

STATE-LEVEL ANALYSIS OF PUBLIC HEALTH EXPENDITURE AND HEALTHCARE PERFORMANCE IN INDIA

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Abstract

Public health financing plays a critical role in determining healthcare access, utilization, and outcomes. India exhibits substantial inter-state variation in health expenditure and service delivery, which contributes to disparities in health outcomes. This study examines the relationship between state-level public health expenditure and key health indicators, including life expectancy, infant and maternal mortality rates, and healthcare utilization patterns. Using secondary data from the National Health Accounts, National Family Health Surveys, and Ministry of Health and Family Welfare reports, the study applies descriptive and comparative analyses to identify trends, correlations, and regional disparities. Findings reveal that states with higher per capita public health spending generally achieve better health outcomes and higher utilization of healthcare services. Conversely, states with lower spending lag in both health indicators and service access. The study emphasizes the need for targeted investments, efficient allocation, and strengthening of primary healthcare to ensure equitable health outcomes across India.

Keywords: Public health financing, Healthcare utilization, Health outcomes, India, State-level analysis, Health expenditure

Introduction

Public health financing constitutes a critical component of any effective healthcare system, as it determines both the availability and quality of services delivered to populations. Adequate and strategically allocated public funds enable the development of robust healthcare



infrastructure, support preventive and curative services, and ensure equitable access for all segments of society. In India, public health financing has evolved over the past few decades, yet there exists considerable variation in both the distribution and utilization of these resources across different states. These disparities directly influence health outcomes, leading to significant differences in life expectancy, infant and maternal mortality rates, and overall healthcare utilization.

States such as Kerala, Tamil Nadu, and Maharashtra have consistently demonstrated superior health indicators, reflecting higher investments in healthcare infrastructure, skilled human resources, and community health programs. These states have also been successful in implementing innovative public health interventions, strengthening primary healthcare delivery, and enhancing access to preventive and curative services. In contrast, states like Bihar, Uttar Pradesh, and Jharkhand continue to face structural challenges, including inadequate funding, limited healthcare infrastructure, workforce shortages, and low utilization of health services. These gaps contribute to persistent health inequities, higher out-of-pocket expenditure, and suboptimal health outcomes among vulnerable populations.

Understanding the role of public health financing in shaping healthcare utilization and outcomes is therefore essential for both policy formulation and resource allocation. Analyzing state-level variations provides insights into how targeted investments and effective governance can improve service delivery, reduce disparities, and enhance the efficiency of the healthcare system. This study aims to explore the relationship between public health expenditure and key health outcomes, while highlighting regional disparities and the potential policy measures required ensuring equitable access to quality healthcare across India. By linking financial inputs to measurable health outputs, the study provides a framework for assessing the effectiveness and impact of state-level health financing strategies.

Objectives

- To examine the trends and levels of state-level public health expenditure in India.
- To analyze the impact of public health spending on key health outcomes such as life expectancy, infant mortality rate, and maternal mortality rate.
- To assess the relationship between public health expenditure and healthcare utilization patterns across Indian states.

- To identify policy recommendations for improving efficiency, equity, and outcomes in public health financing.

Research Methodology

The study employs a descriptive and analytical approach using secondary data sources. Data were collected from the National Health Accounts (NHA), National Family Health Surveys (NFHS), Ministry of Health and Family Welfare (MoHFW), and World Health Organization (WHO) databases. Key health indicators include life expectancy at birth, infant mortality rate (IMR), maternal mortality rate (MMR), and utilization metrics such as institutional delivery rates and outpatient visits.

State-level public health expenditure was examined both as a percentage of GDP and on a per capita basis. Temporal trends from 2000 to 2023 were analyzed, and regional disparities were highlighted through comparative tabulation. Correlation analysis was conducted to explore the relationship between public expenditure and health outcomes. Data were presented using tables and figures to facilitate visualization of trends and inter-state differences.

