Value for Money in Health: Efficiency of healthcare system in India

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Abstract
India has made a noticeable progress on health status in the recent period. However, there are wide gaps in the health sector in terms of infrastructure, human resources and public spending. In India, the government spending on health has been increasing over the years. But, people do not receive the sufficient healthcare from the healthcare spending. The primary objective of this study is whether the provision of healthcare exceeds the costs of the healthcare and healthcare system is efficient in terms of getting good Value for Money (VfM). To estimate the efficiency of healthcare system, this study attempt to measure the VfM by comparing the expenditure on health to the availability, use and access to health resources in each state. The estimated results show that there are a numerous variations between states in getting better VfM from their healthcare spending. The lower VfM in the states indicates the inefficiency of healthcare systems. The results also suggest that states those received the highest VfM are scored better in access and use of health resources. It can be observed from the results the high expenditure does not have any impact on provision of healthcare unless the healthcare system of the state is functioning well. Therefore, strengthening the healthcare systems and making them more equitable have been recognized as the key strategies for improving the better outcomes in health sector.
Key words: Provision of healthcare, Healthcare expenditure, Healthcare system, Value for money, Min-max method, Under achievers, over achievers

1. Introduction

It is recognised that access to health is an important component of well-being. Expenditure on health plays the pivotal role on health status and that keeps access to health and sustainable wellbeing. But in India, government spending on healthcare is well below what exactly needed. However, India has made tremendous strides in improving health status in the recent period. But health inequalities and the lack of quality healthcare remain major challenges. This is because Indian healthcare sector can be viewed as a glass half empty and a glass half full. There are many gaps in the health sector in terms of infrastructure, human resources and public spending. It is believed that lack of utilisation of health resources, uneven distribution of public health spending and improper functioning of healthcare system among states are contributing inequality in health. The availability of adequate health workforce, infrastructure and availability of medicines are the most basic requirements for a proper functioning of healthcare system. In India, the overall achievement with regard to some key health indicators is impressive. But, the difference between rural and urban indicators of health and the wide inter-state disparities in health status are well known. The government spending on health has been increasing over the years. But, people do not seem to receive the sufficient value or provision of healthcare from the healthcare spending. Looking to the welfare of people, it is important to estimate that how much we spend on healthcare? And how much value we get for our spending? When those who pay for health look at what they get for their money, can they be sure that they are getting value for their money. The 'value for money' is used in the sense of whether the benefits of spending exceed the costs. Here, increased 'value for money' can come from reduced spending (OECD, 2010). The concept of 'value for money' is the ratio of some measure of valued health system outputs to associated expenditure. The primary objective of this study is whether healthcare system provides widespread access to healthcare services for the population. Whether the provision of healthcare exceeds the costs of the healthcare and healthcare system is efficient and effective in terms of getting good 'value for money'. These objectives are concerned that how well healthcare system is performing in terms of healthcare supply and whether resources are adequate to get good 'value for money'. To estimate the overall efficiency of healthcare system, this study measures the 'value for money' across states in both rural and urban areas. This study then finds out the status of achieving 'value for money' among states.

1.1 Measuring the Value for Money (VfM)

Measuring the efficiency of healthcare system is complex, but vital for ensuring accountability, transparency and is valuable for identify the areas for improvement. Evaluating the performance of healthcare system among states provide an opportunity for policy makers to determine how well their respective healthcare systems are performing relative to their counterparts. When examining the quality of healthcare in India, it identifies two distinct questions: 'How healthy are Indians?' and "How healthy is the Indian healthcare system? When answering the first question, it is important to note that the health status of population is determined by a number

