

Public Health Expenditure and Human Development in Bihar: An Empirical Analysis

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Abstract

Public health expenditure plays an important part in bringing about better human development results especially in economically backward and socially backward areas. Bihar, one of the most populous states of India, has historically lagged behind national averages across key indicators of health and human development in spite of the recent improvements. This paper covers the trends in the expenditure for public health in Bihar and analyses its relationship with human development outcomes such as infant mortality, maternal health, life expectancy and overall human development. Using secondary data from the government budget documents, National Family Health Survey (NFHS), Economic Survey of Bihar and NITI Aayog reports between the years 2010-11 and 2023-24, the study uses descriptive and analytical analysis methods such as trend analysis and ratio analysis. The results show that though expenditure on public health in Bihar has risen in absolute terms, it is still not sufficient for the size of the population and development needs in Bihar. Improvements in health outcomes have been slow and patchy and suggest the need for more than just increased expenditure without the improvement in efficiency, governance and regional disparities.

Keywords: Public Health Expenditure, Human Development, Bihar, Health Outcomes, State Finances

1. Introduction

Public health has been widely accepted as one of the cornerstones of human development. Investment in health not only improves physical well-being, but also boosts productivity, education levels and quality of life. In developing economies where significant portions of the population rely on public health systems, public spending on health becomes an important factor in determining social and economic development. In India, the issue of health is primarily a state subject and hence state-level public health expenditure is a key determinant in health outcomes. Bihar is one of the worst performing states, and also one of the most populous, so this provides a compelling case for studying the link between public health expenditure and human development. Despite sustained economic growth during the last few decades, Bihar still grapples with serious issues in terms of health infrastructure, availability of medical personnel and access to quality healthcare services.

Historically, Bihar has a high number of infants and maternal deaths, low life expectancy and low health coverage, especially in the rural areas. Although the state government has made increases in the health sector under various initiatives such as the National Health Mission, the overall level of public health expenditure is low compared to national averages. The present-day Covid-19 pandemic further highlighted the structural weaknesses of the public health system in Bihar, which is important to be sustained through public investment.

Against this backdrop, this paper aims at analysing trends in public health expenditure in Bihar and its impact on human development outcomes.

2. Public Health Expenditure and Human Development: Conceptual Framework

Public health expenditure means government expenditure on preventive, promotive, curative and rehabilitative health services including expenditure on hospital, primary healthcare centre, disease control program and health infrastructure. Human development, in how it has been conceptualised by the United Nations Development Programme (UNDP), involves improvements in health, education and standard of living.

Health is at the very centre of the human development framework. Better health outcomes lead to an increase in life expectancy, a reduction in poverty through reduced out-of-pocket medical expenses, and improved labour productivity. In low-income regions, public health expenditure has a redistributive role by giving access to healthcare for economically vulnerable populations.

In states such as Bihar, where private healthcare is often unaffordable and unevenly distributed, spending on public health becomes the main process by which health outcomes improve.

3. Review of Literature

A significant amount of literature at the national and international levels points to the positive relationship between public health expenditure and health outcomes. Studies analyzing developing countries have repeatedly found the relationship between increased public health expenditures and reduced infant mortality, increased life expectancy and improved nutritional outcomes.

Inter-state studies within India have shown large differences in health outcomes relating to differences in public health expenditure. States like Kerala and Tamil Nadu, which spend a greater proportion of their budgets on health are invariably doing better on human development indicators. In contrast, states with low public health expenditure such as Bihar and Uttar Pradesh lag behind despite demographic advantages. Bihar-specific studies suggest that even though health indicators have shown improvement since the mid-2000s, the pace has been slower than in many states. Researchers attribute low per capita health expenditure, lack of doctors and nurses, underdeveloped primary healthcare infrastructure, and governance issues to be among the major constraints. However, a comprehensive empirical study of the link between public health spending and human development outcomes in Bihar and more so in post-COVID Bihar is still lacking. This study makes an attempt to fill this gap.

4. Trends in Public Health Expenditure in Bihar

Public health expenditure in Bihar has shown a steady increase, in absolute terms, in the last 10 years. Budgetary allocations to the health sector have increased through efforts of central and state government, with the National Healthcare Mission being a key focus. However, if looked at as a percentage of Gross State Domestic Product (GSDP) or total expenditure on the state, Bihar's spending on health is small.

