sustainability

Article

District-Level Patterns of Health Insurance Coverage and Out-of-Pocket Expenditure on Caesarean Section Deliveries in Public Health Facilities in India

Rajesh Kamath [1,2,*], Helmut Brand [1,2], Nisha Nayak [3], Vani Lakshmi [3], Reena Verma [4] and Prajwal Salins [5]

[1] Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal 576104, India
[2] Department of International Health, Care and Public Health Research Institute—CAPHRI, Faculty of Health, Medicine and Life Sciences, Maastricht University, 6229 ER Maastricht, The Netherlands
[3] Department of Data Science, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal 576104, India
[4] Department of Dietetics & Applied Nutrition, WGSHA, Manipal Academy of Higher Education, Manipal 576104, India
[5] Department of Health Information Management, Manipal College of Health Professions, Manipal Academy of Higher Education, Manipal 576104, India
* Correspondence: rajeshkamath82@gmail.com or rajesh.kamath@manipal.edu

Abstract: Reducing catastrophic out-of-pocket expenditure (OOPE) and increasing the rates of institutional deliveries are part of the Sustainable Development Goals (SDGs). India has made significant progress on the maternal and child health front in recent years. India's National Health Mission (NHM) has been able to increase rates of institutional deliveries. In the present study, we aim to ascertain district-level patterns of percentage of health insurance coverage in the National Family Health Surveys NFHS 4 and NFHS 5. We also aim to ascertain district-level patterns of out-of-pocket expenditure on C-section deliveries in public health facilities in NFHS 4 and NFHS 5. The present study explores district-level data associated with health insurance coverage (%) and out-of-pocket expenditure in a public health facility (in INR) observed across NFHS 4 and NFHS 5. A spatial analysis was carried out using QGIS 3.26 (Mac version) and GeoDA 1.20.0.8. A visual assessment of the maps across NFHS 4 and NFHS 5 shows improvement in insurance coverage at the district level across the two surveys. Despite an increase in insurance coverage, North East India has experienced an increase in OOPE for C-section deliveries. Rajasthan and various parts of South India have experienced a decrease in OOPE for C-section deliveries. Kerala has experienced a rise in insurance coverage and OOPE for C-section deliveries. Univariate LISA cluster and significance maps revealed that Kerala and Tamil Nadu, the eastern coast of India and parts of Mizoram are hot spots, whereas Jammu and Kashmir and parts of Uttar Pradesh and Gujarat are cold spots. Both these findings are significant. Rajasthan emerges as a significant hot spot along with parts of Assam and a few districts on the eastern coast of India in Tamil Nadu and Andhra Pradesh. Jammu and Kashmir, Ladakh, parts of Uttar Pradesh, Maharashtra, and Karnataka have emerged as significant cold spots. The South Indian states of Kerala and Tamil Nadu are no longer hot spots indicating geospatial variations across time. An increase in the number of hot spots across NFHS 4 and NFHS 5 indicates rising out-of-pocket expenditure for C-sections despite growth in health insurance coverage. The present study does not offer any evidence to suggest that health insurance coverage decreases OOPE on C-section deliveries at government facilities. With RSBY having been launched in 2008 and Ayushman Bharat in 2018, high levels of OOPE on C-section deliveries at government facilities raise serious concerns about the efficacy of PFHIs in reducing OOPE. The government would need to plug the well-documented weaknesses of PFHIs, such as fraud, double charging, poor enrolment, and lack of awareness in addition to the unfortunate phenomena of "tips" and "tie ups" mentioned earlier that plague the public healthcare system, if we are to see any reduction in OOPE in the foreseeable future.

Keywords: district-level patterns; health insurance coverage; out-of-pocket expenditure; caesarean section deliveries; public health facilities in India

check for updates

Citation: Kamath, R.; Brand, H.; Nayak, N.; Lakshmi, V.; Verma, R.; Salins, P. District-Level Patterns of Health Insurance Coverage and Out-of-Pocket Expenditure on Caesarean Section Deliveries in Public Health Facilities in India. *Sustainability* **2023**, *15*, 4608. https://doi.org/10.3390/su15054608

Academic Editor: Mihajlo (Michael) Jakovljevic

Received: 16 November 2022
Revised: 8 January 2023
Accepted: 21 January 2023
Published: 4 March 2023

1. Introduction

India has a government healthcare infrastructure of subcentres (1 for every 5000 population), Primary Health Centres (1 for every 30,000 population), and Community Health Centres (1 for every 120,000 population). There is significant interstate variation in the quality of the infrastructure of these health centres as well as the quality of care provided in them, with the better-governed states doing better than the rest. These health centres are almost entirely in the rural areas, where 65% of the population resides. Thirty-five percent of the population in urban areas receives public healthcare from district hospitals and general hospitals. Seventy percent of healthcare is accessed from the private healthcare sector and the rest from the public healthcare system. With the aim of reducing catastrophic out-of-pocket health expenditure (OOPHE), Rashtriya Swasthya Bima Yojana (RSBY) in 2008 was India's first national attempt at a publicly funded health insurance (PFHI) scheme [1] RSBY had a cashless cover of INR 30,000 (USD 400) with a family size cap of five [2]. RSBY was subsumed by Ayushman Bharat (AB), which was launched in November 2018 [3]. AB is intended to be a bigger and better version of the RSBY. AB removes the cap on family size and enhances the cashless cover by more than 16 times to INR 500,000 (USD 6600) [4]. Both AB and its precursor RSBY aim to reduce OOPHE. There is very little impact evaluation evidence for AB in the public domain. Evidence from RSBY impact evaluation studies suggests that a private provider-dominated ecosystem is inconducive to attempts at OOPHE reduction through PFHI vehicles [5]. PFHIs can be plagued by the phenomenon of double-barrelling, in which hospitals charge patients for a portion of services/medicines/diagnostics, which are covered under the PFHI and later also claim the reimbursement from the PFHI. This phenomenon is most likely more prevalent in geographies with historically low levels of education and socioeconomic development. Information asymmetry is a feature of medical care that is amplified in these underdeveloped geographies, leading to increased propensities for the misuse of pronounced power hierarchies in service provider–patient relationships [6–11].

Both the RSBY and AB do not cover outpatient care [12]. The evidence suggests that outpatient care accounts for 40 to 80% of OOPHE and is an important determinant of catastrophic OOPHE, pushing families below the poverty line [13–19]. Understandably therefore, most published impact evaluation studies of the RSBY have found an insignificant or no reduction in OOPHE. Another cause of OOPHE is healthcare provider-induced unnecessary care and hospitalization [20]. High C-section rates could be one symptom of this, high hysterectomy rates being another [21]. These pernicious practices are facilitated by poor quality regulation of the healthcare market [22]. Like the RSBY, AB will also be vulnerable to this phenomenon in the absence of necessary remedial measures.

