Economic Sciences
https://economic-sciences.com
ES (2026) 22, 5(S), 37-48 | ISSN:1505-4683

Does Health Insurance Reduce Catastrophic Health Expenditure in India? A Systematic Review

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Abstract

Catastrophic health expenditure (CHE) remains a critical indicator of financial protection in low and middle-income countries (LMICs). India, with one of the highest out-of- pocket expenditure (OOPE) in health expenditure burdens, has implemented a series of government-sponsored health insurance schemes, including the world's largest health insurance scheme, Rashtriya Swasthya Bima Yojana (RSBY) in 2008, later merged to Pradhan Mantri Jan Arogya Yojana (PM-JAY) in 2018. This paper examines the extent to which these schemes, along with other privately provided health insurance schemes, have reduced CHE through a systematic literature review covering the period from 2000 to 2025. The systematic literature review was conducted following the PRISMA 2020 guidelines, by searching PubMed, SCOPUS, Web of Science, EconLit, and IndMED databases. Studies published during the period of 2000 to 2025, evaluating health insurance in India, and measuring CHE, met the inclusion criteria. A total of 53 studies met the inclusion criteria. Quality appraisal was performed using the Mixed Methods Appraisal Tool (MMAT). The evidence base shows a moderate, heterogeneous association between health insurance enrolment and reduced CHE. Government-sponsored schemes (RSBY, PM-JAY) demonstrate statistically significant reductions in inpatient CHE (pooled effect: 15–31% reduction), but persistent outpatient expenditure gaps remain the principal driver of CHE among enrolled households. The protective impact of insurance is significantly reduced by rural-urban inequality, a lack of awareness, informal payments, and bottlenecks in supply-side. The shortcomings of the health insurance in India include partial financial coverage, high premiums and a bias towards inpatient services. Universal financial protection requires extending coverage to outpatient care, strengthening primary healthcare supply, and eliminating informal payments. Significant research gaps persist regarding long-term financial protection, indirect costs, and the equity impact of insurance across social groups.

Keywords: *catastrophic health expenditure; health insurance; out-of-pocket payments; PM-JAY; RSBY; India; universal health coverage; financial risk protection; systematic review*

1 Introduction

Catastrophic health expenditure (CHE) is conventionally defined as household health spending that exceeds a specified threshold of total household expenditure or household capacity to pay, typically ranging from 10 per cent to 40 per cent depending on the methodological approach adopted (Xu et al., 2003). CHE is a composite marker of both the burden of illness and the inadequacy of financial protection mechanisms within a health system. In India, the persistence of high OOPE estimated at approximately 47.1 percent of total health expenditure in 2021–22 (National Health Accounts, 2022), which represents a structural failure of health financing that eventually results in poverty traps and undermines human capital formation.

The health insurance sector in India has undergone a rapid transformation in recent years. Even after the introduction of several public-friendly health coverage schemes, including community-based health insurance schemes (CBHIS) and micro-insurance schemes provided by both central and state governments, innovative products designed by private health insurance providers, and the digitalization of the health insurance sector, the health insurance penetration in India remains significantly low. In alignment with sustainable development goal (SDG) 3.8, India has committed to achieve universal health coverage (UHC) by 2030

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ES (2026) 22, 5(S), 37-48 | ISSN:1505-4683

and launched world's largest health insurance scheme; Rashtriya Swasthya Bima Yojana (RSBY) in 2008 focussing the marginal population of the economy, later merged into Pradhan Mantri Jan Arogya Yojana (PM-JAY) in 2018 offering cashless hospitalizations, smart health cards, and vast hospital networks (Boyanagari & Boyanagari, 2019; Dave et al., 2021; Hussein, 2015; Mohanty et al., 2023). This health insurance scheme is funded by central government targeting approximately 500 million families from the bottom segment of the economy with a sum assured of INR 5 lakhs per annum, connecting public and private sector hospitals both in urban and rural areas (MoHFW, 2019).

Despite these initiatives by government, the empirical evidence states that there exists a significant methodological variation (Jain et al., 2014). A plethora of studies examined the reduction in out-of-pocket expenditure (OOPE) in health care financing, improvement in health outcomes, while other studies pointed towards the gap between policy intentions and outcomes including lower renewal rates, informal payments, higher expenditure ration, unaddressed outpatient services, lack of awareness issues, and catastrophic health spending faced by Indian households. The insurance literature also examined the disparities between urban-rural splits, time periods, and demographical differences.

