH HYPOTHESIS

Null Hypothesis for the Study Undertaken: No relationship exists between the Healthcare Expenditure of the State & The Performance of the Health Indicators

Alternative Hypothesis for the Study Undertaken: There exists a relationship between the Healthcare Expenditure of the State & The Performance of the Health Indicators.

III. METHODOLOGY

This is a study undertaken to analyse the relationship between the Healthcare Expenditure of the States and the Performance of Health Indicators of those states. Top 15 states of India (population wise) have been considered for this research. The aim is to understand how much does expenditure on healthcare affect the overall welfare and health of the population and to determine if any other factors are also affecting the holistic health of the population. 5 health indicators namely Infant Mortality Rate, Under 5 Mortality Rate, Total Fertility Rate, Institutional Deliveries & Sex Ratio have been taken for assessing the effect of healthcare expenditure on the health indicators. Regression analysis and mean calculation along with other descriptive statistics are used in deciding the conclusion of the paper.

IV. RESULTS

Health Indicators and Expenditure of selected states

Sr. No.	STATE	INFANT MORTALITY RATE (2016)	UNDER 5 MORTALITY RATE (2011)	TOTAL FERTILITY RATE (Birth/women) (2016)	INSTITUTIONAL DELIVERIES (% of total deliveries) (2016)	SEX RATIO (Females / 1000 Males) (2015)	EXPENDITURE 2016
1	Uttar Pradesh	43	73	3.1	67.8	879	5.07
2	Bihar	38	59	3.3	63.8	916	3.94
3	Maharashtra	19	28	1.8	90.3	878	5.08
4	West Bengal	25	38	1.6	75.2	951	5.33
5	Madhya Pradesh	47	77	2.8	80.8	919	4.17
6	Rajasthan	41	64	2.7	84	861	5.61
7	Tamil Nadu	17	25	1.6	99	911	4.99
8	Karnataka	24	40	1.8	94.3	939	5.03
9	Gujarat	30	52	2.2	88.7	854	5.86
10	Andhra Pradesh	34	45	1.7	91.6	918	4.7
11	Odisha	44	72	2	85.4	950	4.8
12	Telangana	31	72	1.7	91.5	918	4.8
13	Jharkhand	29	54	2.6	61.9	902	4.82
14	Kerala	10	13	1.8	99.9	967	5.85
15	Assam	44	78	2.3	70.6	900	7.09

Descriptive Statistics				
	N	Range	Mean	Std. Deviation
Expenditure	15	3.15	5.1427	0.75749

Results of the Regression Analysis:

Sr. No.	Independent Variable	Dependent Variables	R-Squared Values
1	State Expenditure on Healthcare	Infant Mortality Rate	0.011996244
2		Under 5 Mortality Rate	0.003273995
3		Total Fertility Rate	0.057252839
4		Institutional Deliveries	0.008712557
5		Sex Ratio	0.036635912

From the above results, its evident that the R-squared values for all the dependent variables is close to 0 rather than close to 1. This suggests that all the dependent variables are very loosely correlated to the independent variables and there exists a weak relationship between them.

Sr. No.	Independent Variable	Dependent Variables	P-Values
1	State Expenditure on Healthcare	Infant Mortality Rate	0.69759482
2		Under 5 Mortality Rate	0.839489275
3		Total Fertility Rate	0.390399837
4		Institutional Deliveries	0.740743151
5		Sex Ratio	0.494380699

From the above results, it can be inferred that the alternative hypothesis is rejected and the Null Hypothesis Prevails.

V. CONCLUSION

The analysis of the above observations states that there lies a weak relationship between the health expenditure of a state (calculated as percentage of their GDP) and their performance selected health indicators which are generally taken as global health performance indexes. The mean for health expenditure for states was 5.14 and a positive correlation would point out that states having expenditure above this limit will be performing higher on health indicators. But the analysis of data suggests no such pattern and points out the role of other key factors like education and

implementation of health program, in deciding their performance on certain health indicators.

States in India often find them in a dilemma of priorities and it totally depends on the state governments to decide the budget for the health. States like Assam have been performing poorly on health indicators instead of spending a large portion of their GDP's percentage on health infrastructure and on the other hand side, a state like Kerala which spends average percentage on their health , is leading on all parameters. This analysis points out that the mere increasing the percentage of expenditure on health won't help states to improve their health indicators. They have to follow a holistic and integrated plan to execute programs targeting health issues in their states.

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