of factors, some of which like timely access, availability of health workforce and quality medical care may fall under the purview of a healthcare system. The value for money (VfM) is focused on the answer to the second question - how healthy is the Indian healthcare system? Achieving VfM in health broadly means making the best use of resources available for the provision of health services. Five components (four value components, and one expenditure component) were identified for measurement of VfM. The VfM that states receive can be thought of as consisting of two equally important parts: provision of healthcare (the value) and, expenditure on healthcare (the cost). The provision of healthcare is captured using components aggregated into four broad equally important components: availability of resources, use of resources, access to resources and clinical performance of medical goods and services. When attempt to measure the performance of healthcare systems in India, it is essential to compare the results of health outcomes with the costs of maintaining such systems. Thus, in order to provide an economic context for the healthcare system characteristics measured, we include an indicator representing healthcare expenditure. It is incorrect to define higher public spending on health as negative without considering the benefits. The opposite also holds true: it is incorrect to define a healthcare system as having higher levels of benefits without considering the costs. Therefore, this study constructs an overall measure of VfM by comparing the per capita expenditure or cost of healthcare systems to the availability of resources, use of resources, access to resources, and clinical performance in each state. Due to the lack of appropriate data, this study uses only seven indicators of five components for 18 states to capture the VfM and the efficiency of healthcare systems. The VfM thus measures with the help of following indicators:

Components	Indicators
Provision of healthcare (the value)	
Availability of resources	Number of doctors and dental surgeons
Use of resources	Number of district hospitals and beds
Access to resources	Institutional deliveries
Clinical performance of medical goods and services	Infant Mortality Rate
Expenditure on healthcare (the cost)	
Expenditure/Cost	Government or Public expenditure on health

A Min-Max method is used to attribute relative scores from 0 to 10, using the following formula for cases.
Where higher values are preferable:
The VfM = $(S-Y)/(X-Y)\ x10$
Where lower values are preferable:
The VfM = $(X-S)/(X-Y)\ x10$
Where S=Value of the State, X=Maximum value, Y=Minimum value

Components: Each indicator within a component is given a standard score of 0 to 10 using the Min-Max calculation.

Overall provision of healthcare (Value): The scores for the four value components are aggregated, and then a Min-Max method is used to give each state a score from 0 (worst) to 10 (best) for overall value.

Overall expenditure on healthcare (Cost): A similar procedure is used to derive the score for overall cost with lower per capita healthcare expenditure receives a higher score –The estimates of the degree of healthcare spending efficiency are based on healthcare outcomes defined as those gains in health status that can be attributed to healthcare spending. A state is judged to be more efficient than another if it achieves higher health status for a given level of healthcare spending. Based on this concept, the provision of healthcare exceeding the cost of health, therefore, it is considered that lower cost with high provision of healthcare is the better achievement. In this view lower expenditure on health has been given higher scores.

The two indexes (value and cost) are considered together to create a final overall value for money index for state's health care systems.

Overall VfM: Finally, the overall value score and costs score are added together, and a Mini-Max calculation is used to give states an overall VfM score from 0 to 10.

VfM Ranking: All States were ranked in descending order by their VfM Index value. The State which takes the highest score as VfM is considered as major achiever and so on.

Classification:

- States in the VfM range between 9.0 and 10.0 are considered as over achievers (High efficiency of healthcare system),
- States in the VfM range between 5.1 and 8.9 are medium or average achievers (Average efficiency of healthcare system), and,
- States in the VfM range of <5.0 are categorised as under achievers (Lowest efficiency of healthcare system).

1.1.1 Data Sources

This study uses the most recent year available data to measure the provision of healthcare in comparison to healthcare expenditures across states in India. Data is not always available for some states. In these cases, data from the most recent year were substituted for the missing data. North Eastern States were excluded from the analysis (except Assam) due to the large amounts of missing data. The data source for Infant Mortality Rate (IMR) is the Sample Registration System (SRS) Bulletin 2012, published by the Office of Register General, Government of India. The public expenditure on health, institutional delivery, allopathic doctors, dental surgeons, number of beds and number of district hospitals are obtained from various issues of National Health Profile Statistics, published by the Central Bureau of Health Intelligence, Government of India.

2. Value for Money (VfM) in Health

The concept of VfM has been central to the India's health policy and it represents the relation between provision of healthcare and expenditure on health. The institutional arrangements within the healthcare system matter and that, some states do better than others at translating health spending into health outcomes. In this study, the estimated results show that there are variations between states in getting better VfM from their healthcare spending.