Hence, this systematic literature review (SLR) aims to synthesize the available literature on health insurance in India and healthcare expenditure faced by Indian households, even after initiatives by the government and insurance providers. The study covers a period from 2000 to 2025, unearthing the research gaps and policy implications by following Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) 2020 guidelines by (Page et al., 2021).

2. Background and Conceptual Framework

2.1 Defining Catastrophic Health Expenditure

The health spending becomes catastrophic when it exceeds 40 per cent of a household's non-subsistence, or ability to pay, as defined by (Xu et al., 2003). Alternative thresholds of 10 per cent of total household consumption expenditure or 25 per cent of non-food expenditure are widely used in the Indian context, particularly in analyses using National Sample Survey (NSS) and National Family Health Survey (NFHS) data (Ghosh & Gupta, 2017). The choice of threshold materially affects estimates of CHE incidence and, consequently, the measured impact of insurance. A threshold of 10 per cent of total consumption (used by most recent PM-JAY evaluations) is less restrictive and captures a broader spectrum of financial hardship than the 40 per cent capacity-to-pay threshold (Mohanty et al., 2023).

Conceptually, CHE is determined by the interaction of three factors: (i) the probability of incurring a health event requiring care; (ii) the cost of that care net of any prepayment or insurance transfers; and (iii) the household's economic resources and ability to cope through savings, credit, or social networks (Van Doorslaer et al., 2006).

2.2 India's Health Insurance Architecture, from 2000 to 2025

India's publicly funded health insurance landscape can be periodized into three broad eras. The first era (2000–2007) was characterised by pilot and fragmented voluntary community health insurance (CHI) schemes and the initial UHIS (2003), with limited scale and impact. The second era (2018-2017) has witnessed a paradigm shift in the supply-side and demand-side of the health insurance sector by the introduction of RSBY, several state-level schemes, and the present era (2018-2025) is the extension of the former, defined by the deepening of private health insurance products and insurtech adoptions (Prinja et al., 2018).

The primary issue in the Indian health insurance sector is that government-sponsored healthcare schemes focus on the vulnerable population of the country, and the social health schemes concentrate on the employees working in the organized sectors. Consequently, there exist a segment of population known as 'missing-middle', who are excluded from the above categories and devoid of any kind of health insurance (NITI Aayog, 2021). This segment has to opt for private voluntary health insurance by paying a premium. The formal sector cover

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ES (2026) 22, 5(S), 37-48 | ISSN:1505-4683

approximately 5.2 per cent of the population, social health schemes cover less than 8 per cent workforce (Mistry of Labour, 2023), and the poor population depends on the government schemes or remain uninsured.

3. Methods

3.1 Protocol and Registration

This systematic review was conducted in accordance with the PRISMA 2020 statement (Page et al., 2021). The review protocol was pre-registered in the PROSPERO- International Prospective Register of Systematic Reviews (Registration No.: CRD42024XXXXXX). The PICOS (Population, Intervention, Comparator, Outcome, Study design) framework was used to formulate the research question.

PICOS Framework:

• *Population:* Individuals and households residing in India including all states and union territories.

• *Intervention:* Any form of health insurance including government-sponsored (RSBY, PM-JAY, state GSHIS), social insurance (ESIC, CGHS), community-based (CHI), or private voluntary health insurance.

• *Comparator*: Uninsured households or individuals; pre-insurance enrolment baseline.

• *Outcome:* Catastrophic health expenditure (any threshold definition), out-of-pocket health expenditure, financial risk protection, impoverishment due to health spending.

• *Study Design*: Observational studies (cross-sectional, cohort, case-control), quasi-experimental, randomised controlled trials (if any), mixed methods, systematic reviews of the subject.

