An Analysis of Trends and Pattern of Public Spending on Health Services in Mizoram, India

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Abstract **- The State Government of Mizoram has shown commendable efforts towards the provision of healthcare facilities among the people. Several government medical institutions have been established in different parts of the states especially after 1987 when the Mizoram was elevated to the full fledge state. By analyzing the growth trends and pattern of public spending on health service during 1981-2014, the present study revealed that public expenditures on health services in Mizoram have shown gradual increase both at current and constant prices. For instance, the plan expenditure on health services at current prices have increased with CAGR of 15.26 per cent while the corresponding non-plan expenditures have increased with the CAGR of 10.52 per cent during the same period. At the same time, the constant prices of plan and non-plan expenditure also increased with the CAGR of 8 per cent and 3.46 percent. The study also found that the significance of all factors under consideration in determining public spending, both in terms of total expenditures and per capita expenditures with acceptable R-square. It is noteworthy that the estimated coefficients or elasticities are found to be significant and positive in all cases implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. At the same time, the estimated constant terms are negative in all cases which imply zero (or near zero) expenditures in the absence of these factors.**

Index Terms **– public expenditure, determinants, growth trends, health services.**

I.INTRODUCTION

Expenditure on health services is an important determinant of the health status and economic development of a nation. It has revealed that countries which assign due recognition to this aspect have healthier and more productive human capital. This in turn raises the GDP of a nation, in contrast to countries which spend less on health sector (Sengupta:2015).The Constitution of the World Health Organization which came into effect in 1948 also recognized health as a basic human right and states that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition”(WHO:2005,2014).For instance, health is considered a "positive concept, emphasizing social and personal resources, as well as physical capacities"(Goodman:2014). This concept leads to the idea of health promotion as a process of enabling people to increase control over, and to improve, their health (WHO:1984).

OBJECTIVES OF THE STUDY

To analyze the trends and pattern of public expenditure on health services in Mizoram during 1981-2014,

To analyze the determinants of public investment on health services in the state.

Hypothesis: Public expenditure on health services increases with an increase in GSDP and population.

SOURCES OF DATA AND METHODOLOGY

Data Source: The study is based on Secondary data which are collected from different sources like Annual Financial Statement(various years), Demand for Grants, Finance Department, Government of Mizoram; Economic Survey-various issues, Department of Planning and Programme Implementation: Government of Mizoram; Statistical Abstract and Handbooks-various issues, Government of Mizoram ; Annual Report of Health and Family Welfare (various years),Government of Mizoram; Census Reports-various years, Government of India.

Analytical Tools: Data collected from various sources are analyzed by using simple statistical techniques such as averages, percentages. The Compound Annual Growth Rate (CAGR) was also calculated by estimating log-linear regressions. A Wholesale Price Index (WPI) which is obtained from the website of the Office of the Economic Adviser, Ministry of Commerce, Government of India is used to convert the data into one series with a common base year (i.e.,1981-82=100). For this, the study covers 33 years i.e. from 1981-2014.

Simple log-linear regression model is adopted to examine the determinants of public expenditures on health. This model is adopted to avoid the likely econometric problem of multicollinearity due to the limited degrees of freedom and apparently same trends shown by the explanatory variables which may manifest in high correlation. The advantage of using log-linear regression is its applicability on heterogeneous measurement units and its showing of constant elasticity. So, the regression model has been estimated on each of the selected variables to test their significance on public investment in health:

$$\log(Y) = \alpha + \beta \log X + u$$

Where Y denotes the dependent variable (public expenditure/investment on health), X is the explanatory variable (determinant), u is the random disturbance term, and α and β are constant and estimated coefficients respectively. Further, β indicates the constant elasticity of public expenditure.

