

**A STUDY OF OUT-OF-POCKET HEALTH
EXPENDITURE IN INDIA: A STATE-WISE ANALYSIS**

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MAY 2024

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by

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submitted

in fulfilment of the requirements of the degree of Doctor of Philosophy

to the



INDIAN INSTITUTE OF TECHNOLOGY DELHI

MAY 2024

Dedicated to my country - India.

*In hope that this research will be an eye-opener to drive improvements in the
healthcare system in India.*

CERTIFICATE

The thesis titled “A study of out-of-pocket health expenditure in India: a state-wise analysis” being submitted by Isha Goel (nee Vasan) to the Indian Institute of Technology, Delhi for the award of the degree of Doctor of Philosophy is a record of bonafide research work carried out by her. She has worked under our supervision and has fulfilled all the requirements for submitting this thesis, which has attained the standard required for a Ph.D. degree at this institute. The results presented in this thesis have not been submitted elsewhere for awarding any degree or diploma.

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ACKNOWLEDGMENT

This thesis marks the culmination of my studies at the Department of Management Studies, Indian Institute of Technology, Delhi. I take this opportunity to express my deep gratitude towards God who gave me the strength to reach this point in my research journey.

Reaching this milestone was only made possible with the unwavering support of, my mother, Mrs. Usha Vasan, and my supervisors Prof. Seema Sharma, and Prof. Smita Kashiramka, whose continuous support and positivity helped me. I owe it all to all three of them.

I spent a lot of time with my supervisors and slowly grasped their techniques and methods of approaching the problems. Whenever I was stuck with a difficult task, the very thought of how my supervisor would have approached the problem at hand, helped me to proceed further.

My mother spent most of her life witnessing Ph.D. students, who used to work hard and present work to my dad. She knew the kind of effort I would have to put in to reach the final point as she witnessed the ups and downs of many in front of her. She always motivated me by saying – “I think it’s almost done now”, which made me hope for the same.

Further, I can’t forget how as a five-year-old kid, seeing my father completing his Ph.D. work made me say ‘I will never do a Ph.D.!’ now taught me a lesson ‘Never say Never!’. My heartfelt gratitude to my father, who kept a check on my progress every day and motivated me to publish articles during the initial phase of my journey. He also kept a check on me so that I dedicate a fixed time to my thesis every day, amidst my other responsibilities. Finally, heartfelt thanks to my husband and my kid for witnessing my sorrows and happiness as equal partners during this challenging journey and keeping the patience that someday I will reach my destination and spend more quality time with them.

Also, thankful to all my SRC committee members for their valuable suggestions, Prof. Amlendu Dubey who laid the foundation of econometrics and R language for our batch, and my colleague researcher – Pankaj who always answered my queries. Last but not least, all my fellow researchers helped me in reaching out to the respondents for my survey.

Isha Goel

ABSTRACT

Universal Health Coverage (UHC) is about ensuring that people have access to the healthcare they need without suffering any financial hardship. Sustainable Development Goal (SDG) 3.8 aims to achieve UHC, including financial protection, and access to safe, quality, effective, and affordable essential healthcare services, medicines, and vaccines for one and all. SDG 1 calls to end poverty in all its forms¹. However, almost 90 million people across the globe are impoverished by health expenses on an annual basis (World Bank, 2022). Almost 2 billion people are facing catastrophic or impoverishing spending (SDG 3.8.2) (WHO, 2022). A country's progress towards SDG 3.8, of achieving UHC is tracked using two indicators: coverage of essential health services and catastrophic health spending and impoverishing health spending².

The fundamental basis for tracking the progress on these indicators is done by assessing the proportion of households with expenditures on health as a share of total household expenditure or income at a household level, which is then assessed against predefined World Health Organization (WHO) catastrophic expenditure thresholds and specific poverty lines. At times, the expenditure on health could reach an extent where it is more than the household's capacity to pay thereby leaving the family in a financially distressed position, which is an observed phenomenon across geographies including India.