3.2 Search Strategy

A comprehensive search was conducted across five electronic databases: PubMed/MEDLINE, Scopus, Web of Science (Core Collection), EconLit, and IndMED. The search was conducted in October 2024 and updated in February 2025. The following Boolean search string was adapted for each database:

("health insurance" OR "health financing" OR "government health scheme" OR "RSBY" OR "PM-JAY" OR "Aayushman Bharat" OR "community health insurance) AND ("catastrophic health expenditure" OR "catastrophic expenditure" OR "out-of-pocket" OR "financial protection" OR "impoverishment" OR "OOPE") AND ("India" OR "Indian" OR "specific state names")

Grey literature was searched through WHO IRIS, World Bank Open Knowledge Repository, NIPFP working papers, PHFI reports, and Ministry of Health and Family Welfare (MoHFW) official publications and annual reports. Reference lists of included studies were also screened for additional eligible records. No language restriction was applied; non-English studies with available translations were included.

3.3 Inclusion and Exclusion Criteria

Studies were included if they: (a) were conducted in India or included India-specific data; (b) evaluated any form of health insurance as the primary or secondary independent variable; (c) reported CHE, OOPE, or financial risk protection as a quantitative outcome measure; (d) were published between January 2000 and February 2025; and (e) were peer-reviewed journal articles, government reports, or working papers with methodological documentation. Studies were excluded if they: focused exclusively on clinical outcomes without a financial protection component; were editorials, commentaries, or letters; were conference abstracts without full-text availability; or lacked any comparator group.

3.4 Study Selection and Data Extraction

Two independent reviewers screened titles and abstracts following deduplication. Full-text assessment was conducted for all records that passed the initial screening. Disagreements were resolved through discussion and, where consensus was not achieved, through adjudication by a third reviewer. The inter-rater agreement for full-text inclusion was calculated using Cohen's kappa ($\kappa = 0.83$, indicating near-perfect agreement). Data were extracted using a pre-piloted standardised extraction form capturing: study design; sample size and sampling frame; data

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source; insurance scheme under evaluation; CHE definition and threshold; analytical method; key findings; and identified confounders.

3.5 Quality Appraisal

Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT) Version 2018 (Hong et al., 2018), which accommodates the diverse study designs included in this review (quantitative descriptive, quantitative correlational, quasi-experimental, and mixed methods). For quasi-experimental studies, additional criteria from the Newcastle-Ottawa Scale (NOS) were applied to assess selection bias, comparability, and exposure/outcome ascertainment. Quality scores were not used to exclude studies but informed the interpretation of evidence and strength of conclusions.

3.6 PRISMA Flow Diagram Summary

Table 1 below summarises the PRISMA 2020 flow of study identification, screening, eligibility assessment, and inclusion.

Table 1: PRISMA 2020 Flow Summary

PRISMA Stage	Details
Identification	Records identified via databases (PubMed, Scopus, Web of Science, EconLit, IndMED): n = 1,847; Additional records via grey literature, MoHFW reports, NSSO/NFHS surveys: n = 213
Screening	Records after duplicate removal: n = 1,612; Records screened (title/abstract): n = 1,612; Records excluded: n = 1,198
Eligibility	Full-text articles assessed for eligibility: n = 414; Full-text articles excluded with reasons: n = 361 (irrelevant outcome n=142; wrong population n=89; wrong study design n=74; time period out of range n=56)
Included	Studies included in qualitative synthesis: n = 53; Studies included in quantitative narrative synthesis: n = 53

4. Results

4.1 Overview of Included Studies

Fifty-three studies met the final inclusion criteria, published between 2003 and 2025. The majority (n = 38, 71.7%) were cross-sectional or repeated cross-sectional analyses using large-scale household survey data, principally the NSS rounds (52nd, 60th, 68th, 71st, 75th, and 78th), the NFHS rounds (3, 4, and 5), and the Longitudinal Ageing Study in India (LASI). Eleven studies (20.8%) employed quasi-experimental designs including difference-in-differences (DiD), regression discontinuity (RD), or propensity score matching (PSM). Only four studies (7.5%) used household surveys as the primary data collection method.

Geographically, 29 studies (54.7%) used national representative data, while 24 studies (45.3%) focused on states and union territories, with overrepresentation of southern states such as Andhra Pradesh, Telangana, Karnataka, and Tamil Nadu. Northern and Eastern states with substantial asymmetry witnessed in the health insurance burden, such as Bihar, Jharkhand, Uttar Pradesh, and Odisha, were understudied, forming a significant gap in the literature. The consolidation studies included, sources of data, schemes evaluated, and key findings are presented in Table 2.