Globally, rates of C-section births are on the rise. The same is the case with OOPE on healthcare [23–25]. High C-section rates are associated with high OOPE and high rates of catastrophic OOPE, causing significant impoverishment in developing countries [26,27]. Other significant determinants of higher OOPE and catastrophic OOPE are deliveries at private facilities and pregnancies with medical complications [28]. On average, C-section births impose higher costs on the patients than normal vaginal deliveries, across all types of service providers and across all geographies [29–31]. The broad clinical indication for C-section births is medically complicated pregnancies with a higher risk of maternal and neonatal mortality [32–35]. According to the WHO, the acceptable rate range for C-section deliveries is 10 percent to 15 percent for any population [36]. The share of C-section deliveries globally has almost tripled from 6.7 percent in 1990 to 19.1 percent in 2014 [23,37]. There are very significant intercountry variations, with rates as low as 0.6 percent in South Sudan to as high as 58.9 percent in the Dominican Republic [38]. C-section delivery rates beyond 15 percent have not been seen to reduce neonatal and maternal mortality [32,39,40]. C-section deliveries are associated with increased morbidity and mortality, including subsequent pregnancy complications, respiratory illness, obesity, and allergies in children [41–44].

Notwithstanding the considerable debate surrounding the appropriateness of nonmedically indicated C-section deliveries, there is no lack of clarity among researchers, medical doctors, and public health experts that middle- and high-income countries are seeing a rise in the rates of unnecessary C-section deliveries [45,46]. Rates of induced and prelabour C-section deliveries have seen an increase across geographies [47]. An increasing body of evidence from China, Latin America, and Europe seems to suggest that the increasing C-section delivery rates are associated with increasing age at child birth, obesity in mothers, medical and surgical complications arising in pregnancy, increasing parity, multiple C-section deliveries, wrong understanding of C-section deliveries, and pain avoidance arising from fear [48–54]. An increased rate of institutional deliveries has been associated with Increased C-section rates in China [55]. These are demand-side factors. On the supply side, the following have contributed to an increase in C-section deliveries: patient and clinician convenience, potential for higher earnings through C-section deliveries even in the absence of clinical indications, clinician practice style, and practice of defensive medicine out of fear of medical malpractice litigation [23,51,56]. On the demand side, wealthier homes, educated women, residents of urban areas, and private healthcare providers were seen to have higher rates of C-section deliveries [57–59]. There is evidence to suggest that C-section delivery rates can be reduced through nonclinical interventions targeted at healthcare facilities, healthcare providers, women, and families [60]. RCT data from Latin America suggest that a compulsory second opinion could reduce the rate of C-section deliveries by as much as 22 per 1000 deliveries without having any negative impact on maternal or perinatal morbidity and patient satisfaction [61].

Reduction in catastrophic OOPE and increasing the rates of institutional deliveries are part of the Sustainable Development Goals (SDGs). India has made significant progress on the maternal and child health front in recent years. India's National Health Mission (NHM) has been able to increase rates of institutional deliveries. This has directly resulted in a drop in the infant mortality rate (IMR) and maternal mortality rate (MMR). The NHM has also been able to bring down inequity in access to institutional deliveries [62–64]. Institutional delivery rates have more than doubled from 38.7 percent in 2005–2006 to 78.9 percent in 2019 [65]. MMR has nearly halved from 254 per 100,000 live births in 2004–2005 to 130 per 100,000 live births in 2014–2016. C-section delivery rates have increased substantially, more than five times to 17.2 percent in 2015–2016 from 2.9 percent in 1992–1993 [66]. This is now a cause for public health concern in most Indian states [63]. The determinants of the increase in C-section delivery rates in India are increasing rates of institutional deliveries, medically complicated pregnancies, and unethical promotion of C-section deliveries even in the absence of clinical indications for profit by private healthcare providers [66,67].

There is significant interstate variation across India in maternal and child health indicators, which is camouflaged by the national average. India's National Health Mission (NHM) launched the Janani Suraksha Yojana (JSY) with the express objective of reducing interstate inequality in maternal care across India [68]. The JSY uses data on institutional deliveries to classify states as Low-Performing States (LPSs) and High-Performing States (HPSs). Under this system, ten states are classified as LPSs and all the rest are HPSs. The ten LPSs correspond to the economically poorest states of India: Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Odisha, Rajasthan, Assam, and Jammu and Kashmir. Seventy five percent of JSY beneficiaries were in the ten LPSs (7.6 million out of 10.4 million) [68].

In the present study, we aim to ascertain district-level patterns of percentage of health insurance coverage in the National Family Health Surveys NFHS 4 and NFHS 5. We also aim to ascertain district-level patterns of out-of-pocket expenditure on C-section deliveries in public health facilities in NFHS 4 and NFHS 5.

2. Methodology

The present study explores district-level data associated with health insurance coverage (%) and out-of-pocket expenditure in a public health facility (in INR) observed across

NFHS 4 and NFHS 5. India is divided into 25 plus states, which are further divided into districts. India had 641 districts at the time of NFHS 4. This had increased to 732 districts at the time of NFHS 5. Spatial analysis was carried out using QGIS 3.26 (Mac version) and GeoDA 1.20.0.8. Firstly, a spatial weight matrix was calculated to quantify the spatial proximity between each possible pair of regions. Further, the spatial clustering of both the characteristics of interest was examined using Local Moran's I statistic, which measures the spatial autocorrelation and indicates the degree to which data points are similar or dissimilar to their neighbours. The *p*-value of Local Moran's I was generated using a randomization test on a Z-score with 999 permutations.

Following this, Univariate Local Indicators of Spatial Association (LISA) measured the correlation of neighbourhood values around a specific spatial location and determined the extent of spatial randomness and clustering present in the data. This provided LISA cluster and significance maps, respectively.

The following scenarios are presented in the maps, which are linked to the quadrants of Moran's I scatter plot as:

Hot spots: regions with high values, with similar neighbours (high–high);

Cold spots: regions with low values, with similar neighbours (low–low);

Spatial outliers: regions with high values, with low-value neighbours (high–low);

Regions with low values, but with low-value neighbours (low–high).

3. Results

Figures 1 and 2 present the spatial quantile maps for health insurance coverage (%) across NFHS 4 and NFHS 5 at the district level. The colour coding is an indicator of spatial patterns; darker colours indicate higher insurance coverage, and lighter colours indicate relatively lower health insurance coverage. A visual assessment of the maps across NFHS 4 and NFHS 5 shows improvement in insurance coverage at the district level across the two surveys. One possible reason could be Ayushman Bharat enrolments.