In fact, in, India, government spending on health has been low over the years compared to other developed countries resulting in high out-of-pocket health expenditure. This expenditure is impoverishing some 55 million Indians, with over 17 percent of households incurring catastrophic levels of health expenditures on an annual basis, a WHO report from March 2022 estimated (Selvaraj et al., 2022). With different healthcare infrastructures and services across the states, a holistic view of the SDG 3.8.1 indicators for different states in India across the years become crucial.

Our first study sets the cornerstone by conducting an out-of-pocket health expenditure analysis at a state level through secondary data as an input to a random effect econometric model. The second study conducts a catastrophic and impoverishing health expenditure analysis at a household level, through secondary data where the results and findings are graphically depicted through state-level heat maps. The last study complements the earlier two studies by providing a holistic picture of the households bearing catastrophic expenditures through a primary survey.

¹ <https://www.un.org/sustainabledevelopment/poverty/>

² [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc))

In this thesis, we take a step back from SDG 3.8.2, to first find the determinants of out-of-pocket health expenditure through a state-level analysis. Next, we track India's progress through household data at the state level via indicators outlined in SDG 3.8.2. The findings indicate that in New Delhi, the capital of India, a high percentage of the population has been incurring catastrophic health expenditures between 2014 and 2021 but has not received much attention in the existing literature in terms of investigating its out-of-pocket health expenditure patterns. Thus, the last study takes up this challenge by conducting an in-depth analysis through a primary survey across Delhi which is an input to a logit model. This model tracks the determinants of catastrophic health expenditure at the household level in Delhi.

The results of the three studies combined provide insights to academicians and new findings to the policymakers as to the determinants of catastrophic health expenditure followed by the relative position of the states across the years in terms of catastrophic health expenditure and impoverishing health expenditure. The thesis also analyses the health expenditure in terms of medicines, health supplements, health enhancements, etc., to provide insights to the policymakers for components that heavily augment the health expenditure at a household level.

The first research study spans from 2014-2020 across 19 states in India analysing the macro-economic data from National Health Accounts, Government of India. The findings, in general, suggest that economically better-off states are incurring more out-of-pocket health expenditures than economically worse-off states. The state-specific and year-specific factors are taken as control variables. Whilst the state-specific factors include (but not limited to) diverse health insurance schemes, and different levels of funding available from central and state governments. The year specific factors include inflation (but not limited to) increasing the cost of medicines, health supplements, and health services over the years. The research findings indicate that Gross State Domestic Product per capita (GSDP), government health expenditure per capita, and total health expenditure per capita play a significant role in determining out-of-pocket health expenditure.

The second research study spans from 2014-2021 across 24 states in India. Household-level data from consumer pyramid surveys was analysed followed by the depiction of results through elaborate heatmaps to provide an overview of the change in catastrophic health

expenditure across the states and over the years. The research then takes a step ahead to analyze the average poverty gap index across states giving a cue to the policymakers to assess (state-wise) the impact of health expenditure-driven impoverishment at a household level in respective states. Next, it drills down further into health expenditure components which reveals that the share of medicines, dental care products, and health supplements, form a major chunk of health expenditure across the states in both urban and rural areas.

The last study is built on the foundations of quantitative and qualitative analysis of the 320 primary survey responses in Delhi collected during 2020-2021. The findings of the quantitative study suggest that family size and the level of education of the household play a crucial role in determining out-of-pocket health expenditure in Delhi. Next, the findings of the qualitative study unfold the condition of the public health infrastructure in Delhi. The results indicate long waiting queues, unhygienic conditions, and out-of-stock medicines in public hospitals, as major driving factors for pushing households who cannot afford the exorbitant private medical care cost to avail the private medical treatment. This comes at the cost of incurring catastrophic health expenditure which has a future potential to drive such households to poverty. The study urges the government to improve the grim situation of public hospitals by increasing the funding, and better management of these hospitals to provide superior medical facilities, which could be the ultimate solution for reducing out-of-pocket health expenditure in the distant future. An improvement over the current shortcomings of public hospitals in India can contribute towards reducing overall out-of-pocket health expenditure.