Rural Areas: Among the states, Himachal Pradesh receives a score of 10 for the component representing the availability of resources, 0.7 for the component representing the use of resources, 6.4 for access to resources and 4.9 for clinical performance (Please see Table 1). When the scores of these components are added together, Himachal Pradesh receives a total score of 7.1 for the overall value. Despite the high public expenditure on health, the overall VfM for Himachal Pradesh is equal to 0.0, lowest among all states. It indicates the ratio of valued health system outputs is not associated with expenditure. Bihar scored at the least in overall value (provision of healthcare) with 0.0 for availability of resources, 0.2 for use of resources, 2.5 for access to resources and 3.4 for clinical performance. It indicates that government is not spending much on health, at the same time the provision of healthcare is very low due to the un-availability of resources, lack of access and use of resources. These results indicate that Indian states vary enormously in how much they spend on health and the value at which they get. On a scale of 0 to 10, Tamil Nadu receives a total value score of 10 for overall provision of healthcare. It receives a score of 9.5 for overall VfM, and it positioned at 2nd place among the states. It indicates, the overall value exceeded the expenditure and experienced the highest VfM. The efficiency of healthcare system in Tamil Nadu is better than the states like Bihar and Himachal Pradesh. The high number of medical colleges, hospitals and doctors in Tamil Nadu may be attributed these results. Haryana receives the overall value that is lower than Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Rajasthan, Tamil Nadu and West Bengal. Haryana scored 2.6 on VfM with inadequate expenditure on health. It suggests that the healthcare system is not efficient in terms of providing access and availability of resources. Among the states, Karnataka receives the highest score in providing timeliest access to resources, but in the component of availability of resources, use of resources and clinical performance, it has scored the lowest compared to Haryana, Himachal Pradesh, Kerala, Punjab and West Bengal. The combined overall value of Karnataka is 6.8, lower than Himachal Pradesh, Kerala, Tamil Nadu and West Bengal. However, Karnataka has scored 6.4 on VfM indicates that one of the strongest healthcare system in India. In addition, Karnataka is providing better healthcare when compared to its health expenditure. On the other hand, Jharkhand receives the lowest score in the overall value with lower access to health components, and lowest public expenditure per capita. The combined impact of these scores has given the lowest VfM for Jharkhand. It indicates the healthcare system is not efficient to provide sufficient health resources, and healthcare is not associated with expenditure. The state which received the highest score on clinical performance is Kerala. However, Kerala scored the lowest in availability of resources and use of resources. The combined overall value is 8.5, lower than Tamil Nadu. The VfM is very low in Kerala due to the provision of healthcare is not associated with the cost of healthcare. The lowest score in clinical performance is observed in Madhya Pradesh. Madhya Pradesh also scored the lowest in availability of resources, use of resources and access to resources. The combined score of Madhya Pradesh in overall value is the lowest among all states except Assam, Bihar, Chhattisgarh and Jharkhand. The lower value

and health expenditure contributed the least VfM for Madhya Pradesh. Even with the lowest score in public expenditure and availability of resources, West Bengal received the highest VfM (ranked 1st), indicates the overall value is exceeded the cost. The high score in access to resources and clinical performance in West Bengal has attributed to acquire the better VfM.

Table1: Scores for Components, Value, Cost and Value for Money (Rural Areas)

States	Components				Overall Value	Public Expenditure (Cost)	Value for Money
	Availability of Resources	Use of Resources	Access to Resources	Clinical Performance			
Andhra Pradesh	1.9	1.2	7.2	3.0	3.2	7.4	3.9 (8)
Assam	1.5	0.9	5.0	1.3	1.1	9.1	3.6 (9.5)
Bihar	0.0	0.2	2.5	3.4	0.0	10.0	3.2 (12)
Chhattisgarh	0.3	0.9	2.6	2.8	0.2	8.5	1.8 (16)
Gujarat	0.4	4.4	4.3	3.0	2.7	5.5	1.2 (17)
Haryana	7.5	0.0	2.3	3.0	3.0	6.4	2.6 (13)
Himachal Pradesh	10.0	0.7	6.4	4.9	7.1	0.0	0.0 (18)
Jharkhand	0.5	2.5	0.0	4.3	0.5	8.6	2.3 (15)
Karnataka	2.7	4.2	10.0	4.5	6.8	6.0	6.4 (4)
Kerala	3.5	4.7	6.9	10.0	8.5	2.6	4.5 (7)
Madhya Pradesh	0.6	4.2	5.4	0.0	1.8	8.5	3.6 (9.5)
Maharashtra	0.4	5.6	5.8	6.2	5.3	6.4	5.2 (6)
Odisha	0.6	9.6	6.7	0.8	5.2	7.6	6.3 (5)
Punjab	4.2	0.5	2.0	5.7	2.7	6.5	2.4 (14)
Rajasthan	1.4	5.6	8.6	1.1	4.7	8.1	6.5 (3)
Tamil Nadu	0.8	10.0	9.8	7.9	10.0	5.6	9.5 (2)
Uttar Pradesh	0.5	6.8	2.7	0.6	2.0	8.1	3.4 (11)
West Bengal	3.1	5.5	8.2	6.6	7.7	8.2	10.0 (1)