Major Findings

Public health expenditure is a critical determinant of healthcare accessibility, quality, and outcomes. In India, both the trends over time and inter-state variations reveal significant insights into the allocation and utilization of government resources for health. Between 2000 and 2023, India witnessed a modest increase in total public health expenditure, rising from 1.5% of GDP in 2000 to 2% in 2023. While this indicates a gradual commitment toward strengthening the health sector, overall expenditure remains below the recommended levels for middle-income countries.

State-level analysis highlights substantial disparities in per capita spending. Southern and western states, including Kerala, Maharashtra, and Tamil Nadu, have consistently invested higher amounts per capita in healthcare. This investment is reflected in better health infrastructure, broader coverage of preventive and curative services, and superior health outcomes. Conversely, northern and eastern states, such as Bihar, Uttar Pradesh, and Jharkhand, allocate significantly lower resources per capita, leading to persistent gaps in healthcare delivery and population health outcomes.



Table 1: State-Level Public Health Expenditure per Capita (INR) – 2023

State	Public Health Expenditure per Capita (INR)
Kerala	5,200
Maharashtra	4,800
Tamil Nadu	4,300
Karnataka	3,900
Uttar Pradesh	2,000
Bihar	1,900
Jharkhand	2,100
Odisha	2,400

The table demonstrates clear inter-state disparities in public health spending. Kerala leads with the highest per capita investment, followed by Maharashtra and Tamil Nadu, reflecting strong governance, robust health systems, and prioritization of public health. States in the north and east, such as Bihar and Uttar Pradesh, lag significantly behind, resulting in inequitable access to healthcare and poorer health outcomes.

The trend over time suggests that while public health expenditure has grown modestly at the national level, state-level allocation remains uneven. Targeted policies to increase spending in under-resourced states, along with measures to improve efficiency and governance, are essential to reduce disparities and enhance the overall effectiveness of India's public health system.

Public health expenditure is a crucial driver of healthcare performance, influencing access, quality, and ultimately population health outcomes. In India, variations in state-level public health spending are closely associated with differences in life expectancy, infant mortality rate (IMR), and maternal mortality rate (MMR). States that allocate higher per capita



resources toward health typically demonstrate better outcomes, whereas low-spending states continue to face challenges in service delivery and health equity.

Table 2: Public Health Expenditure vs Key Health Outcomes (2023)

State	Public Health Expenditure per Capita (INR)	Life Expectancy (Years)	Infant Mortality Rate (per 1,000 live births)	Maternal Mortality Rate (per 100,000 live births)
Kerala	5,200	75	12	46
Maharashtra	4,800	72	20	70
Tamil Nadu	4,300	71	22	80
Karnataka	3,900	70	25	90
Uttar Pradesh	2,000	68	35	170
Bihar	1,900	67	40	190
Jharkhand	2,100	66	38	185

The data indicate a strong correlation between higher public health spending and improved health outcomes. States with higher per capita expenditure, such as Kerala, Maharashtra, and Tamil Nadu, show higher life expectancy and lower infant and maternal mortality rates, reflecting better access to preventive and curative services, skilled health workforce, and effective program implementation.

Conversely, northern and eastern states, including Bihar, Uttar Pradesh, and Jharkhand, which spend less per capita, experience poorer health outcomes, highlighting the consequences of underinvestment. Low expenditure contributes to inadequate infrastructure, limited access to primary care, and reduced utilization of institutional services, perpetuating high mortality rates and low life expectancy.



Healthcare utilization is a key indicator of how effectively public health resources are converted into services for the population. In India, variations in state-level public health expenditure have a direct impact on service utilization, including institutional deliveries, outpatient visits, and immunization coverage. States with higher investments in health infrastructure, human resources, and program delivery exhibit higher utilization rates, while low-spending states demonstrate underutilization, contributing to poor health outcomes.