To conclude, this thesis presents a case for the government to increase the average per capita health funding for healthcare, in the respective states, analyzed. The recommendations are also based on the specific composition of households in terms of family size and the level of education of the household head. Furthermore, it puts a strong case for the policymakers to create differential financial protection schemes that cater not only to the poor but for different classes of people. Last but not least, it provides a nudge to the government for a better experience for the masses in public hospitals which could be potentially one of the solutions to solve the out-of-pocket health expenditure problems in the country.

Keywords

Out-of-pocket health expenditure, impoverishing health expenditure, catastrophic health expenditure, India, population, health economics, economy, health policy, financial protection, medicines, hospitalization, inpatient, outpatient, poverty.

सार

यूनिवर्सल हेल्थ कवरेज (यूएचसी) यह सुनिश्चित करने के बारे में है कि लोगों को बिना किसी वित्तीय कठिनाई के अपनी आवश्यक स्वास्थ्य देखभाल तक पहुंच प्राप्त हो। सतत विकास लक्ष्य (एसडीजी) 3.8 का लक्ष्य यूएचसी हासिल करना है, जिसमें वित्तीय सुरक्षा और सभी के लिए गुणवत्तापूर्ण, सुरक्षित, प्रभावी और किफायती आवश्यक स्वास्थ्य देखभाल सेवाएं, दवाएं और टीके तक पहुंच शामिल है। एसडीजी¹ में गरीबी को उसके सभी रूपों में समाप्त करने का आह्वान किया गया है। हालाँकि, दुनिया भर में लगभग 90 मिलियन लोग वार्षिक आधार पर स्वास्थ्य व्यय से गरीब हैं (विश्व बैंक, 2022)। लगभग 2 अरब लोग विनाशकारी या गरीब खर्च (एसडीजी 3.8.2) (डब्ल्यूएचओ, 2022) का सामना कर रहे हैं। यूएचसी प्राप्त करने के लिए एसडीजी 3.8 की दिशा में किसी देश की प्रगति को दो संकेतकों का उपयोग करके ट्रैक किया जाता है: आवश्यक स्वास्थ्य सेवाओं का कवरेज और विनाशकारी स्वास्थ्य व्यय और खराब करने वाला स्वास्थ्य व्यय²।

इन संकेतकों पर प्रगति को ट्रैक करने का मूल आधार कुल घरेलू व्यय या घरेलू स्तर पर आय के हिस्से के रूप में स्वास्थ्य पर व्यय करने वाले परिवारों के अनुपात का आकलन करना है, जिसका मूल्यांकन पूर्वनिर्धारित विश्व स्वास्थ्य संगठन (डब्ल्यूएचओ) के विनाशकारी व्यय के विरुद्ध किया जाता है। सीमाएँ और विशिष्ट गरीबी रेखाएँ। कभी-कभी, स्वास्थ्य पर खर्च उस सीमा तक पहुंच सकता है जहां यह परिवार की भुगतान करने की क्षमता से अधिक हो जाता है, जिससे परिवार आर्थिक रूप से संकटग्रस्त स्थिति में आ जाता है, जो कि भारत सहित सभी भौगोलिक क्षेत्रों में देखी गई घटना है।

वास्तव में, भारत में, अन्य विकसित देशों की तुलना में पिछले कुछ वर्षों में स्वास्थ्य पर सरकारी खर्च कम रहा है, जिसके परिणामस्वरूप स्वास्थ्य पर अपनी जेब से अधिक खर्च करना पड़ता है। मार्च 2022 की WHO रिपोर्ट (सेल्वराज एट अल., 2022) का अनुमान है कि यह व्यय सालाना लगभग 55 मिलियन भारतीयों को गरीब बना रहा है, जिसमें 17 प्रतिशत से अधिक परिवारों को वार्षिक आधार पर स्वास्थ्य व्यय का विनाशकारी स्तर उठाना पड़ रहा है। राज्यों में अलग-अलग स्वास्थ्य देखभाल बुनियादी ढांचे और सेवाओं के साथ, भारत के विभिन्न राज्यों के लिए एसडीजी 3.8.1 संकेतकों का समग्र दृष्टिकोण पिछले कुछ वर्षों में महत्वपूर्ण हो गया है।