Rajasthan has witnessed a gradual spatial progression from low insurance coverage to high insurance coverage. The North Eastern states have also witnessed a gradual spatial progression from low insurance coverage to high insurance coverage, particularly in Assam. Insurance coverage in South India is higher relative to the rest of the country. Interstate disparities serve as pointers for health policy formulation.

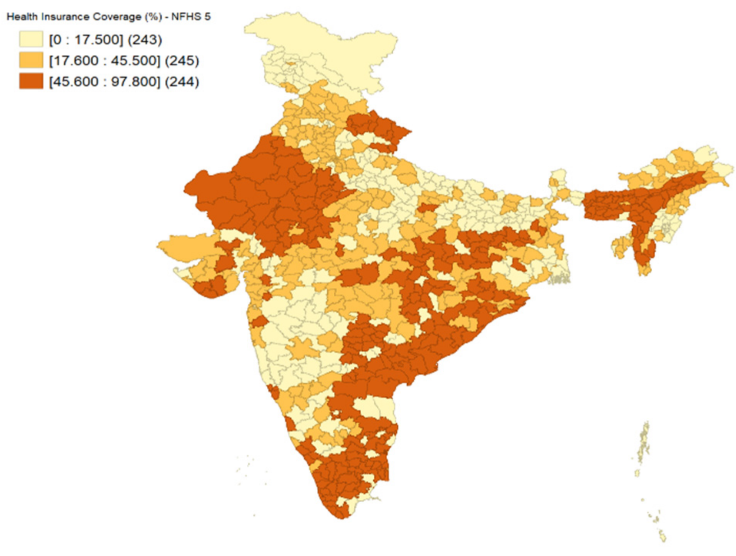


Figure 1. District-Level Patterns in Health Insurance Coverage (%)—NFHS 5.

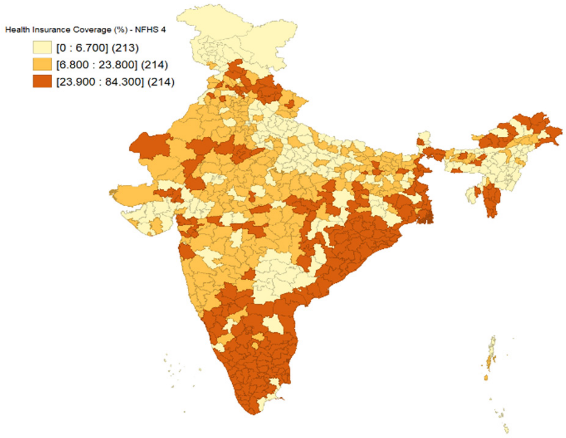


Figure 2. District-Level Patterns in Health Insurance Coverage (%)—NFHS 4.

Spatial quantile maps were generated for out-of-pocket expenditure (OOPE) incurred for C-section deliveries (expressed in INR) for district-level data across NFHS 5 and NFHS 4 in Figures 3 and 4, respectively. NFHS 4 data were adjusted for inflation.

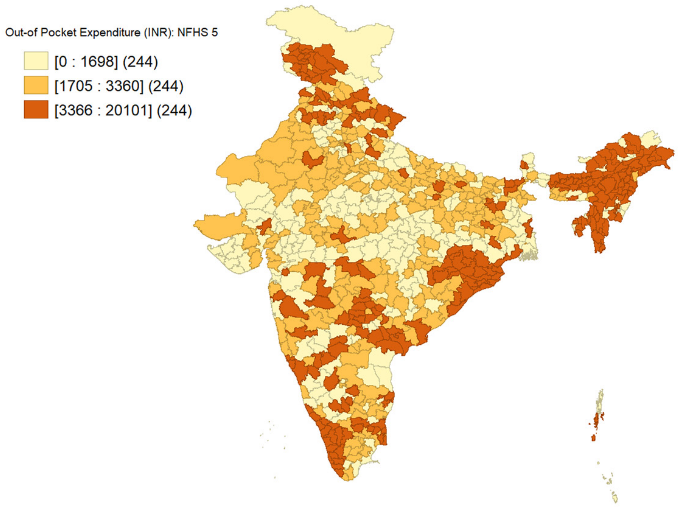


Figure 3. District-Level Patterns of Out-of-Pocket Expenditure on C-Section Deliveries in Public Health Facilities (INR)—NFHS 5.

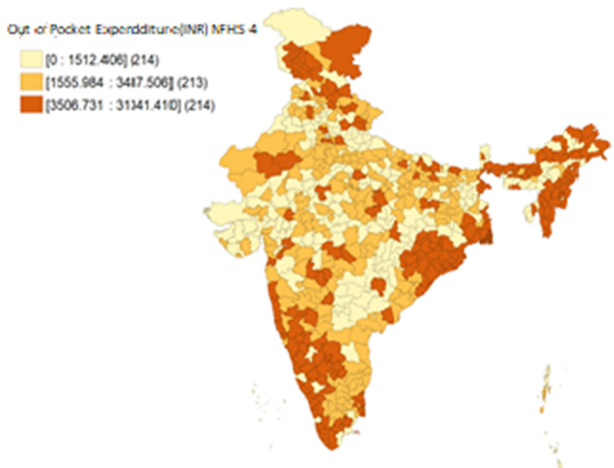


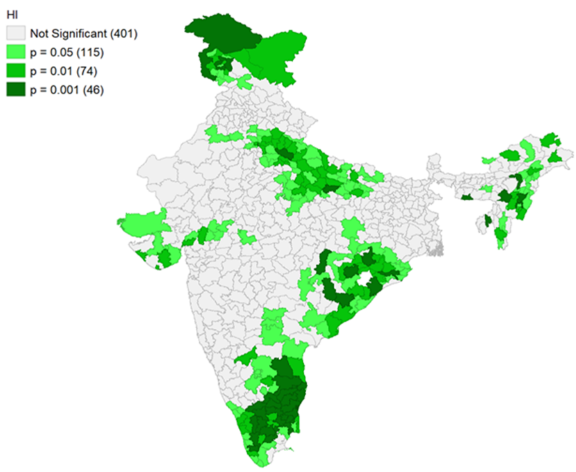
Figure 4. District-Level Patterns of Out-of-Pocket Expenditure on C-Section Deliveries in Public Health Facilities (INR)—NFHS 4.