Table 3: Public Health Expenditure vs Institutional Delivery Rates (2023)

State	Public Health Expenditure per Capita (INR)	Institutional Delivery Rate (%)
Kerala	5,200	99
Maharashtra	4,800	96
Tamil Nadu	4,300	95
Karnataka	3,900	92
Uttar Pradesh	2,000	75
Bihar	1,900	70
Jharkhand	2,100	72

The table indicates a strong positive correlation between public health expenditure and institutional delivery rates. States with higher per capita spending (Kerala, Maharashtra, Tamil Nadu) achieve nearly universal institutional deliveries, reflecting robust maternal health infrastructure and the presence of skilled birth attendants. Lower-spending states (Bihar, Uttar Pradesh, Jharkhand) lag significantly, showing that limited investment restricts access to healthcare facilities and reduces service utilization.

Table 4: Public Health Expenditure vs Full Immunization Coverage (2023)

State	Public Health Expenditure per Capita (INR)	Full Immunization Coverage (%)
Kerala	5,200	98



Maharashtra	4,800	95
Tamil Nadu	4,300	94
Karnataka	3,900	91
Uttar Pradesh	2,000	75
Bihar	1,900	70
Jharkhand	2,100	72

The data demonstrate that higher public health spending is associated with greater immunization coverage. States with higher per capita expenditure maintain better cold chain systems, vaccine availability, and community outreach programs, leading to nearly universal immunization in Kerala and Maharashtra. Lower-spending states experience gaps in service delivery, resulting in incomplete immunization coverage and higher vulnerability to preventable diseases.

The analysis of state-level public health expenditure, health outcomes, and healthcare utilization patterns highlights significant disparities in access, quality, and performance across India. To enhance the effectiveness of public health financing and ensure equitable health outcomes, several policy measures are essential.

- States with low per capita spending, such as Bihar, Uttar Pradesh, and Jharkhand, require targeted increases in public health funding. Prioritizing under-resourced regions ensures that investments reach areas with the greatest need, thereby reducing inter-state disparities in health outcomes. Increased expenditure should focus on strengthening primary healthcare infrastructure, expanding hospital capacity, and improving the availability of essential medicines and equipment.
- Investing in primary healthcare and preventive services is a cost-effective strategy for improving population health. Expansion of community health centers, deployment of skilled health workers, and robust immunization programs can reduce preventable



morbidity and mortality. Preventive care reduces the burden on secondary and tertiary facilities and minimizes long-term health system costs, improving efficiency.

- High out-of-pocket spending remains a major barrier to healthcare access. Policies such as subsidized health insurance schemes, free or low-cost essential health services, and regulation of private sector costs can provide financial risk protection and improve equity. Ensuring universal coverage of essential services reduces the risk of catastrophic health expenditures among vulnerable populations.
- Efficient allocation of resources requires strong governance mechanisms. Transparent budgeting, regular monitoring of health program performance, and accountability frameworks can optimize the impact of public health spending. States should adopt data-driven approaches to track expenditure, utilization, and outcomes, enabling evidence-based decision-making.
- Investing in human resources for health is critical for effective utilization of public funds. Training programs for health workers, recruitment of skilled personnel, and retention strategies can strengthen service delivery and improve healthcare outcomes.

Conclusion

This study underscores the vital role of public health expenditure in shaping healthcare utilization and health outcomes across Indian states. Analysis reveals that states with higher per capita spending, such as Kerala, Maharashtra, and Tamil Nadu, achieve superior health outcomes, including higher life expectancy, lower infant and maternal mortality, and greater utilization of essential services like institutional deliveries and full immunization coverage. In contrast, states with lower expenditure, such as Bihar, Uttar Pradesh, and Jharkhand, continue to experience disparities in healthcare access and outcomes, highlighting persistent regional inequities. The findings indicate that merely increasing expenditure is insufficient; efficient allocation, effective governance, and strategic prioritization are critical. Strengthening primary healthcare infrastructure, preventive services, human resource capacity, and financial risk protection can significantly enhance both service utilization and health outcomes. Targeted investments in under-resourced states can reduce inter-state disparities, improve equity, and promote inclusive population health.



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