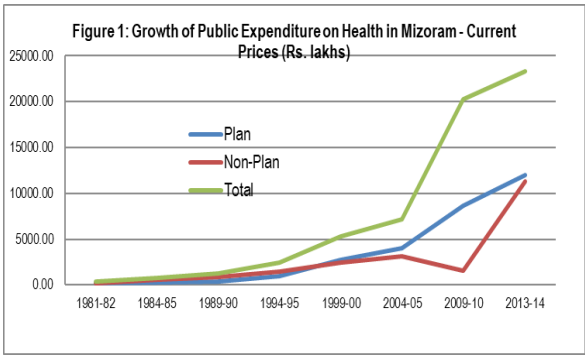
Socio-Economic Profile of Mizoram

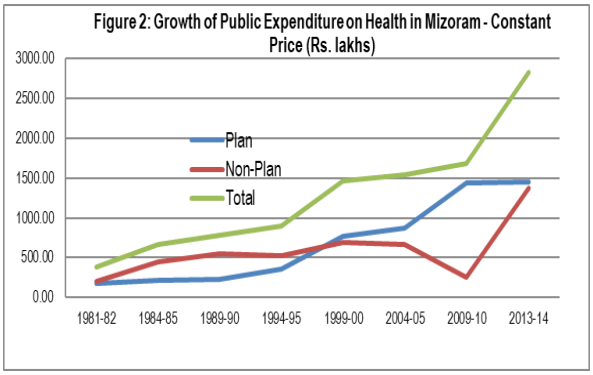
Mizoram, situated in the North-Eastern region of India, is a small state with a total area of 21,081 sq. km. It is bounded by Myanmar in the East and South, Bangladesh and Tripura in the West, Assam and Manipur in the North. The state has been divided into 11 Districts, 26 Rural Development Blocks, 23 Sub-Division and 3 Autonomous District Councils. The total population of Mizoram according to 2011 census is 10,97,206.

Trends and Pattern of Public Spendingon Health Services in Mizoram

In Mizoram, the State Government has shown commendable efforts towards the provision of healthcare facilities among the people. Several government medical institutions have been established in different parts of the states especially after 1987 when the Mizoram was elevated to the full fledge state. It may be noted that the modus operandi of providing health care infrastructure changes with the changes in the administrative set up of the state.

The trends of public investment on health services through budgetary expenditures in Mizoram are presented in Figure 1 & 2 and Table -1. The study reveals that there has been a continuous growth in health expenditure both in term of current and constant prices. In general, the pattern of the growth rates was more or less stable till the year 1994-95 but shows a relatively higher rate of growth after this till 2004-05 and further increase afterwards. Interestingly, a similar consistent growth pattern has witnessed with both plan and non-plan expenditure till 2004-05. But a downward trend of non-plan expenditure is seen during 2005-09 and improved afterwards. There has been a significant jump on the over-all health expenditure after 2009-10 onwards, due to the implementation of major Centrally Sponsored Scheme like National Rural Health Mission and National Health Mission in the state. In fact, the contribution of these Central programs for the improvement of health status in the states is commendable.





Data incorporated in Table-1 reveals that both the plan and non-plan expenditures increased over the

period. In terms of current prices, the plan expenditure was significantly improved from Rs.181.77 lakhs in 1981-82 to Rs.12003.68 in 2013-14 with CAGR of 15.26 percent while the corresponding non-plan expenditures shows the same trends from Rs.204.08 lakhs to Rs.11288.68 with CAGR of 10.52 percent during the same period. In terms of constant prices, both the plan and non-plan expenditures increased with CAGR of 8 per cent and 3.46 per cent over the same period. The total heath expenditure in constant prices was calculated with an increase of 5.76 per cent while it was 13.2 per cent in term of current prices.

Table 1: Growth of Public Expenditure on Health Services in Mizoram

Year	Current Price (Rs. Lakh)			Constant Price (Rs. Lakh)			Budget Share (%)
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
1981-82	181.77	204.08	385.85	181.77	204.08	385.85	4.22
1984-85	262.79	532.57	795.36	218.81	443.44	662.25	2.96
1989-90	391.00	914.08	1305.08	235.97	551.65	787.62	3.80
1994-95	1014.85	1473.52	2488.37	363.72	528.10	891.82	4.20
1999-00	2781.98	2493.81	5275.79	772.66	692.62	1465.28	5.20
2004-05	4067.35	3105.87	7173.22	876.34	669.18	1545.52	4.65
2009-10	8688.91	1536.41	20225.32	1431.17	253.07	1684.23	6.31
2013-14	12003.68	11288.68	23292.36	1456.33	1369.58	2825.91	3.00
CAGR(%)	15.26	10.52	13.2	8	3.46	5.76	

Source: Demand for Grants (Various Issues), Finance Department Government of Mizoram & Economic Survey (Various Issues), Mizoram

Another interesting area for the researcher is to analyze the budgetary outlay for the health services in the state. As shown in Table-1, the share of health expenditure in the total state budgetary outlay hovers between 2.96 per cent to 6.31 per cent during 1981-2014. This further indicates that the health services were not given a priority by the state government. Moreover, there was a stagnating share over the period, and this can be taken as negligence on the part of the state government. As healthy workers lead to more productivity, it is quite necessary to scale up the budgetary expenditure with the pace of economic development for the improvement of health services in the state.

Determinants of Public Health Expenditures

By considering the most reasonable determining factors such as GSDP, total budget and population, we analyzed the trend and pattern of the health expenditures in the state. Here, the estimates of log-linear regression are adopted to test the level of significance of these factors. By using the same model, it is also analyzing the sensitivity of health expenditures per person we called per capita budgetary expenditure. This is worked out by dividing the total expenditure on health by projected population in Mizoram. The analysis is expected to test our research hypothesis that "public expenditure on health services increases with an increase in GSDP and population". The result is presented in Table 2.