Despite an increase in insurance coverage, North East India has experienced an increase in OOPE for C-section deliveries. Rajasthan and various parts of South India have experienced a decrease in OOPE for C-section deliveries. Kerala has experienced a rise in insurance coverage and OOPE for C-section deliveries. The district-level spatial data were analysed using QGIS 3.26 (Mac version) and GeoDA 1.20.0.8. A spatial weight matrix was calculated to quantify the spatial proximity between each possible pair of regions. The spatial clustering of the characteristic of interest (health insurance coverage %, OOPE) was examined using Local Moran's I statistic, which measures the spatial autocorrelation and indicates the degree to which data points are similar or dissimilar to their neighbours. The *p*-value of Local Moran's I was generated using a randomization test on a Z-score with 999 permutations. Univariate Local Indicators of Spatial Association (LISA) measure the correlation of neighbourhood values around a specific spatial location and determine the extent of spatial randomness and clustering present in the data. LISA cluster maps and significance maps are subsequently presented in Figures 5–8.

In Figure 5a–d, Moran's I statistic (I = 0.518, p = 0.001) indicates high spatial autocorrelation in health insurance coverage (%) as per NFHS 4. Univariate LISA cluster maps and significance maps revealed that Kerala and Tamil Nadu, the eastern coast of India and parts of Mizoram are hot spots, whereas Jammu and Kashmir, parts of Uttar Pradesh, and Gujarat are cold spots. Both these findings are significant.

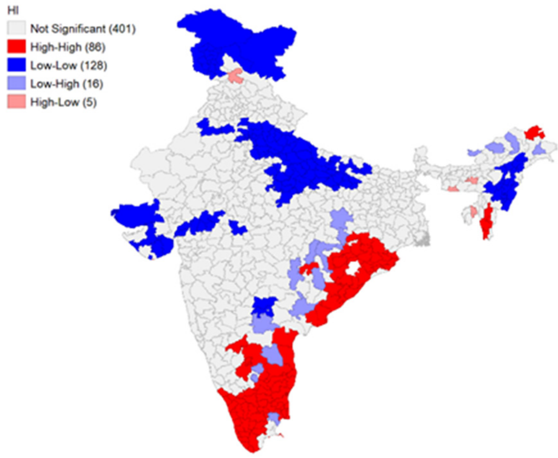
In Figure 6a–d, Moran's I statistic (I = 0.479, p = 0.001) indicates high spatial autocorrelation in health insurance coverage (%) as per NFHS 5. Univariate LISA cluster maps and significance maps revealed significant changes in hot and cold spots, highlighting major geospatial intrastate variations. Rajasthan emerges as a significant hot spot along with parts of Assam and a few districts on the eastern coast of India in Tamil Nadu and Andhra Pradesh. Jammu and Kashmir, Ladakh, parts of Uttar Pradesh, Maharashtra, and Karnataka have emerged as significant cold spots. The South Indian states of Kerala and Tamil Nadu are no longer hot spots indicating geospatial variations across time.

In Figure 7a–d, Moran's I statistic (I = 0.255, p = 0.001) indicates significant spatial autocorrelation in OOPE (INR) as per NFHS 4. Univariate LISA cluster maps and significance maps revealed relatively fewer hot spots across the country, centred particularly around districts in Kerala, Tamil Nadu, Manipur, and West Bengal, whereas parts of Chattisgarh, Madhya Pradesh, and Gujarat emerged as the cold spots with relatively lower OOPE. The regional variations are significant for 150 districts.

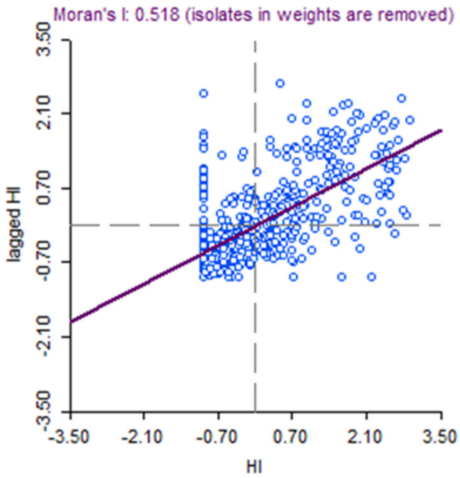


(**a**)

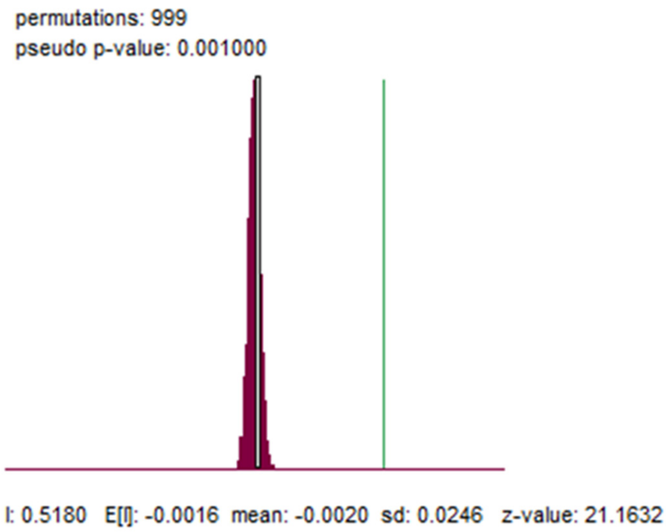
Figure 5. *Cont.*



(**b**)

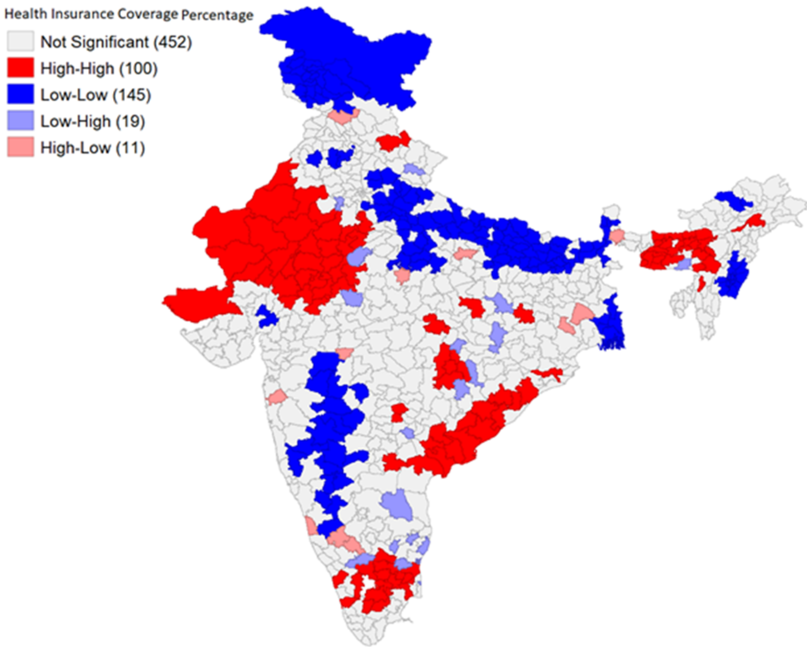


(**c**)