Source: Computed from the data of National Health Statistics and Sample Registration System Bulletin 2012.
Note: Figures in parentheses are ranks.

The results of the study revealed that states those received the highest VfM are scored better in use of resources, access to resources and clinical performance. It indicates that the lack of availability of resources is the major problem in many states, for instance, lack of doctors, nurses and other health specialists etc. It can be observed from the results healthcare outcomes are associated with expenditure in some states and not in some other states. It means the high expenditure does not have any impact on provision of healthcare unless the health system of the state is functioning well. On the other hand, states those have scored least on VfM are worst performers in use of resources and availability of resources. These states also have high expenditure on health indicates the overall value in the provision of healthcare was not exceeding the cost.

Urban areas: In the urban areas, Maharashtra has received the better VfM from their public healthcare system, followed by citizens of West Bengal, Karnataka and Rajasthan (Refer to Table 2). Conversely, those living in Haryana receive the least VfM from their public healthcare system, followed by residents of Uttar Pradesh, Himachal Pradesh, Chhattisgarh, Odisha and Bihar. The lowest VfM in these states is caused by the lack of availability and use of resources, access to resources and it may be believed that weak healthcare system functioning with poor institutional arrangements. The availability of resources on a per capita basis, Himachal Pradesh has the largest number of human resources and the high value on provision of healthcare and public expenditure but it has scored lowest on VfM due to the inefficiency of healthcare system. When examined separately without considering cost in urban areas, Himachal Pradesh and Maharashtra are the top-ranked states for their provision of healthcare when compared to other states. If we compared with costs, Himachal Pradesh is spending higher whereas Maharashtra is spending lower among the sample states. It may be argued that the healthcare system is efficient in Maharashtra than Himachal Pradesh.

Table 2: Scores for Components, Value, Cost and Value for Money (Urban Areas)

