Bala MB, Balamurugan S, Gopal M. An Empirical Assessment of Out-of-Pocket Healthcare Expenditure and Financial Vulnerability in Southern India: A Cross-Sectional Survey Study. *Academic Medicine & Surgery*. Published online October 15, 2025. doi:10.62186/001c.144500

Original Research

An Empirical Assessment of Out-of-Pocket Healthcare Expenditure and Financial Vulnerability in Southern India: A Cross-Sectional Survey Study

M Bharath Bala, master of public health[1], Shalini Balamurugan[2], Muthu Gopal, Ph.D[2]

[1] integrative medical research, Sri Manakula Vinayagar Medical College and Hospital, [2] Sri Manakula Vinayagar Medical College and Hospital, Puducherry

Keywords: out of pocket expenditure

https://doi.org/10.62186/001c.144500

Academic Medicine & Surgery

Background

Out-of-pocket (OOP) expenditure remains the dominant mode of healthcare financing in India, frequently resulting in financial distress among low- and middle-income households. Despite public health insurance programs such as Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY) and state-level schemes like the Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS), large gaps in financial protection persist, especially in rural settings.

Objective

This study aimed to quantify OOP healthcare expenditure in Southern India and assess the role of insurance schemes and awareness of government programs in mitigating financial vulnerability.

Methods

A descriptive cross-sectional survey was conducted in December 2022 among 110 respondents from Tamil Nadu, Kerala, and Puducherry. Data on demographics, income, insurance coverage, healthcare utilization, and OOP spending were collected using a structured questionnaire. Descriptive statistics, t-tests, and correlation analysis were performed using SPSS v26.

Results

Of the 110 participants, 52 provided complete OOP data. The mean annual OOP expenditure was ₹22,856 (maximum ₹2,00,000). Although 55% reported health insurance coverage, significant OOP costs persisted. Urban respondents incurred higher absolute expenditures, while rural households bore a relatively greater financial burden compared to income. A weak negative correlation ($r = -0.14$) between income and OOP spending reflected the regressive nature of healthcare financing. Awareness and utilization of Janani Suraksha Yojana (JSY) were notably low.

Conclusion

OOP spending continues to impose disproportionate financial hardship in Southern India despite the presence of insurance schemes. Policy reforms must expand coverage to outpatient care, enhance rural health infrastructure, and strengthen awareness of government programs to ensure equitable financial protection.

Keywords: Out-of-pocket expenditure, Catastrophic health spending, Financial risk protection, PM-JAY, CMCHIS, JSY, Southern India

INTRODUCTION

In the Indian healthcare system, Out-of-Pocket (OOP) expenditure constitutes the primary method of financing medical care, particularly in the absence of universal health coverage. According to the National Health Accounts Estimates for India (2017–18) published by the Ministry of Health and Family Welfare, OOP spending accounts for approximately 48.2% of the total health expenditure in the country. This high dependence on personal health spending poses a significant risk for financial hardship, especially among households with limited income. When healthcare

costs exceed a certain threshold of household income, they are classified as catastrophic health expenditures—a phenomenon widely documented in both urban and rural India. These costs often lead to medical impoverishment, indebtedness, and avoidance of timely care-seeking, which further exacerbates the burden of disease and deepens socioeconomic inequalities.

Despite multiple government efforts to mitigate these risks through public insurance schemes, India continues to lag behind in achieving equitable and financially protective healthcare access. The launch of the Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PM-JAY) in 2018 was a landmark step toward providing financial protection to approximately 500 million poor and vulnerable Indians by covering up to ₹5 lakh per family per year for secondary and tertiary hospitalization. State-level schemes like the Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) in Tamil Nadu have supplemented this effort by covering hospitalization and select treatments in private and government institutions. However, the actual impact of these schemes remains contested in academic and policy circles.

Qualification Details: PM-JAY (Pradhan Mantri Jan Arogya Yojana) is targeted at poor and vulnerable families identified by the Socio-Economic Caste Census (SECC) data, providing up to ₹5 lakh coverage per family per year for secondary and tertiary care hospitalization. Tamil Nadu Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS) covers families with annual income less than ₹72,000, offering coverage of up to ₹5 lakh for select procedures in empaneled hospitals. Janani Suraksha Yojana (JSY) is a safe motherhood intervention under the National Health Mission, providing conditional cash transfers to promote institutional deliveries among low-income women.