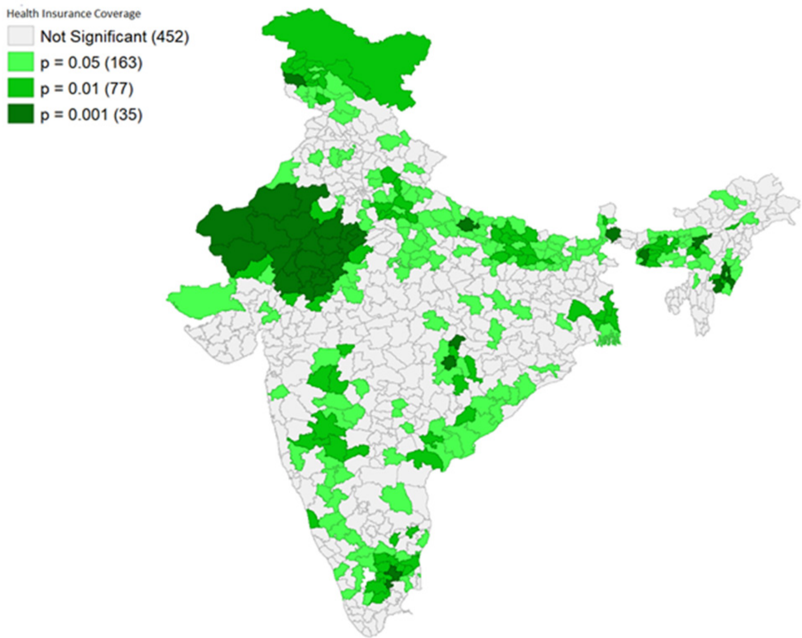


(**d**)

Figure 5. For NFHS 4, (**a**) Univariate Local Indicators of Spatial Association (LISA) Cluster Map for Health Insurance Coverage, (**b**) LISA Significance Map for Health Insurance Coverage, (**c**) Moran's I Scatter Plot, and (**d**) Univariate Local Moran's I Test of Significance.

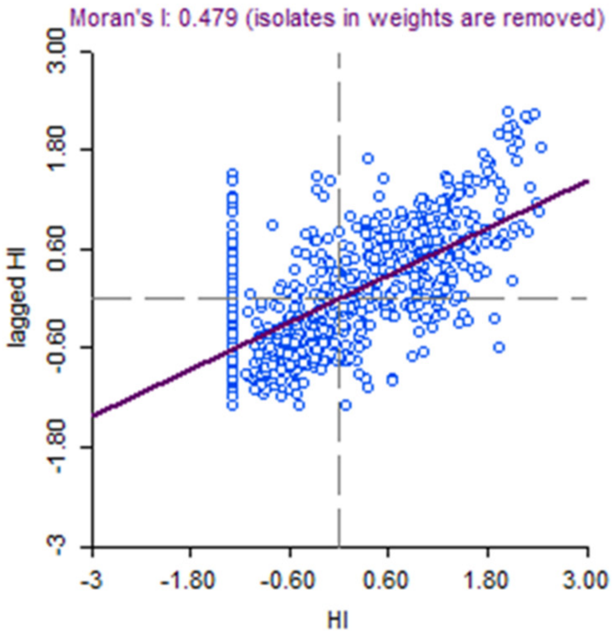


(**a**)

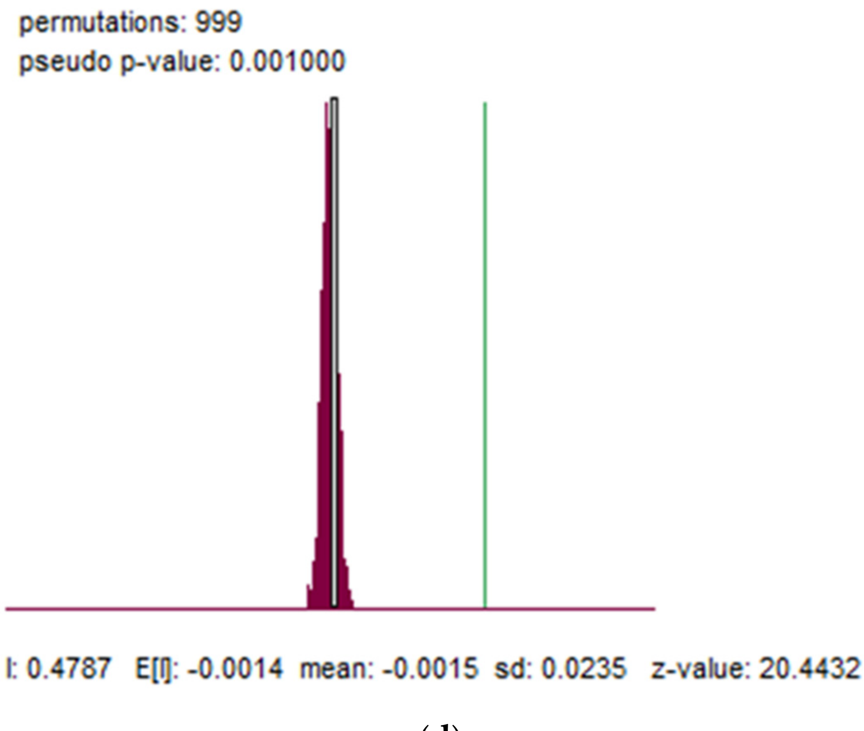


(**b**)

Figure 6. *Cont.*

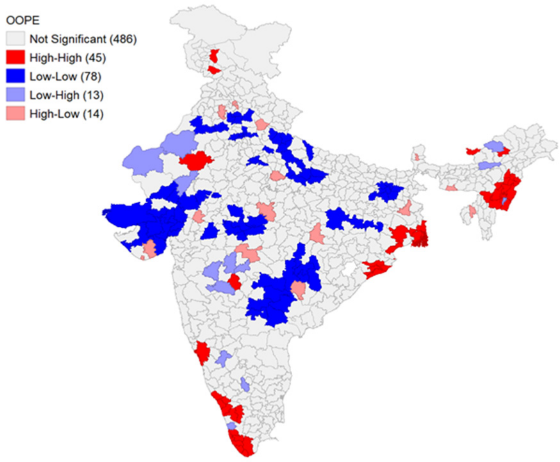


(**c**)