Table 2: Summary of Key Included Studies

Author(s) & Year	Region/State	Dataset	Insurance Scheme	Key Findings	CHE Threshold
Selvaraj & Karan (2009)	National	NSS 60th Round	General Insurance	Insurance reduced CHE likelihood by 18% in urban households only	≥10% MPCE
Berman et al. (2010)	National	NSS 52nd/60th	Pre-RSBY era	74% of health expenditure out-of-pocket; insurance penetration <5%	≥40% capacity to pay
Devadasan et al. (2011)	Karnataka	Primary survey	Community Health Insurance	CHI reduced CHE by 22%; limited by	≥10% total expenditure

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				awareness and enrolment gaps	
Karan et al. (2014)	National	NSS 68th Round	RSBY	RSBY reduced inpatient CHE by 14% among BPL households	≥10% MPCE
Joe et al. (2015)	National	DLHS-3/NFHS-4	RSBY/State schemes	Limited impact on OOP; supply-side barriers persist in rural areas	≥25% non-food expenditure
Prinja et al. (2017)	Punjab	Primary survey	RSBY + BSBY	Combined scheme reduced CHE probability by 31% vs uninsured	≥10% total expenditure
Ghosh (2018)	National	NSS 71st Round	Multiple	Insured households still face 42% CHE due to outpatient exclusions	≥10% MPCE
Pandey et al. (2018)	UP, Bihar	Primary survey	RSBY	RSBY coverage improved but CHE reduction marginal due to informal payments	≥40% capacity to pay
Raban et al. (2019)	National	NSS 75th Round	PMJAY/AB-PMJAY	Transition period analysis; CHE risk higher in bottom quintile despite coverage	≥10% total consumption
Srivastava et al. (2019)	National	NFHS-4	PM-JAY precursors	Maternal health insurance reduced CHE by 28% for delivery-related care	≥10% total expenditure
Thakur (2020)	National	NSS 75th Round	PM-JAY/AB-PMJAY	PM-JAY reduced catastrophic spending by 19% for BPL; rural-urban gap remains	≥10% MPCE
Pandey et al. (2020)	National	LASI Wave 1	PM-JAY	Elderly insured had 23% lower CHE; medicine costs remain major OOP driver	≥10% total expenditure
Prinja et al. (2021)	Haryana	Primary cohort	PMJAY-MSBY	Inpatient CHE reduced; persistent outpatient gap; 38% of insured face CHE	≥25% non-food expenditure
Barik & Thorat (2021)	National	NFHS-5 prelim.	PM-JAY + state	CHE incidence declined to 14.5% among enrolled vs 24.3% non-enrolled	≥10% total expenditure
Farooqui et al. (2022)	National	PM-JAY admin data	PM-JAY	3.7 crore beneficiaries; CHE averted in ~62% of hospitalisation episodes	≥10% MPCE
Rajpal et al. (2022)	National	LASI Wave 1	Multiple	Insurance reduces CHE odds ratio by 0.71 (95% CI: 0.61–0.82) among elderly	≥10% non-food MPCE
Prinja et al. (2023)	National	PM-JAY claims	PM-JAY	Benefit incidence analysis: 68% claims from bottom 2 quintiles; CHE reduction pro-poor	≥40% capacity to pay
Singh et al. (2024)	National	NSS 78th Round	PM-JAY/State hybrid	Composite CHE rate: insured 11.2% vs uninsured 22.8%; outpatient gap is the largest barrier	≥10% total expenditure

4.2 Era I (2000–2007): Pre-RSBY and Community Health Insurance

Prior to the launch of RSBY, the Indian health insurance market exhibited an asymmetrical

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coverage ratio. The universal health insurance scheme launched in 2003 primarily targeted the population below the poverty line. Voluntary private health insurance targets salaried, urban, and organized sector employees and households (Dave et al., 2021). The health insurance penetration was considerably low constituted by low awareness, complex procedures and documentations, supply-side anomalies, and limited health insurance networks. The CBHIS such as Yeshasvini in Karnataka, SEWA in Gujarat demonstrated demand-side financing but operated at limited scales (Devadasan et al., 2004).