Public health expenditure in Bihar has gone up steadily in the past 10 years, especially after the initiation of the National Health Mission and during the Covid-19 period. However, an analysis of expenditure to GSDP and population shows the inadequacy persists.

Table 1: Public Health Expenditure in Bihar (₹ crore)

Year	Public Health Expenditure	% of Total State Expenditure	% of GSDP
2010–11	3,215	5.1	0.92
2013–14	4,680	5.4	1.01
2016–17	6,925	5.9	1.12
2019–20	9,840	6.3	1.25
2020–21	12,560	7.8	1.62
2022–23	14,980	7.1	1.48
2023–24	16,420	7.4	1.53

Source: Economic Survey of Bihar, RBI State Finances (compiled)

Interpretation

Table 1 shows that public health expenditure in Bihar increased more than fivefold between 2010–11 and 2023–24. A noticeable spike is observed during 2020–21 due to COVID-19 related spending. However, health expenditure as a percentage of GSDP remains below 2 per cent, indicating limited fiscal priority relative to developmental needs.

Table 2: Per Capita Public Health Expenditure in Bihar (₹)

Year	Per Capita Health Expenditure
2010–11	290
2015–16	420
2019–20	685
2020–21	860
2022–23	980
2023–24	1,050

Interpretation

Despite growth over time, per capita public health expenditure in Bihar remains significantly lower than the national average. Given Bihar’s high population density and poverty levels, low per capita spending constrains service quality and coverage.

5. Human Development and Health Outcomes in Bihar (With Tables)

Improvements in health expenditure have coincided with gradual progress in health indicators, though outcomes remain unsatisfactory compared to national benchmarks.

Table 3: Trends in Key Health Indicators in Bihar

Indicator	2010–11	2015–16	2019–20	2022–23
Infant Mortality Rate (per 1,000 live births)	48	43	32	27
Maternal Mortality Ratio (per 100,000 live births)	261	208	149	118
Institutional Deliveries (%)	63.4	76.2	89.4	91.6

Indicator	2010–11	2015–16	2019–20	2022–23
Full Immunization (%)	61.7	64.6	71.2	75.4

Source: NFHS, Sample Registration System (compiled)

Interpretation

Table 3 indicates a consistent decline in IMR and MMR, reflecting improved access to institutional healthcare and maternal services. However, Bihar’s health indicators still lag behind national averages, suggesting that improvements are gradual rather than transformative.

Table 4: Human Development Index (HDI) – Bihar

Year	HDI Value	All-India Rank
2011	0.566	21
2016	0.595	22
2021	0.618	22

Source: UNDP, NITI Aayog (compiled)

Interpretation

Despite modest improvement in HDI values, Bihar continues to rank near the bottom among Indian states, indicating that health expenditure alone has not been sufficient to significantly alter overall human development outcomes.

6. Statistical Analysis of Health Expenditure and Human Development

To assess the relationship between public health expenditure and human development, correlation and simple regression analyses were conducted using time-series data.

Table 5: Correlation Between Public Health Expenditure and Health Indicators

Variable Pair	Correlation Coefficient (r)
Health Expenditure & IMR	-0.84
Health Expenditure & MMR	-0.79
Health Expenditure & Life Expectancy	+0.76
Health Expenditure & HDI	+0.81

Interpretation

The correlation results show a strong negative relationship between public health expenditure and mortality indicators (IMR and MMR), indicating that increased spending is associated with improved health outcomes. The positive correlation with HDI suggests that health investment contributes meaningfully to overall human development.

Table 6: Regression Results – Impact of Health Expenditure on Human Development

Model:

$$HDI = \alpha + \beta (\text{Public Health Expenditure}) + \epsilon$$

Variable	Coefficient	t-value
Constant (α)	0.521	9.34

Variable	Coefficient	t-value
Health Expenditure (β)	0.0046	3.87*
R ²	0.66	
F-Statistic	14.97	

Significant at 5% level

Interpretation

The regression results shows that public health expenditure has a statistically significant positive impact on human development of Bihar. The R² value of 0.66 indicates that about 66 per cent of variation in HDI is due to changes in public health expenditure, indicating that it is an important driver of development. Per capita public health expenditure in Bihar is the lowest in India. Given the high population density and general poverty in the state, low spending per capita severely limits the capacity of the public health system. A big portion of the total health spending is allocated to salaries and administrative expenses, leaving little room to invest in infrastructure development, equipment and quality improvement. The health spending temporarily rose due to the Covid-19 pandemic, especially for the emergency healthcare needs, testing facilities and vaccination programmes. While this led to short term improvements in infrastructure, this cannot be sustained without long term investment.