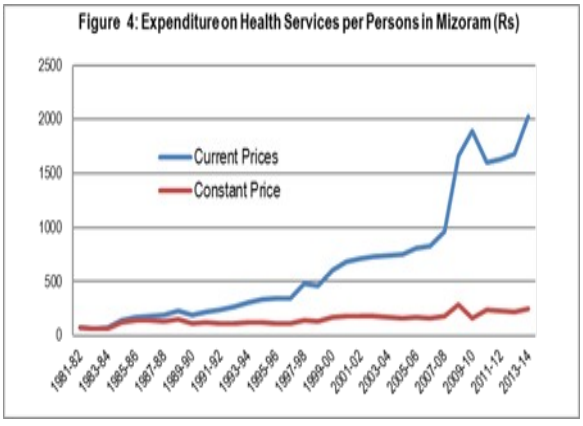


Table 2: Results of Regression of Health Expenditure on GSDP, Budget and Population

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Independent Variables	Constant	Coefficient	R-Square
Total Budgetary Expenditures			
GSDP	-2.06***	0.89***	0.98
Total Budget	-3.87***	1.06***	0.97
Population	-57.94***	4.96***	0.98
Per Capita Budgetary Expenditure			
GSDP	-2.04***	0.71***	0.97
Budget	-3.51***	0.84***	0.96
Population	-46.42***	3.86***	0.97
***significant at 1 percent level			

The values of statistical units in Table-2 shows the significance of all factors under consideration in determining public expenditures, both in terms of total expenditures and per capita expenditures with acceptable R-square. It is noteworthy that the estimated coefficients or elasticities are found to be significant and positive in all cases implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. The result is in conformity with our research hypothesis as stated above. At the same time, the estimated constant terms are negative in all cases which imply zero (or near zero) expenditures in the absence of these factors.

In addition, the magnitude of the estimated coefficients has further interpretation. It is found to be highest for population at 4.96 and 3.86 for total and unit expenditures on health services respectively. Thus, public health expenditure in Mizoram increases with an increase in population by significantly more than proportionately, and it is most sensitive to the change population size. At the same time, total budgetary expenditures with respect to the total state's budget is almost one (1.06) that it will change more or less proportionately with the change in the total budget size. Interestingly, public expenditure on health increase less than proportionately with an increase in the state income (GSDP). The result may have an interpretation on the state's inability to scale up its health expenditures according to the increase in income and resources.

FINDINGS AND CONCLUSION

Based on our analysis, we may draw the following findings and conclusion:

- The study found that both the plan and non-plan expenditures increased over the period. In terms of current prices, the plan expenditure was significantly improved from Rs.181.77 lakhs in 1981-82 to Rs.12003.68 in 2013-14 with CAGR of 15.26 percent while the corresponding non-plan expenditures shows the same trends from Rs.204.08 lakhs to Rs.11288.68 with CAGR of 10.52 percent during the same period.
- In terms of constant prices, both the plan and non-plan expenditures increased with CAGR 8 per cent and 3.46 per cent over the same period. The total heath expenditure in constant prices was calculated with an increase of 5.76 per cent while the corresponding it was 13.2 per cent in term of current prices.
- The share of health expenditure in the total state budgetary outlay hovers between 2.96 per cent to 6.31 per cent during 1981-2014. This further shows that the health services were not given a priority by the state government. Moreover, there was a stagnating share over the period and this can be taken as negligence on the part of the state government. As healthy workers leads to more productivity, it is quite necessary to scale up the budgetary expenditure with the pace of economic development for the health services in the state.
- The estimated coefficients or elasticities are found to be significant and positive with all the

three determining factors implying that the public expenditures on health services will increase with an increase in income, population and total budget size of the state. The result is in conformity with our research hypothesis.

- It also reveals that the estimated constant terms are negative with all the determining factors such as income, population, budget size- which imply zero (or near zero) expenditures in the absence of these factors.
- Public spending on health services is found to be most sensitive with the population growth as 4.96 and 3.86 for total and unit expenditures on health services respectively. So, public health expenditure in Mizoram increases with an increase in population by significantly more than proportionately.
- The total budgetary expenditures with respect to the total state's budget is almost one (1.06) which further explains that that it will change more or less proportionately with the change in the total budget size.
- Public spending on health services increases less than proportionately with an increase in the state income (GSDP). The result may have an interpretation on the state's inability to scale up its health expenditures according to the increase in income and resources.

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