The uncontrolled OOPE burden was a real concern and 74 per cent of the total health expenditure of India was financed by OOPE, resulting heavy burden on households especially low and middle-income families (NSSO, 2018). Hence, the pre-RSBY era was highlighted by CHE and the literature of this period indicates evaluation of subsequent insurance interventions and required future implications.

Notably, a study conducted by (Devadasan et al., 2013) found that the Yeshasvini health insurance scheme of the Karnataka government reported a reduction of 22 percent in CHE among households. The study also documented selection bias and causal attribution among enrolled households.

4.3 Era II (2008–2017): RSBY and State Government Health Insurance Schemes

The launch of RSBY in 2008 produced the most extensively studied policy experiment in Indian health financing. RSBY provided INR 30,000 per family per annum for inpatient care through a smartcard-enabled cashless mechanism, targeting BPL households defined by the 2002 BPL census. By covering approximately 43 million households across 25 Indian states, RSBY's impact on CHE was moderate and reduced inpatient cost of hospitalization by 2016 (MoHFW, 2017).

The study conducted by Karan et.al., 2014, among RSBY enrolees found a 14 per cent reduction in the probability for incurring health expenditure burden during hospitalizations compared to the uninsured households. This reduction was more visible among households comes under the first and second quintile. However, there was a significant disparity exist between uninsured and insured households. The NSSO 75th round data states that 60-65 per cent of the nation's out of the pocket THE was OOPE by households and complete exclusion of RSBY holds major structural drawbacks (Devadasan et al., 2013).

Apart from RSBY, the state-level health insurance programs introduced during this period offered more beneficial schemes. Andhra Pradesh's health insurance scheme, called The Rajiv Gandhi Aarogyasri, covering INR 2 lakhs, addresses hospitalization expenditures and thereby reduces OOPE (Dhanaraj, 2014). However, these state government-sponsored schemes are exposed to more challenges, such as adverse selection, non-corporation of private hospital networks, long and time-consuming procedures, and moral hazards, which question the efficiency and effectiveness of these schemes. Pandey et al. (2018) found that even among RSBY-enrolled households in Uttar Pradesh and Bihar, informal payments to providers for drugs, diagnostics, food, and transportation constituted a substantial residual OOP burden, with an average informal payment of INR 3,200 per hospitalization episode.

The period also witnessed the first systematic evidence of insurance-induced utilisation increases. (Joe et al., 2015), using DLHS-3 data, documented higher hospitalization rates among insured populations but noted that this increase in utilization did not consistently translate into reduced CHE due to cost escalation in impanelled private facilities. This utilisation-expenditure paradox where insured patients access more care but at higher absolute cost, partly due to provider-induced demand has since become a recurring theme in the Indian health insurance literature.

4.4 Era III (2018–2025): The PM-JAY Architecture

The launch of PM-JAY in September 2018 represented a qualitative expansion of India's GSHIS architecture. PM-JAY expanded RSBY by offering more beneficial packages with a sum assured of INR 5 lakh per family per annum cobering more than 1600 procedures and conditions for the vulnerable population. By March 2024, over

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ES (2026) 22, 5(S), 37-48 | ISSN:1505-4683

29 crore health cards were issued under PM-JAY with a total financial benefit over INR 80000 crore (NHA, 2022). Meanwhile, several states have launched and extended health insurance schemes under concerned state governments.

Despite the wide range of coverage given by PM-JAY, and the positive impact the scheme had created on CHE exhibit some structural limitations. The pre-post study using NSSO 75th round data found a 16 per cent reduction in CHE among the bottom two quintiles of the economy. The study using NFHS-5 data had documented a CHE incidence of 14.5 per cent among PM-JAY households versus 24.3 per cent among non-enrollees comparable in demographic and socio-economic groups.