¹ <https://www.un.org/sustainabledevelopment/poverty/>

² [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc))

हमारा पहला अध्ययन एक यादृच्छिक प्रभाव अर्थमितीय मॉडल के इनपुट के रूप में माध्यमिक डेटा के माध्यम से राज्य स्तर पर आउट-ऑफ-पॉकेट स्वास्थ्य व्यय विश्लेषण आयोजित करके आधारशिला निर्धारित करता है। दूसरा अध्ययन माध्यमिक डेटा के माध्यम से घरेलू स्तर पर एक विनाशकारी और गरीब स्वास्थ्य व्यय विश्लेषण आयोजित करता है, जहां परिणामों और निष्कर्षों को राज्य-स्तरीय ताप मानचित्रों के माध्यम से ग्राफिक रूप से दर्शाया जाता है। अंतिम अध्ययन प्राथमिक सर्वेक्षण के माध्यम से विनाशकारी व्यय वहन करने वाले परिवारों की समग्र तस्वीर प्रदान करके पहले के दो अध्ययनों का पूरक है।

इस थीसिस में, हम एसडीजी 3.8.2 से एक कदम पीछे हटते हैं, पहले राज्य-स्तरीय विश्लेषण के माध्यम से अपनी जेब से स्वास्थ्य व्यय के निर्धारकों का पता लगाते हैं। इसके बाद, हम एसडीजी 3.8.2 में उल्लिखित संकेतकों के माध्यम से राज्य स्तर पर घरेलू डेटा के माध्यम से भारत की प्रगति को ट्रैक करते हैं। निष्कर्षों से पता चलता है कि भारत की राजधानी नई दिल्ली में, आबादी का एक बड़ा प्रतिशत 2014 और 2021 के बीच भयावह स्वास्थ्य व्यय कर रहा है, लेकिन मौजूदा साहित्य में अपनी जेब से बाहर स्वास्थ्य की जांच के संदर्भ में इस पर ज्यादा ध्यान नहीं दिया गया है। व्यय पैटर्न. इस प्रकार, अंतिम अध्ययन दिल्ली भर में एक प्राथमिक सर्वेक्षण के माध्यम से गहन विश्लेषण करके इस चुनौती को उठाता है जो एक लॉगिट मॉडल के लिए एक इनपुट है। यह मॉडल दिल्ली में घरेलू स्तर पर विनाशकारी स्वास्थ्य व्यय के निर्धारकों को ट्रैक करता है।

संयुक्त रूप से तीन अध्ययनों के नतीजे शिक्षाविदों को अंतर्दृष्टि प्रदान करते हैं और नीति निर्माताओं को विनाशकारी स्वास्थ्य व्यय के निर्धारकों के बारे में नए निष्कर्ष प्रदान करते हैं, जिसके बाद विनाशकारी स्वास्थ्य व्यय और गरीब स्वास्थ्य व्यय के संदर्भ में वर्षों के दौरान राज्यों की सापेक्ष स्थिति होती है। थीसिस घरेलू स्तर पर स्वास्थ्य व्यय में भारी वृद्धि करने वाले घटकों के लिए नीति निर्माताओं को अंतर्दृष्टि प्रदान करने के लिए दवाओं, स्वास्थ्य पूरक, स्वास्थ्य संवर्द्धन आदि के संदर्भ में स्वास्थ्य व्यय का भी विश्लेषण करती है।