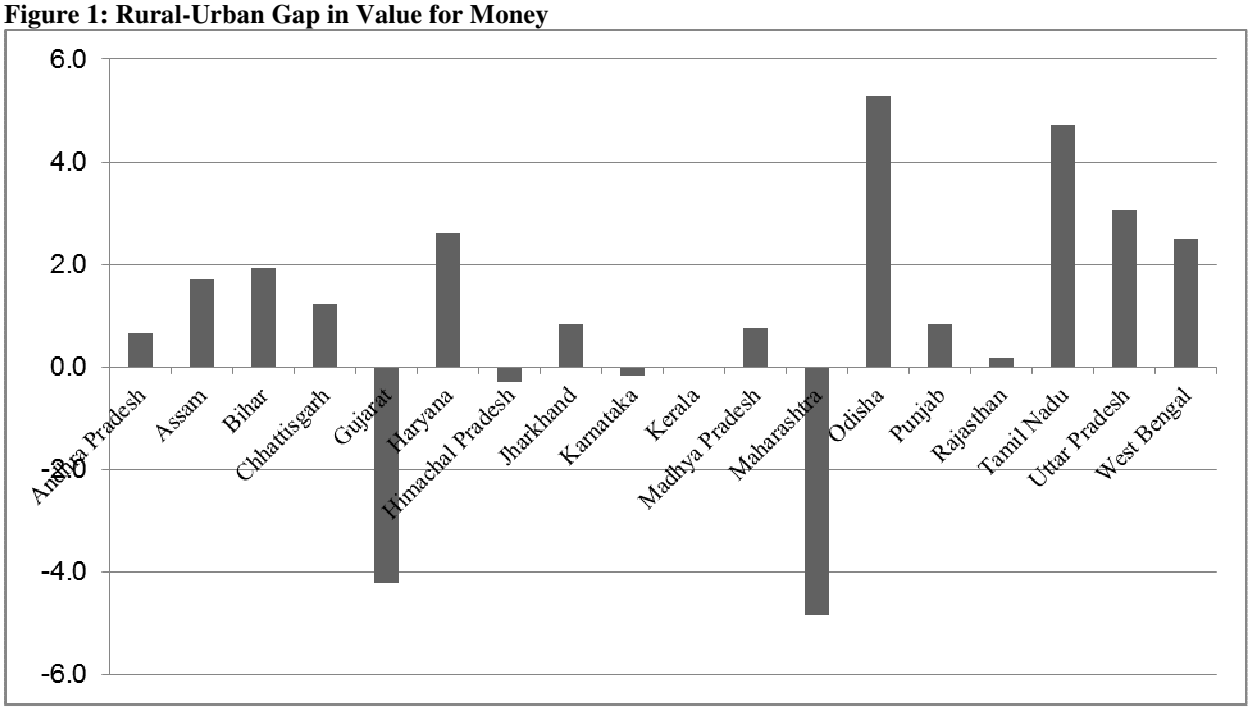
States	Components				Overall Value	Public Expenditure (Cost)	Value for Money
	Availability of Resources	Use of Resources	Access to Resources	Clinical Performance			
Andhra Pradesh	0.4	4.1	2.5	3.2	2.9	9.8	3.3 (8)
Assam	1.2	0.0	5.2	2.4	2.2	9.2	1.8 (10)
Bihar	0.2	1.7	3.3	1.8	1.3	9.6	1.3 (13)
Chhattisgarh	0.1	0.6	4.8	0.0	0.6	9.7	0.6 (15)
Gujarat	0.0	8.5	1.8	4.1	5.0	9.8	5.5 (5)
Haryana	2.0	0.5	0.0	1.8	0.0	9.7	0.0 (18)
Himachal Pradesh	10.0	0.1	10.0	4.4	10.0	0.0	0.3 (16.5)
Jharkhand	0.2	0.6	2.1	4.1	1.3	9.8	1.5 (12)
Karnataka	0.5	6.2	5.2	4.7	6.1	9.7	6.6 (3)
Kerala	0.3	1.6	1.1	10.0	4.3	9.6	4.5 (7)
Madhya Pradesh	0.2	1.4	7.2	0.6	2.5	9.9	2.8 (9)
Maharashtra	0.0	10.0	5.4	7.1	9.0	10.0	10.0 (1)
Odisha	0.4	0.6	7.1	0.3	2.0	8.7	1.1 (14)
Punjab	0.9	1.0	0.5	4.7	1.4	9.8	1.6 (11)
Rajasthan	0.4	4.2	7.8	3.8	5.9	9.6	6.3 (4)
Tamil Nadu	0.0	0.8	5.5	6.5	4.2	10.0	4.8 (6)
Uttar Pradesh	0.3	4.5	0.6	0.0	0.5	9.5	0.3 (16.5)
West Bengal	0.8	4.7	6.8	5.6	6.7	9.9	7.5 (2)

Source: Computed from the data of National Health Statisticsand Sample Registration System Bulletin 2012.
Note: Figures in parentheses are ranks.

It can be observed from the results in urban areas, states those have ranked at top on VfM are the major players on use of resources, access to resources and clinical performance. It means the lack of access and use of resources are the major problems in many states due to inefficient health systems that has not been delivered better health services to all. The results also show that healthcare outcomes are associated with use of resources, access to resources and also public expenditure. It means the high expenditure does make an impact on provision of healthcare in urban areas. However, some of the states even they are spending high public expenditure on health, they have received low VfM, for instance, Madhya Pradesh, Bihar, Chhattisgarh, Jharkhand etc. There could be reasons like inefficiency of health systems and regional inequalities in providing health services. The poor performing states are clearly the health human resource depleted states. The lack of human resources and the lack of access to health facilities are both cause and effect of the pattern of public health system seen across the states. The improved health management and good governance could break this vicious cycle. An overall analysis, however, if we compare it in rural areas, urban healthcare is better in the states than rural healthcare. It reveals that states that have shown some sign of performance on VfM is led by the efficiency of well planning of their health systems. For instance, the states like Karnataka, Rajasthan, West Bengal, Tamil Nadu, Maharashtra and Kerala will come in this category. In addition, in the urban areas, it can be seen on the position of the states like Odisha, Tamil Nadu, Uttar Pradesh and West Bengal, urban healthcare is not impressive when compared to rural healthcare. As a whole, in India, people in many states receive low VfM in terms of the quality of healthcare services in both rural and urban areas.