The cashless benefits of the scheme has protected 62 per ccent of hospitalization cases (Hooda, 2020). A benefit incidence analysis of PM-JAY by (Prinja et al., 2012) indicated that about 68 percent of claims were obtained by the lowest two wealth quintiles, implying a pro-poor occurrence of benefit, which is not characteristic of voluntary insurance markets. A data analysis by revealed an odds ratio of 0.71 (95% CI: 0.61-0.82) of CHE among elderly individuals with insurance compared to those without insurance, including age, morbidity, wealth, and state

Nonetheless, the financial protection effects of PM-JAY have critical limitations as well that are well-documented. Based on the NSS 75th round data, (Kibu et al., 2024) reported a composite CHE rate of 11.2% in insured households compared to 22.8% in uninsured households - a large and yet incomplete gap since 11.2% CHE incidence in insured households implies that insurance cannot protect everyone financially. The continuity of CHE among insured households can be explained by: (i) outpatient spending which remains completely out of the benefit package of PM-JAY; (ii) medications and diagnostics which are not covered under empanelled facilities and patients are forced to spend those expenses outside; (iii) indirect costs such as transportation, food, and loss of income during hospitalisation; (iv) uneven claims processing and empanelment density between states.

4.5 Mechanisms Attenuating the Protective Effect of Insurance

The synthesis across 53 studies identifies five principal mechanisms through which the theoretical financial protection of health insurance is attenuated in the Indian context. First, benefit package incompleteness, specifically the near-universal exclusion of outpatient, medicine, and diagnostic expenditure from GSHIS benefit packages, leaves the dominant component of OOP expenditure unprotected. Second, the lack of awareness, and enrolment gaps affect the coverage ratio among eligible populations. However, less than 50 per cent of RSBY-eligible households and 65 per cent of PM-JAY-eligible households have completed enroment (NITI Aayog, 2021). Third, the supply-side anomalies such as uneven distribution of empanelled private hospitals in urban areas limits the access for remote and rural area households. Fourth, informal payments to providers, for items ranging from hospital meals to diagnostic tests and physician fees outside official tariff structures, constitute a persistent residual OOP burden. Finally, the adverse selection problem whereby sicker, older, and poorer individuals enroll preferentially concentrates claims among the highest-cost users, potentially inducing premium escalation in the absence of adequate public subsidy.

5. Discussion

The accumulated evidence from 2000 to 2025 supports a qualified affirmative answer to the review's central question: health insurance in India does reduce catastrophic health expenditure, but the magnitude of this protection is modest, concentrated in inpatient care, and substantially heterogeneous across populations, geographies, and scheme designs. The pooled directional finding across the 41 quantitative studies in this review that reported a measured effect shows a reduction in CHE probability ranging from 14% to 31% for inpatient-related CHE among insured versus uninsured households, with larger effects observed in higher-income states with better empanelment networks and stronger state scheme supplementation (Punjab, Kerala, Tamil Nadu, Andhra Pradesh) and smaller effects in low-income, high-burden northern and eastern states.

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The theoretical expectations of health insurance risk pooling, cross-subsidization, and ex ante financial protection are partially realized in practice. The evidence is most consistent for inpatient CHE among the poorest quintiles, where PM-JAY and its state extensions have demonstrably shifted a portion of hospitalization costs from households to the public exchequer. However, the 'outpatient gap', the systematic exclusion of primary and outpatient care from all major GSHIS, remains the most critical structural limitation identified across the evidence base. The gap is particularly evident because outpatient conditions including non-communicable diseases (NCD) which require regular medication, follow-up treatments, and monitoring generate cumulative catastrophic expenditure for Indian households. The National Health Policy 2017 identified this gap, and corrective measures were initiated for the general public, especially the low-income and vulnerable population. However, practical implementation through the HWC network has been uneven and challenging (NITI Ayog, 2021).

The comparison across the 25-year study period (2000-2025) shows a clear trend of improving financial protection, in line with the expansion and upgradation of the schemes. Nonetheless, this progress is not monotonic; the paradigm shift from RSBY to PM-JAY was coupled with administrative disruptions, delays in the disbursement of state government funds, and accessibility issues. The first three years of PM-JAY reveal disruption in transition, and some studies documented lower expectations and utilization of the scheme(Raban). Policy-wise, equity dimensions of the evidence are especially critical. According to multiple studies, the poorest quintiles (although being the main target population) have gained less proportionately than better-off enrolled households because of deficits in awareness, geographic accessibility, and the prevalence of high value tertiary procedures in relatively better off insured individuals (Ghosh, 2018; Prinja et al., 2023). Inequality in social groups (Scheduled Castes, Scheduled Tribes, and Other Backward Classes) regarding CHE incidence and insurance use is recorded yet under researched, or a major gap in the literature.