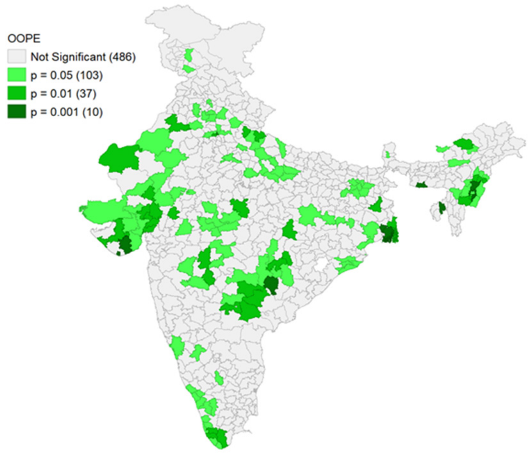


(**d**)

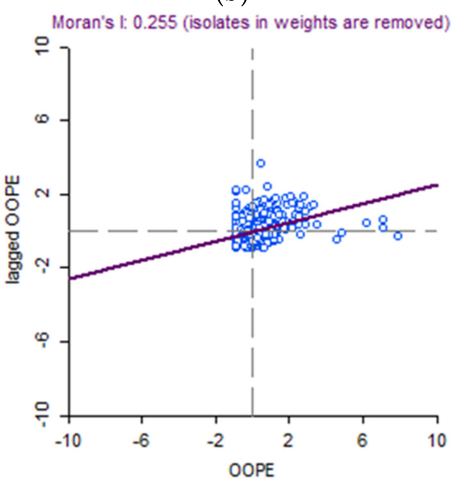
Figure 6. For NFHS 5, (**a**) Univariate Local Indicators of Spatial Association (LISA) Cluster Map for Health Insurance Coverage, (**b**) LISA Significance Map for Health Insurance Coverage, (**c**) Moran's I Scatter Plot, and (**d**) Univariate Local Moran's I Test of Significance.



(**a**)

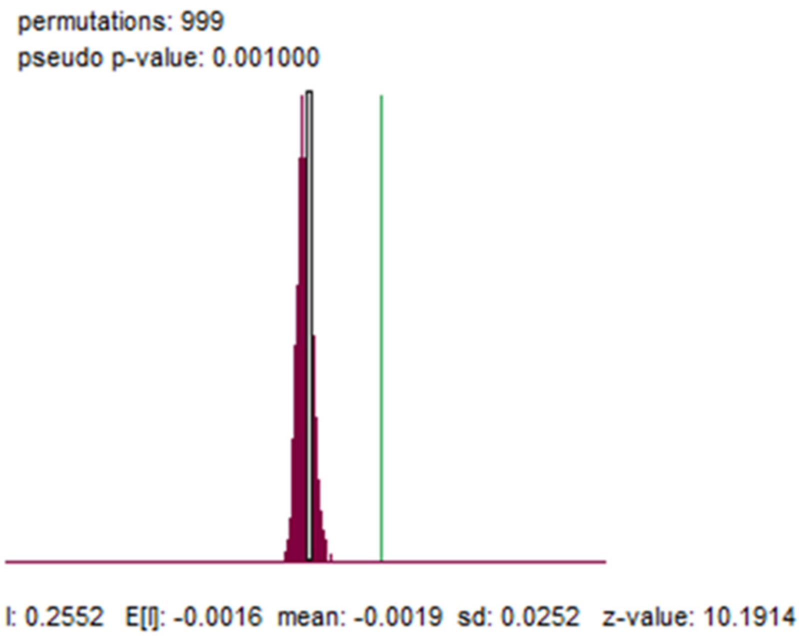


(**b**)



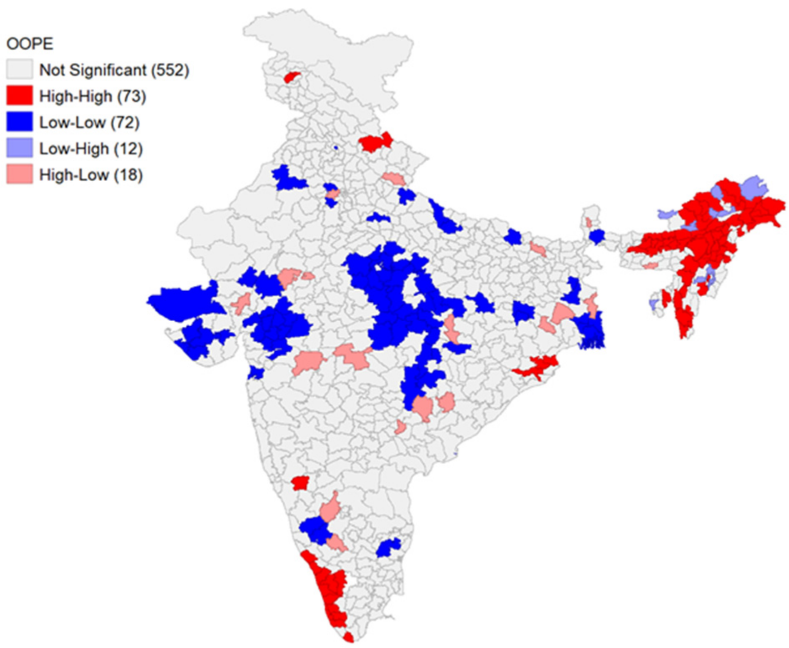
(**c**)

Figure 7. *Cont.*



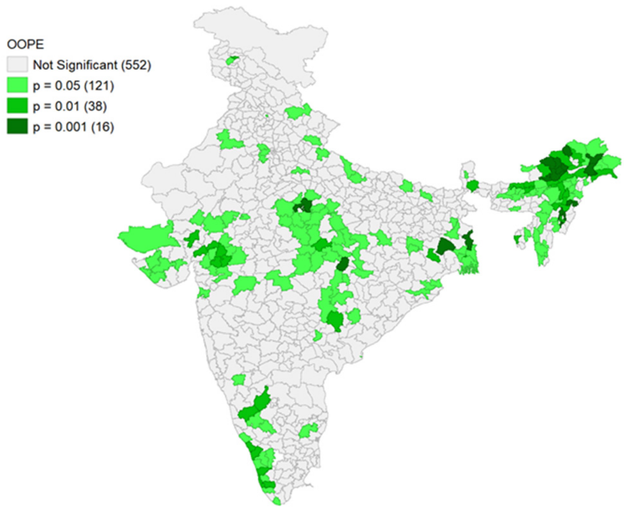
(**d**)

Figure 7. For NFHS 4, (**a**) Univariate Local Indicators of Spatial Association (LISA) Cluster Map for OOPE, (**b**) LISA Significance Map for OOPE, (**c**) Moran's I Scatter Plot, and (**d**) Univariate Local Moran's I Test of Significance.