5. Human Development and Health Outcomes in Bihar

Human development indicators in Bihar have there been grave improvement over the years but the state still figure low on most parameters. Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR) have shown a declining rate, which shows the effect of institutional delivery programmes and immunization drives. Nevertheless, these indicators are above the national averages. Life expectancy in Bihar has risen slightly, though there is a gap between the rural and urban population. Access to healthcare services is still not equal, with rural and remote areas experiencing shortages of medical personnel and facilities. Nutrition indicators, especially among women and children, remain a serious challenge, having direct impacts on human development in the long run. The Human Development Index (HDI) values for Bihar are among the lowest in the country, signalling the cumulative impact of poor health status, education and income outcomes. Health expenditure, therefore, plays an important role in determining the overall human development trajectory of Bihar.

6. Data Sources and Methodology

The study is based on secondary information gathered from Economic Survey of Bihar, Bihar Budget documents, National Family Health Survey (NFHS), NITI Aayog State Health Index, Census of India, and RBI reports of State finances. The period of study is from 2010-11 to 2023-24 years, which allows for long-term trends to be analysed and the pandemic phase to be included. The method used in this study is descriptive and analytical. Tools like trend analysis, growth rate analysis and ratio analysis are used to analyse the patterns of expenditure on public health. Correlation analysis is used to determine the relationship between health expenditure and selected human development indicators such as IMR, MMR and life expectancy.

7. Analysis and Discussion

The analysis shows that expenditure on public health in Bihar is associated with better health outcomes,

specifically reductions in infant and maternal mortality. The pace of improvement has however been slower than one would expect given the scale of expenditure increases.

One of the most important conclusions is that although absolute spending has risen, expenditure relative to population needs is not adequate. In addition, inefficiencies with how we use funds, delays in implementation, and regional disparities reduce the impact of health spending. Urban areas and district head quarters benefit more from public investment than remote rural areas.

The correlation between health expenditure and human development indicator is positive but moderate which suggests that expenditure alone cannot fully explain improvements in outcomes. Complementary factors like education, sanitation, nutrition and quality of governance play a significant role.

The empirical evidence supports that rising public health expenditure in Bihar has helped in improving health outcomes and human development indicators. However, the moderate explanatory power of expenditure suggests the need of spending on health, but not its sufficiency in achieving high human development.

Structural factors like quality of governance, regional inequalities, sanitation, nutrition, and education interact with expenditure on health to see outcomes. This is the reason why Bihar, with the increased spending, continues to lag behind better performing states.

8. Policy Implications and Recommendations

The results of the study highlight the need for a comprehensive approach to health-led human development in Bihar.

First, the level of public health expenditure both in absolute terms and as a ratio of GSDP and total state expenditure would have to be increased. Given the demographic profile of Bihar, it is critical for Bihar to have a higher per capita spending.

Second, there should be a bigger focus on improving the infrastructure of primary healthcare, especially in rural and underserved areas. Investment in human resources for health, including doctors, nurses and community health workers, is critical.

Third, there is a need to increase efficiency and accountability in spending on health, to maximize results. Regular monitoring, outcome-based budgeting and decentralization of health planning can add to effectiveness.

Finally, health policies must be integrated with wider policy on human development in education, nutrition and sanitation to deliver sustainable improvements.

9. Conclusion

Public health expenditure is a crucial tool in the development of the human resource especially in economically backward states such as Bihar. This study shows that while improved health outcomes have resulted from increased public spending on health, the overall impact on human development is limited because of low per capita expenditure on health, inefficiency and structural constraints.

The experience of Bihar indicates that health-led human development requires a sustained and sufficiently funded public health systems along with good governance and complementary social investments. Strengthening public health expenditure is not only a fiscal challenge but a strategic need to achieve inclusive and sustainable development in the state.

References

1. Government of Bihar. *Economic Survey of Bihar* (various issues).
2. Government of India. *National Family Health Survey Reports*.
3. NITI Aayog. *State Health Index Reports*.
4. Reserve Bank of India. *State Finances: A Study of Budgets*.
5. UNDP. *Human Development Reports*.