Several studies were suggested that while insurance uptake may have improved, these programs often fall short of providing comprehensive financial risk protection. Key barriers include limited awareness among the eligible population, poor scheme design, lack of portability, low reimbursement rates, and limited coverage for outpatient care, diagnostics, and medications which are among the largest contributors to OOP expenditure. Moreover, the exclusion of indirect costs such as transportation, informal payments, and wage loss further limits the ability of insurance schemes to alleviate financial stress.[1,2]

A regional understanding of this phenomenon is crucial, as healthcare access, awareness of insurance, and public health infrastructure vary significantly across Indian states. Southern India, comprising states such as Tamil Nadu, Kerala, and the Union Territory of Puducherry, is known for relatively better health indicators and infrastructure. However, disparities in income, urban-rural healthcare access, and health literacy continue to affect healthcare utilization and financial outcomes. Studies focusing on this region can provide critical insights into how different socio-demographic and systemic factors interact to shape the burden of OOP healthcare expenditure.

PROBLEM CONSIDERED

Out-of-pocket (OOP) expenditure remains the primary mode of healthcare financing in India, often leading to financial hardship, particularly among low- and middle-income households. Despite public insurance programs such as Ayushman Bharat and state schemes like CMCHIS, significant gaps in financial risk protection persist, especially in rural areas. There is limited regional evidence from Southern India regarding the magnitude, determinants, and disparities of OOP healthcare expenditure.

MATERIALS AND METHODS

STUDY DESIGN AND SETTING

This study employed a descriptive cross-sectional survey design to assess out-of-pocket (OOP) healthcare expenditures and their socioeconomic correlates among individuals residing in Southern India. The survey was conducted during December 2022 and covered respondents from three regions—Tamil Nadu, Kerala, and Puducherry—selected for their varied healthcare infrastructure and demographics. The study focused on both urban and rural populations, enabling comparative analysis of expenditure patterns.

STUDY POPULATION AND SAMPLING

The study population comprised students, working-class adults, and households aged 17–53 years. A total of 110 participants were recruited using non-probability convenience sampling, considering feasibility constraints and accessibility through digital platforms. The sample included both insured and uninsured individuals across different income brackets to ensure variation in responses.

Inclusion criteria were:

- Age ⩾17 years
- Resident of Tamil Nadu, Kerala, or Puducherry
- Voluntary participation and informed consent

Exclusion criteria were:

- Incomplete or duplicate responses
- Participants not residing in the targeted geographical locations

DATA COLLECTION TOOL AND PROCEDURE

A structured questionnaire, adapted from validated health expenditure surveys, was developed for this study and tailored to the local context. It included closed-ended questions across five thematic areas: demographics (age, gender, education, location), socioeconomic status (income, parental occupation, family size), healthcare access and usage (facility type, distance, frequency), insurance coverage (PM-JAY, CMCHIS, private), and health expenditure with scheme awareness (OOP costs, knowledge and use of JSY). Data were collected via Google Forms, exported to Microsoft Excel, and cleaned for inconsistencies. Statistical analysis was performed using IBM SPSS Version 26. Descriptive statistics summarized means, medians, and pro-

Table 1. Annual household income distribution among the respondents

Income Range (INR)	Respondents (%)
Below 50,000	15
50,001–100,000	30
100,001–500,000	35
Over 500,000	20

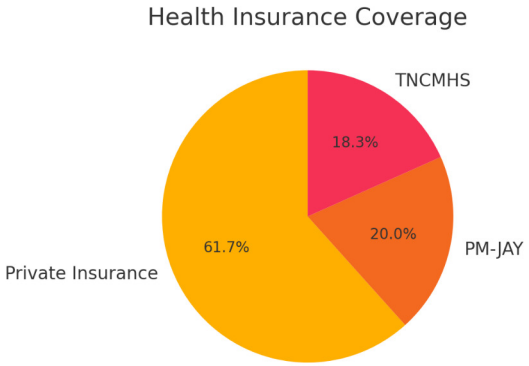

Figure 1. Percentage distribution of health insurance coverage.

PM-JAY = Pradhan Mantri Jan Arogya Yojana; TNCMHS = Tamil Nadu Chief Minister's Health Scheme; Private Insurance = Employer-based or individual insurance plans.

portions. T-tests compared rural and urban OOP expenditures, and Pearson's correlation assessed the relationship between income and spending. Visual representations included bar charts, pie charts, and box plots. A p-value of <0.05 was considered statistically significant. Internal consistency was ensured through pilot testing with 15 participants.