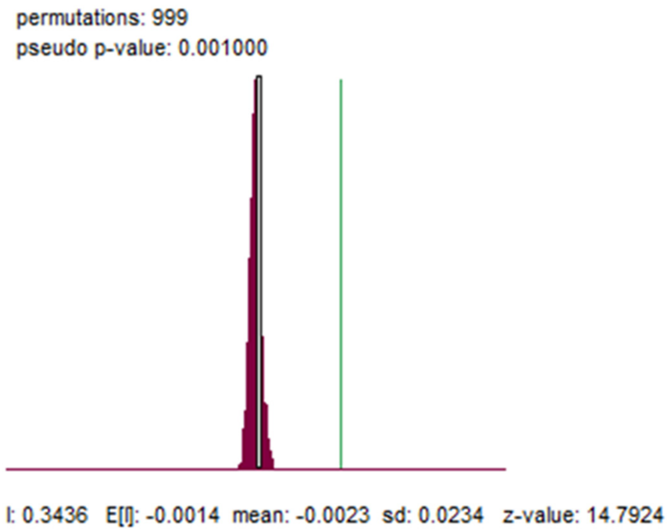


(**a**)

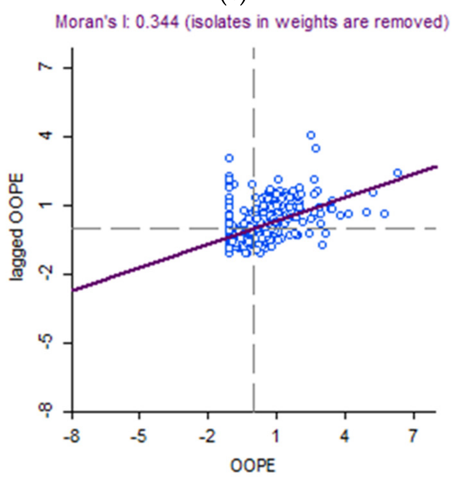
Figure 8. *Cont.*



(**b**)



(**c**)

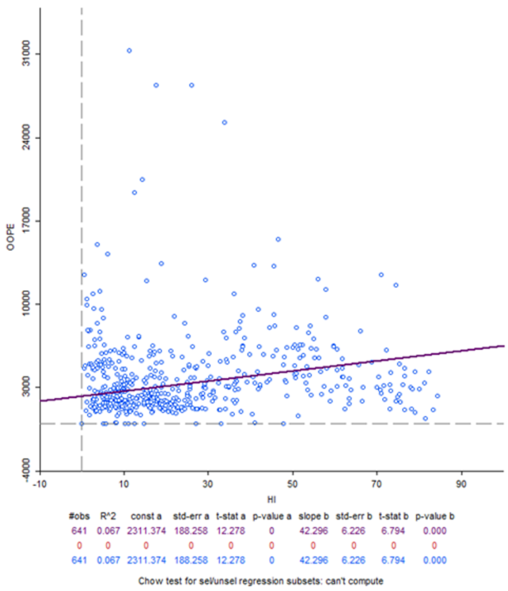


(**d**)

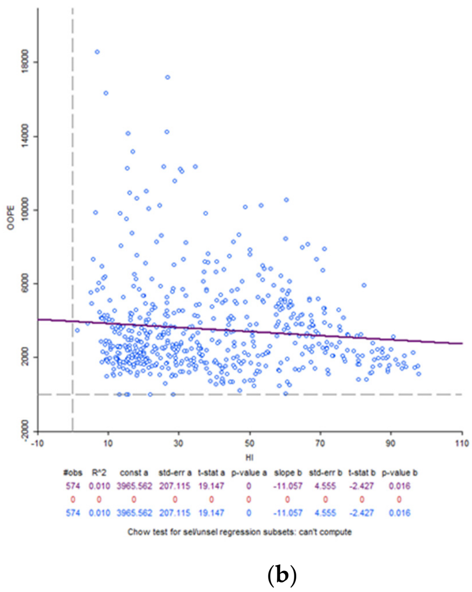
Figure 8. For NFHS 5, (**a**) Univariate Local Indicators of Spatial Association (LISA) Cluster Map for OOPE, (**b**) LISA Significance Map for OOPE, (**c**) Moran's I Scatter Plot, and (**d**) Univariate Local Moran's I Test of Significance.

Based on Figure 8a–d, it is observed that Moran's I statistic (I = 0.344, $p = 0.001$) indicates significant spatial autocorrelation in OOPE (INR) as per the NFHS 5 district-level spatial analysis. Interestingly, univariate LISA cluster maps and significance maps revealed an increase in the number of hot spots across the country, which were centred explicitly around districts in Kerala and Uttarakhand along with a major part of North East India, whereas districts in Central India emerged as cold spots with relatively lower OOPE; both of which are significant. An increase in the number of hot spots across NFHS 4 and NFHS 5 indicates rising out-of-pocket expenditure for C-sections despite growth in health insurance coverage.

Upon verification of assumptions, a spatial lag regression model was used to explore relationships between OOPE and health insurance coverage across NFHS 4 and NFHS 5. As seen in Figure 9a,b, a poor linear relationship was observed between the two variables in NFHS 4 (r = 0.2588, $p < 0.001$) and NFHS 5 (r = 0.1, $p < 0.05$), indicating no evidence of a linear relationship between the two variables.



(**a**)



(**b**)

Figure 9. (**a**) Spatial Correlation Plots Between Health Insurance Coverage (%) and (**b**) OOPE (INR) Across NFHS 4 and NFHS 5.

4. Discussion

Across NFHS 4 and NFHS 5, the relationship between OOPE and health insurance is low. There is significant intrastate heterogeneity observed in OOPE and health insurance coverage. One factor at play could be suboptimal PFHI practices, such as delayed reimbursements and low claim settlement ratios [69]. Claim settlement ratio data for ABPMJAY are not yet available in the public domain, but the data for RSBY show a steady decline from a high of 88% in 2011–2012 to a low of 57% in 2016–2017 [70]. The available data do not allow much scope for a detailed look into the reasons for this decline. It would be reasonable to surmise that low claim ratios might be inducing double-charging behaviour, leading to high OOPE.