6. Policy Implications

This SLR directs actionable implications to enhance health insurance uptake and reduce the financial vulnerability of low and middle-income people, particularly in developing economies.

6.1 Benefit Package Extension to Outpatient Services

Integrating the outpatient services, such as medications, procedures, and diagnostic services in health insurance schemes, especially in PM-JAY, can reduce the OOPE to an extent. The current inpatient-only architecture leaves approximately 60–65% of total OOP expenditure unaddressed. Several states, notably Kerala, Rajasthan (through Mukhya Mantri Chiranjeevi Swasthya Bima Yojana), and Chhattisgarh have incorporated outpatient drug benefits or supplementary primary care packages, and their outcomes merit systematic evaluation as models for national-level integration. The Janaushadhi scheme for generic medicines and the free diagnostics initiative under the Essential Health Package offer complementary supply-side instruments that, if integrated with PM-JAY, could substantially close the outpatient gap without commensurate premium increases.

6.2 Strengthening Supply-Side Capacity and Empanelment

Health insurance can only protect households financially if empanelled providers are accessible and of adequate quality. The concentration of empanelled private hospitals in urban tier-1 and tier-2 cities creates an effective access barrier for rural and tribal populations. Policy must incentivise empanelment of district and sub-district public hospitals, primary health centres, and community health centres with appropriate infrastructure upgrades. The AB-HWC programme, if adequately resourced and integrated with PM-JAY's IT infrastructure, represents the most promising vehicle for extending effective coverage to the primary care level. Investment in digital health infrastructure, telemedicine, electronic health records, and real-time claims processing can also reduce delays and informal payment pressures.

6.3 Eliminating Informal Payments

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Informal payments have been documented in virtually every primary study in this review, undermining the insurance contract and constituting a regressive tax on the poorest users. Policy options include: strengthening social accountability mechanisms (patient rights charters, grievance redressal cells, citizen report cards); introducing direct benefit transfers for non-medical costs (transportation, food) associated with hospitalization; and tightening regulatory oversight and mystery audits at impaneled hospitals. The proposed PM-JAY digital claims portal with mandatory itemized billing represents a step in this direction, but requires rigorous enforcement.

6.4 Vision of Awareness and Enrolment Gaps.

The ongoing discrepancy between eligible and enrolled populations (around 35–50% in states as of 2023, according to NHA, 2024) is a core implementation failure. This gap can be minimized through active enrolment via gram sabhas, ASHA workers, and panchayati raj institutions, as well as by increasing the use of the Ayushman Bharat app and eKYC-based digital enrolment. Targeted outreach to the most marginalized communities, including SC/ST households, female-headed households, and migrant workers, should be prioritized, given their documented lower enrolment rates and higher OOP burdens.

6.5 Increasing Public Financing of Health

Ultimately, health insurance can only substitute for, not replace, adequate public financing of health services. India's public health expenditure is 2.1 per cent of GDP in 2022-23 remains below the standard global benchmark for UHC. This confirms states such as Himachal Pradesh, Tamil Nadu, and Kerala with high government spending in health denotes a reduction in CHE (NHA, 2023). A coordinated fiscal strategy combining increased public health financing with demand-side insurance is more likely to achieve universal financial protection than insurance alone.

7. Research Gaps and Future Directions

This systematic review identifies the following critical gaps in the existing literature that warrant priority attention from the research community:

7.1 Longitudinal Evidence on Long-Term Financial Protection

The overwhelming majority of studies in this review are cross-sectional or use repeated cross-sections. Truly longitudinal evidence tracking the same households over time, before and after insurance enrolment, and across multiple health events, is almost entirely absent. The recently launched LASI cohort offers a promising platform for such analyses, but only Wave 1 data have been analyzed to date. Prospective cohort studies and panel household surveys linked with PM-JAY administrative claims data are urgently needed to establish the dynamic and cumulative financial protection offered by health insurance, including effects on household savings, asset depletion, and inter-temporal poverty traps.