ETHICAL CONSIDERATIONS

This study followed ethical principles outlined in the Declaration of Helsinki. Participation was entirely voluntary, and all respondents provided informed consent digitally. Personal identifiers were not collected to maintain confidentiality. The study was conducted as part of an academic research initiative and was exempt from formal institutional ethical review.

RESULT

A total of 110 respondents participated in the study, with 52 providing complete data on out-of-pocket (OOP) healthcare expenditure. The mean age was 21.4 years (range: 17–53; SD: 6.1), and the gender distribution was 65% female and 35% male. The average household size was 4.6 members (range: 3–18; SD: 2.1).

The distribution of health insurance coverage among the study population reveals that a majority of individuals

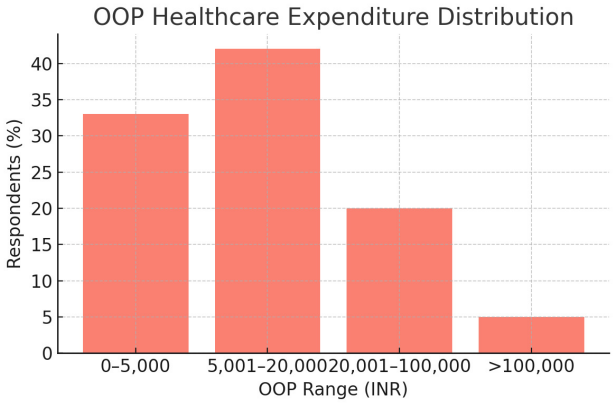

Figure 2. OOP Healthcare Expenditure Distribution

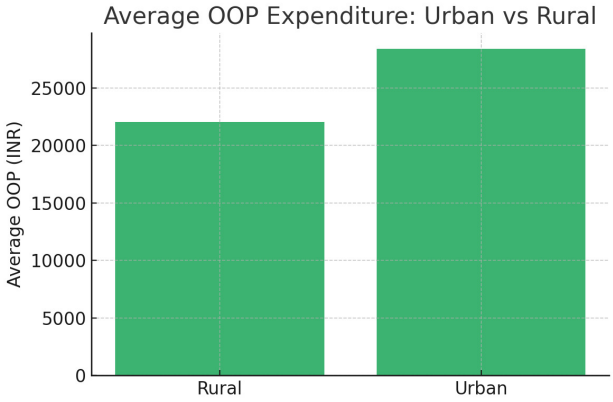

Figure 3. Comparison between urban and rural average OOP expenditures

(61.7%) were covered under private insurance schemes. This was followed by 20.0% of the participants who were beneficiaries of the Pradhan Mantri Jan Arogya Yojana (PM-JAY), a government-sponsored health insurance program. Additionally, 18.3% of the respondents were enrolled under the Tamil Nadu Chief Minister's Health Scheme (TNCMHS). The data highlights a higher reliance on private insurance compared to government-funded schemes among the surveyed population.

The distribution of out-of-pocket (OOP) healthcare expenditure among respondents indicates that the majority incurred moderate healthcare costs. Specifically, 42% of individuals reported spending between ₹5,001 and ₹20,000, while 33% had relatively low expenditures of ₹0–5,000. Around 20% of the respondents spent between ₹20,001 and ₹100,000, and a smaller proportion (5%) reported high OOP expenses exceeding ₹100,000. This pattern reflects a concentration of healthcare spending within the lower to mid-range expenditure brackets, with a decreasing proportion of individuals incurring higher costs.

The average OOP expenditure in urban settings is approximately 28,000 INR, while in rural areas it is around 22,000 INR. This disparity may be attributed to higher healthcare costs in urban areas, greater reliance on private

medical facilities, and more frequent utilization of health services. The data highlights the financial burden of healthcare on urban populations and underscores the need for policies that address affordability and equitable access across different regions.