पहला शोध अध्ययन 2014-2020 तक भारत के 19 राज्यों में फैला है, जिसमें भारत सरकार के राष्ट्रीय स्वास्थ्य खातों के व्यापक-आर्थिक डेटा का विश्लेषण किया गया है। निष्कर्ष, सामान्य तौर पर, सुझाव देते हैं कि आर्थिक रूप से बेहतर राज्य आर्थिक रूप से खराब राज्यों की तुलना में अपनी जेब से अधिक स्वास्थ्य व्यय कर रहे हैं। राज्य-विशिष्ट और समय-विशिष्ट कारकों को नियंत्रण चर के रूप में लिया जाता

है। जबकि राज्य-विशिष्ट कारकों में विविध स्वास्थ्य बीमा योजनाएं और केंद्र और राज्य सरकारों से उपलब्ध वित्त पोषण के विभिन्न स्तर शामिल हैं (लेकिन इन्हीं तक सीमित नहीं हैं)। समय-विशिष्ट कारकों में पिछले कुछ वर्षों में दवाओं, स्वास्थ्य अनुपूरकों और स्वास्थ्य सेवाओं की लागत में वृद्धि (लेकिन यहीं तक सीमित नहीं) मुद्रास्फीति शामिल है। शोध के निष्कर्षों से संकेत मिलता है कि प्रति व्यक्ति सकल राज्य घरेलू उत्पाद (जीएसडीपी), प्रति व्यक्ति सरकारी स्वास्थ्य व्यय और प्रति व्यक्ति कुल स्वास्थ्य व्यय जेब से स्वास्थ्य व्यय निर्धारित करने में महत्वपूर्ण भूमिका निभाते हैं।

दूसरा शोध अध्ययन 2014-2021 तक भारत के 24 राज्यों में फैला है। उपभोक्ता पिरामिड सर्वेक्षणों से घरेलू स्तर के डेटा का विश्लेषण किया गया और उसके बाद विनाशकारी स्वास्थ्य में परिवर्तन का अवलोकन प्रदान करने के लिए विस्तृत हीटमैप के माध्यम से परिणामों का चित्रण किया गया।

राज्यों में और वर्षों में व्यय। इसके बाद अनुसंधान राज्यों में औसत गरीबी अंतर सूचकांक का विश्लेषण करने के लिए एक कदम आगे बढ़ता है, जिससे नीति निर्माताओं को संबंधित राज्यों में घरेलू स्तर पर स्वास्थ्य व्यय-संचालित गरीबी के प्रभाव का आकलन (राज्य-वार) करने का संकेत मिलता है। इसके बाद, यह स्वास्थ्य व्यय घटकों में और गहराई से उतरता है, जिससे पता चलता है कि दवाओं, दंत चिकित्सा देखभाल उत्पादों और स्वास्थ्य पूरकों की हिस्सेदारी, शहरी और ग्रामीण दोनों क्षेत्रों में राज्यों में स्वास्थ्य व्यय का एक बड़ा हिस्सा है।

अंतिम अध्ययन 2020-2021 के दौरान दिल्ली में एकत्र किए गए 320 प्राथमिक सर्वेक्षण प्रतिक्रियाओं के मात्रात्मक और गुणात्मक विश्लेषण की नींव पर बनाया गया है। मात्रात्मक अध्ययन के निष्कर्षों से पता चलता है कि परिवार का आकार और परिवार की शिक्षा का स्तर दिल्ली में जेब से स्वास्थ्य व्यय निर्धारित करने में महत्वपूर्ण भूमिका निभाता है। इसके बाद, गुणात्मक अध्ययन के निष्कर्ष दिल्ली में सार्वजनिक स्वास्थ्य बुनियादी ढांचे की स्थिति को उजागर करते हैं। परिणाम सार्वजनिक अस्पतालों में लंबी प्रतीक्षा कतारों, अस्वच्छ परिस्थितियों और स्टॉक से बाहर दवाओं का संकेत देते हैं, जो उन परिवारों को निजी चिकित्सा उपचार का लाभ उठाने के लिए प्रेरित करने के लिए प्रमुख प्रेरक कारक हैं जो निजी चिकित्सा देखभाल की अत्यधिक लागत वहन नहीं कर सकते हैं। यह विनाशकारी स्वास्थ्य व्यय की कीमत पर आता है जिससे भविष्य में ऐसे परिवारों को गरीबी की ओर ले जाने की संभावना है। अध्ययन में सरकार से आग्रह किया गया है कि वह फंडिंग बढ़ाकर सार्वजनिक अस्पतालों की गंभीर स्थिति में सुधार करे और बेहतर चिकित्सा सुविधाएं प्रदान करने के लिए इन अस्पतालों का बेहतर प्रबंधन करे, जो दूर के भविष्य में अपनी