As far as the rural-urban gap between states in the achievement of VfM are concerned, the high rural-urban gap is recorded in the states of Gujarat, Maharashtra, Odisha, Tamil Nadu, Uttar Pradesh and West Bengal (Please see Figure1). The states such as Karnataka, Kerala and Rajasthan were showing the lowest rural-urban gap in overall VfM. It is considered from the results, governance and institutional arrangements in the rural healthcare system is very strong compared to urban health system in the states of Tamil Nadu and West Bengal. On the other hand, the urban health system is stronger than rural health system in the states of Maharashtra, Gujarat and Karnataka.

Figure 1: Rural-Urban Gap in Value for Money



Source: Computed from the data of National Health Statistics and Sample Registration System Bulletin 2012.

The classification of states in achieving VfM indicates that the states like Tamil Nadu and West Bengal are the over achievers in rural areas in terms of receiving high VfM (Please see Box 1). It indicates that the health systems are very strong in these states. However, Tamil Nadu is in the group of under achievers and West Bengal is in the group of average achievers in urban areas. Maharashtra is the average achiever in rural areas, but it is over achiever in urban areas, indicates the strongest urban healthcare delivery system. The states like Karnataka and Rajasthan are average achievers in both rural and urban areas. Odisha is an average achiever in rural areas, but it has joined in the group of under achievers in urban areas. Gujarat is an average achiever in urban areas, but in rural areas, it is in the group of under achievers. The remaining states like Himachal Pradesh, Haryana, Bihar, Jharkhand, Chhattisgarh, Punjab, Uttar Pradesh, Madhya Pradesh, Assam, Andhra Pradesh and Kerala are in the group of under achievers in both rural and urban areas.

Box 1: Value for Money Classification – Scaling Healthcare System Efficiency

Rural			**Urban**		
Over Achievers (High Efficiency of Healthcare System)	**Average Achievers(Average Efficiency of Healthcare System)**	**Under Achievers(Lowest Efficiency of Healthcare System)**	**Over Achievers(High Efficiency of Healthcare System)**	**Average Achievers(Average Efficiency of Healthcare System)**	**Under Achievers(Lowest Efficiency of Healthcare System)**
Tamil Nadu, West Bengal	Maharashtra, Odisha, Karnataka, Rajasthan	Himachal Pradesh, Gujarat, Chhattisgarh, Jharkhand, Punjab, Haryana, Bihar, Uttar Pradesh, Madhya Pradesh, Assam, Andhra Pradesh, Kerala	Maharashtra	Gujarat, Rajasthan, Karnataka, West Bengal	Haryana, Uttar Pradesh, Himachal Pradesh, Chhattisgarh, Odisha, Bihar, Jharkhand, Punjab, Assam, Madhya Pradesh, Andhra Pradesh, Kerala, Tamil Nadu