DISCUSSION

This study reveals critical insights into the financial burden of healthcare on households in Southern India, highlighting the continuing dominance of Out-of-Pocket (OOP) payments despite the existence of public and private health insurance schemes. The analysis indicates a wide disparity in healthcare costs, a regressive burden on low-income families, and an alarming lack of awareness of government welfare schemes, especially among rural populations. One of the central findings was that the mean OOP expenditure per household was ₹22,856, with a wide range extending up to ₹2,00,000. Although insurance coverage was reported by a significant number of respondents (55%), many still incurred substantial OOP costs. This is consistent with previous literature indicating that Indian insurance schemes often cover inpatient care but exclude a wide range of outpatient services, diagnostics, transportation, and medication costs—elements that make up the bulk of everyday healthcare expenses. Publicly funded health insurance in India provides only partial financial risk protection, and OOP remains high even among beneficiaries.[1] The weak negative correlation (r = -0.14) between household income and OOP expenditure further reinforces the regressive nature of healthcare financing. In theory, higher-income households should be better shielded against health expenses. However, in practice, healthcare expenditure is less influenced by income and more by accessibility, awareness, and coverage adequacy. This trend is particularly concerning as it reflects describes as a situation where the poorest not only pay more relative to their income but are also more likely to experience catastrophic health expenditure.

Moreover, rural households, despite having lower average income levels, reported average OOP expenditures nearly comparable to urban counterparts. This could be attributed to several factors, including limited access to government facilities, dependence on private care, longer travel distances, and associated costs. Similar disparities have been documented,[3] who noted that geographic and systemic barriers contribute significantly to increased OOP spending in rural areas. Another concerning finding was the low level of awareness and utilization of the Janani Suraksha Yojana (JSY) and other government health schemes.[2] Only a minority of respondents reported having heard of or used JSY benefits. Poor implementation, communication gaps, and bureaucratic hurdles are likely contributing to this underutilization. Observed similar barriers in rural India, where eligible women either lacked information about the scheme or faced procedural obstacles in accessing the benefits.[4] These findings suggest that despite large-scale health financing reforms, the Indian healthcare system continues to operate in a fragmented manner. Insurance schemes are not adequately integrated into primary and outpatient care, and financial risk protection remains elusive for the most vulnerable sections of society. Furthermore, the absence of a centralized, well-communicated database for scheme eligibility and coverage details exacerbates confusion and limits uptake. In light of these insights, there is an urgent need for targeted reforms. Expanding the scope of insurance to include outpatient and diagnostic services, ensuring cashless treatment mechanisms, and establishing transparent reimbursement systems can significantly reduce the financial stress of healthcare. Additionally, community-based health education, led by Accredited Social Health Activists (ASHAs) and local health workers, should be leveraged to raise awareness of available government programs.

CONCLUSION

This study highlights the persistent and disproportionate burden of out-of-pocket (OOP) healthcare expenditure among households in Southern India, particularly affecting low-income and rural populations. Despite the existence of various public and private health insurance schemes, financial risk protection remains inadequate. The findings reveal that even insured individuals continue to incur significant OOP expenses due to exclusions in coverage, limited access to affordable public facilities, and poor awareness of government-supported programs such as the Janani Suraksha Yojana (JSY). The weak correlation between income and OOP spending indicates that financial vulnerability in healthcare is not necessarily mitigated by higher earnings, underscoring the regressive nature of the current healthcare financing system. Moreover, rural residents bear a disproportionately high cost burden relative to their income, emphasizing the geographic inequities in healthcare access and financial protection. To address these issues, policy interventions must prioritize the expansion of insurance benefits to include outpatient care, diagnostics, and transport costs. Additionally, effective and targeted awareness campaigns, along with investments in rural health infrastructure and the implementation of income-based caps on household healthcare spending, are critical steps toward achieving equitable and sustainable health financing.

Submitted: August 22, 2025 EDT. Accepted: September 17, 2025 EDT. Published: October 15, 2025 EDT.

REFERENCES

1. Prinja S, Bahuguna P, Tripathy JP, Kumar R. Financial risk protection under publicly funded health insurance in India. *BMJ Glob Health*. 2015;1(1):e000005.

2. Ghosh S. Catastrophic payments and impoverishment due to out-of-pocket health spending. *Econ Polit Wkly*. 2011;46(47):63-70.

3. Raban MZ, Dandona R, Dandona L. Variations in catastrophic health expenditure estimates from household surveys in India. *Bull World Health Organ*. 2013;91(10):726-735. doi:10.2471/BLT.12.113100. PMID:24115796

4. Kumar S. Low awareness of Janani Suraksha Yojana in rural India: Evidence from a community-based study. *Indian J Public Health*. 2015;59(2):153.