जेब से होने वाले स्वास्थ्य व्यय को कम करने का अंतिम समाधान हो सकता है। भारत में सार्वजनिक अस्पतालों की मौजूदा कमियों में सुधार समग्र स्वास्थ्य व्यय को कम करने में योगदान दे सकता है।

निष्कर्ष के तौर पर, यह थीसिस सरकार के लिए संबंधित राज्यों में स्वास्थ्य देखभाल के लिए औसत प्रति व्यक्ति स्वास्थ्य निधि बढ़ाने का मामला प्रस्तुत करती है, जिसका विश्लेषण किया गया है। सिफ़ारिशें परिवारों की विशिष्ट संरचना पर आधारित हैं, जिनमें बुजुर्ग सदस्य शामिल हैं या ऐसे परिवार जहां मुखिया सेवानिवृत्त या बेरोजगार है। इसके अलावा, यह नीति निर्माताओं के लिए अलग-अलग वित्तीय सुरक्षा योजनाएं बनाने का एक मजबूत मामला रखता है जो न केवल गरीबों को बल्कि विभिन्न वर्गों के लोगों को भी पूरा करती हैं। अंतिम लेकिन महत्वपूर्ण बात यह है कि यह सरकार को सार्वजनिक अस्पतालों में जनता के लिए बेहतर अनुभव प्रदान करता है जो संभावित रूप से देश में जेब से स्वास्थ्य व्यय की समस्याओं को हल करने के समाधानों में से एक हो सकता है।

कीवर्ड

आउट-ऑफ-पॉकेट स्वास्थ्य व्यय, खराब स्वास्थ्य व्यय, भयावह स्वास्थ्य व्यय, भारत, जनसंख्या, स्वास्थ्य अर्थशास्त्र, अर्थव्यवस्था, स्वास्थ्य नीति, वित्तीय सुरक्षा, दवाएं, अस्पताल में भर्ती, रोगी, बाह्य रोगी।

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List of Abbreviations

AIC	Akaike Information Criterion
BE	Budget Estimate
BPL	Below Poverty Line
CHE	Current Health Expenditure
CMIE	Centre for Monitoring Indian Economy Private Limited
CNG	Compressed Natural Gas
COVID-19	Coronavirus Disease of 2019
CPI	Consumer Price Index
CPHS	Consumer Pyramid Household Survey
COVID-19	Coronavirus disease of 2019
Dept	Department
GDP	Gross Domestic Product
GDS	Gross Domestic Savings
GSDP	Gross State Domestic Product
GGE	General Government Expenditure
GHE	Government Health Expenditure
ICMR	Indian Council of Medical Research
ICU	Intensive Care Unit
MPI	Multidimensional Poverty Index
NHA	National Health Accounts
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares

OOPHE	Out-of-pocket health expenditure
OTC	Over-The-Counter
PHE	Public Health Expenditure
RE	Revised Budget Estimate
RNTCP	Revised National Tuberculosis Programme
SDG	Sustainable Development Goals
THE	Total Health Expenditure
UHC	Universal Health Coverage
VIF	Variance Inflation Factor
WHO	World Health Organization

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