3. Challenges and Strategies

In the face of insatiable demand for medical treatments, increasing pharmaceutical and health manpower costs and a vibrant market in new medical technologies, the pursuit of VfM in healthcare has become an imperative for all healthcare systems. The results of the study revealed that the under performers among the states are experiencing mainly the inefficiency of healthcare systems. It indicates that India was spending much on health in some of the states but gets substantially less value for that spending. If we want to improve VfM in our health care, we need to identify and address the challenges in the systems that impede progress. What policies should be strengthened healthcare system to provide quality of health outcomes? This study has described a range of policy measures that may help policy makers address this issue. It is important to assess the policy options available to achieve VfM in healthcare systems in the future. The value we get from spending on health seems to be much less than the value the other developing countries get. To get more value from spending on healthcare, it suggests that public health programs should concentrate on both cost and benefit. We need to ensure much broader coverage of health services to provide essential healthcare and we need to do it through a system which is appropriate to our needs and within our financial capability. Our intent is to provide a favourable situation, from which one can able to see how inter connected the opportunities to improve and sustain our healthcare systems. It is difficult to decide wisely how much to spend on healthcare without a much better understanding of what current spending achieves. Increased spending on health alone is not sufficient to improve the health status. Simultaneous steps are needed to improve performance, efficiency, and accountability in the public and private sectors. Reinforcement of health management information systems, community supervision and public disclosure could help to improve effectiveness and accountability. In addition to an increase in public expenditures on health, the Government of India will, however, need to introduce specific methods to improve the efficiency of spending, increase accountability, and monitor the effect of expenditures on health. Health financing and financial protection is also the important strategic views to improve health outcome. It is a greater need to strengthen the healthcare system in the states of Himachal Pradesh, Haryana, Bihar, Jharkhand, Chhattisgarh, Uttar Pradesh, Madhya Pradesh and Assam. The gaps between states in terms of performance in health should be reduced. Strengthening health systems and making them more equitable have been recognized as the key strategies for improving the better outcomes in health sector.

4. Conclusion

Development of the public health services in India in the past twenty years has witnessed a tremendous expansion in healthcare systems across states. Many health related programmes that have been launched at the national and state level. India has achieved substantial progress in terms of availability and standards of healthcare services by way of public healthcare interventions. However, there are wide variations in the level of healthcare development within and between the states, which is evident in comparing to the VfM across the states. Some states are getting better VfM from their health spending than others. Furthermore, state-wise comparisons show weak relationships between health spending and outcomes, suggesting that more health spending does not necessarily generate improvements in health. Healthcare systems are economically sustainable when the benefits of health spending exceed their costs. Indeed, the strengthening of healthcare systems through net increases in spending to benefit from the opportunities brought by new technology, while at the same time seeking efficiency improvements, may be seen as an optimal approach. Low levels of healthcare system functioning resulting a poor quality of health status. Problems with healthcare systems are not confined to poor states. Some rich states have large populations without access to care because of inequitable arrangements. Thus, reforms in the health sector will have to address the issue of strengthening of healthcare system focusing on ensuring greater access to healthcare. The well-functioning of healthcare system could increase access, reduce costs and increase quality of healthcare. The implementation of interventions on health is dependent on the capacity of healthcare system to implement policies. The capacity of healthcare system to facilitate implementation of health interventions needs to be improved, both in terms of the role of actors and in terms of structures and operations.

References

1. Barua Bacchus (2013). *Studies in Health Policy: Provisional Healthcare Index 2013,* Fraser Institute, Canada.
2. Central Bureau of Health Intelligence (2012). *National Health Profile 2012*, Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India.
3. Ministry of Home Affairs (2012). “Sample Registration System”, Office of the Registrar General & Census Commissioner, Government of India.

4. Organisation for Economic Co-operation and Development (OECD) (2010). *OECD Health Policy Studies: Value for Money in Health Spending,* pp.22-23.
5. Singh Vikram (2012). *Public Administration Dictionary*, Second Edition, Tata Mc Grow Hill's winning edge series.
6. World Economic Forum (2013). "*The Global Gender Gap Report*" Geneva, Switzerland, pp.59.

Note 1. Healthcare system is the network of all the organisations, institutions and resources whose primary intent is to promote, restore and improve health. The term healthcare system usually is used to refer to the system by which healthcare is made available to the population and financed by government, private enterprise or both. In a larger sense, the elements of a healthcare system embrace the following: Workforce (physicians, nurses and midwives, other healthcare workers); infrastructure (hospitals, and beds); medical technologies and devices (radiotherapy and computed tomography units); and access to essential medicines. A good healthcare system delivers quality services to all people, when and where they need them - World Health Organisation (WHO) 2007.

Note 2. Value for money is a utility derived from every purchase or every sum of money spent. Value for money is based not only on the minimum purchase price but also on the maximum efficiency and effectiveness of the purchase – Public Administration Dictionary 2012.

Note 3. Min-Max equations are commonly used to generate standardized scores in composite indexes like that published in the Fraser Institute's Economic Freedom of the World and the United Nations Development Programme's (UNDPs) Human Development Index. In this study, to construct the 'value for money', Min-Max method is adopted from the Fraser Institute's (Canada) healthcare index model 2013.