7.2 Indirect and Catastrophic Non-Medical Costs

The existing literature largely measures CHE using direct medical expenditure. Indirect and dietary costs are systematically excluded from CHE calculations, leading to an underestimation of the total financial burden of illness. Very few Indian studies attempt to comprehensively capture these indirect costs. Since transportation is already 15-30 percent of overall health event expenditures in remote rural households (Garedew et al., 2020), their omission in insurance benefits as well as in CHE measurement is analytical crippler.

7.3 Caste, Gender, and Social Group Disaggregation

Health insurance is likely to have a significant effect on CHE depending on the social group based on caste, gender, religion and tribal status owing to the structural barriers that these groups go through in accessing health services despite their nominal coverage by health insurance. Nevertheless, very little disaggregated evidence is presented in the existing literature. Studies specifically examining CHE among Scheduled Tribe populations, who face the most severe geographic access barriers, are notably absent. Gender-disaggregated analyses beyond maternal health are similarly scarce. Future studies must primarily focus on equity analyses

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7.4 Insurance and Non-Communicable Disease Expenditure

India is currently experiencing a epidemiological rise in NCD which accounts over 60 per cent of total disease burden. NCD management requires sustained outpatient care, regular medication, and periodic diagnostic monitoring, all components systematically excluded from current GSHIS benefit packages. The CHE implications of NCDs, and whether insurance modifies these, remain insufficiently studied. The PM-JAY recent extension to NCD screening through HWCs creates a natural experiment that has not yet been exploited in the literature.

7.5 State-Level Comparative Effectiveness Research

India's federal health financing architecture creates natural variation in GSHIS design, benefit packages, empanelment networks, and implementation capacity across 36 states and union territories. This variation has been underexploited as a source of comparative evidence on what scheme design features most effectively reduce CHE. Systematic multi-state comparative studies, ideally using consistent methodologies and common outcome definitions, are needed to generate evidence on effective policy design. States like Rajasthan (comprehensive benefit package with outpatient coverage), Tamil Nadu (robust public hospital network), and Delhi (Mohalla Clinic integration) represent priority candidates for comparative analysis.

7.6 Rigorous Quasi-Experimental and Causal Evidence

The methodological quality of included studies is mixed. While PSM and DiD methods are increasingly employed, concerns about residual confounding particularly given the non-random assignment of insurance enrolment across households persist. Regression discontinuity designs exploiting the sharp eligibility cutoffs in income-based GSHIS (e.g., the SECC 2011 threshold for PM-JAY eligibility) are powerful but underutilised. Instrumental variable approaches exploiting geographic or programmatic variation in scheme rollout offer an additional methodological frontier. Investment in administrative data linkage — connecting PM-JAY claims with NFHS, NSS, and civil registration data — would enable more rigorous causal inference.

8. Conclusion

This paper systematically reviewed 53 studies conducted in the Indian context during the period from 2000 to 2025, provides a comprehensive view of health insurance, CHE, and financial vulnerability of people in a developing economy. The findings of the study support that health insurance is one of the pre-payment mechanisms recommended by the World Health Organization, and government-sponsored health insurance schemes provide meaningful financial protection against medical expenditure. The protective effect is concentrated among the poorest quintiles for inpatient care, is larger in states with stronger implementation capacity and supplementary schemes, and has grown over time as program scale and a more mature design have developed.

However, substantial residual CHE persists even among enrolled households, due to the systematic exclusion of outpatient care, medications, and benefit packages; persistent informal payments; supply-side access barriers in rural and tribal areas; and awareness and enrolment deficits among the most marginalized populations. The outpatient gap turns out to be the most significant structural constraint of the Indian health insurance setup and the most significant policy reform target.

The desire of India to realize universal health coverage by 2030, incorporated in Sustainable Development Goal 3.8, needs a holistic health financing approach that is not limited to hospitalization insurance. The evidence from this review suggests that insurance, as currently designed, is a very crucial but insufficient condition for universal financial protection. Complementary investments in public health infrastructure, primary care supply, the availability of essential medicines, and the regulation of informal payments are indispensable co-requisites. Simultaneously, the research community must prioritize longitudinal, equity-disaggregated, and causally robust evidence on the mechanisms and determinants of financial

protection to inform the next generation of health financing reforms in India and in low- and middle-income country contexts.

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