Even though the public healthcare system is supposed to provide maternal services free of cost, OOPE on maternal care is an unfortunate reality, with most of it being on medicines and diagnostic facilities [71,72]. Overcrowding at public maternal care facilities, long waiting times, understaffing, and nonfunctional equipment mean that people feel compelled to spend meagre resources on private healthcare providers. Unethical and illegal "tie ups" between public and private providers mean that a suboptimal provision or nonprovision of outsourceable services, such as diagnostics and medicines, is incentivized. This is sometimes enforced by direct and indirect threats of nonprovision of treatment in the event of noncompliance with the unofficial directives to avail of the designated services through the unofficial and illegal "tie ups" [73]. Compromised access to public health services in underserved geographies means that women need to travel to better-served geographies, typically cities. This is particularly so for complicated deliveries and is a major cause of OOPE. With greater ownership and better quality assurance in the private sector, women gravitate towards private hospitals for maternity care, which in turn contributes to high levels of OOPE. Significant differences have been observed in expenditure on maternity care in private and public hospitals. Public maternity healthcare services need upgradation in terms of quality, ownership, availability, and accessibility. C-section deliveries are more expensive than normal deliveries. Increasing rates of C-section deliveries are an important contributor to OOPE [74]. "Tips" for services have been reported to be a major component of OOPE. There is an urgent need to put in place mechanisms for curtailing this culture of tips. ASHAs (Accredited Social Health Activists) reduce OOPE but do not eliminate it fully. Women availing monetary incentives from government safe motherhood programmes, such as JSY, are reportedly spending up to half of that in the form of "tips" and bribes to access services that are supposed to be free of cost [75].

One way to tackle the high levels of OOPE on C-section deliveries would be to scale up the cash maternity benefits. This could be achieved by strengthening the quality of the services included in the Maternity Benefit Package (MBP). It would also be beneficial to enhance JSY incentives to reduce or eliminate OOPE on antenatal care, internatal care, postnatal care, and essential new-born care in addition to expenditure on C-section deliveries. Budgetary allocations to MBP services need to be enhanced substantially to ameliorate supply-side deficiencies. Government spending on healthcare, both at the central and state levels at 4% of GDP, is clearly insufficient and needs to be ramped up along with enhancement of the absorptive capacity of the health system for the additional funding [76]. The National Food Security Act (NFSA) 2013 and the Maternity Benefit Act 2016 guarantee a cash transfer of INR 6000 to pregnant women and lactating mothers, but the structure of the funding seems to be a limiting factor. The funding is by both the central and the state governments, which means that several states have not implemented it fully [77]. The cash transfer is supposed to be made in three instalments: INR 3000 in the first 3 months of pregnancy, INR1500 immediately after the delivery at an institution, and the last INR 3000 3 months after childbirth. In contrast, going against the spirit and logic of the scheme, the cash transfers are being made only after childbirth, which means that pregnancy outcomes are not positively impacted.

The present study does not offer any evidence to suggest that health insurance coverage decreases OOPE on C-section deliveries at government facilities. With RSBY having been launched in 2008 and Ayushman Bharat in 2018, high levels of OOPE on C-section deliveries at government facilities raise serious concerns about the efficacy of PFHIs in reducing OOPE. The government would need to plug the well-documented weaknesses of PFHIs, such as fraud, double charging, poor enrolment, and lack of awareness in addition to the unfortunate phenomena of "tips" and "tie ups" mentioned earlier, that plague the public healthcare system, if we are to see any reduction in OOPE in the foreseeable future.

Author Contributions: Conceptualisation, R.K., H.B. and V.L.; Methodology, R.K., V.L., N.N. and R.V.; Software, V.L., N.N., R.V. and P.S.; Validation, N.N., R.V. and P.S.; Formal analysis, V.L., H.B., N.N., R.V. and P.S.; Data curation, R.K., V.L., H.B., N.N., R.V. and P.S.; Writing—original draft preparation, R.K. and H.B.; Writing—review and editing, V.L.; Supervision, R.K. and H.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: All the data used in this study are available for download through The Demographic Health Survey (DHS) Program's data distribution system. The DHS website belongs to ICF International. For more details on obtaining and downloading NFHS data, please visit www.DHSprogram.com.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Azam, M. Does social health insurance reduce financial burden? Panel data evidence from India. *World Dev.* **2018**, *102*, 1–17. [CrossRef]
2. Dasgupta, R.; Nandi, S.; Kanungo, K.; Nundy, M.; Murugan, G.; Neog, R. What the good doctor said: A critical examination of design issues of the RSBY through provider perspectives in Chhattisgarh, India. *Soc. Chang.* **2013**, *43*, 227–243. [CrossRef]
3. Furtado, K.M.; Raza, A.; Mathur, D.; Vaz, N.; Agrawal, R.; Shroff, Z.C. The trust and insurance models of healthcare purchasing in the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana in India: Early findings from case studies of two states. *BMC Health Serv. Res.* **2022**, *22*, 1056. [CrossRef] [PubMed]
4. Hooda, S. Decoding Ayushman Bharat. *Econ. Political Wkly.* **2020**, *55*, 107–115.
5. Karan, A.; Yip, W.; Mahal, A. Extending health insurance to the poor in India: An impact evaluation of Rashtriya Swasthya Bima Yojana on out of pocket spending for healthcare. *Soc. Sci. Med.* **2017**, *181*, 83–92. [CrossRef]
6. Sen, A. Check Hospital Pulse Regularly to Detect Bogus Claims: Insurers Told. *The Economic Times*, 25 October 2010.
7. TNN. Duplicate Cards, Fraudulent Users Pose Challenge to Rashtriya Swasthya Bima Yojana: Lucknow News-Times of India. *The Times of India*, 13 April 2013.
8. Keralakaumudi Daily. Massive Fraud Under Ayushman Bharat Health Insurance Scheme; Doctor Couple Behind Racket Embezzling Money from Govt Using Fake Patients. *Keralakaumudi Daily*, 29 August 2022.
9. Saraswathy, M. Nearly 3000 fraud cases detected under Ayushman Bharat Health Insurance Scheme. *Moneycontrol*, 12 November 2019.
10. Bureau, M.D. 23000 fraud transactions done by hospitals under Ayushman Bharat: Health Ministry Data. *Medical Dialogues*, 7 August 2022.
11. Ghosh, A. 18,606 Fraudulent Hospital Transactions Found in Ayushman Bharat Insurance Scheme, Govt Tells rs. *ThePrint*, 5 April 2022.
12. Has Ayushman Bharat delivered on its promises? IDR. *India Development Review*, 4 July 2022.
13. Dash, A.; Mohanty, S.K. Do poor people in the poorer states pay more for healthcare in India? *BMC Public Health* **2019**, *19*, 1020. [CrossRef]
14. Pandey, A.; Kumar, G.A.; Dandona, R.; Dandona, L. Variations in catastrophic health expenditure across the states of India: 2004 to 2014. *PLoS ONE* **2018**, *13*, e0205510. [CrossRef]
15. Shahrawat, R.; Rao, K.D. Insured yet vulnerable: Out-of-pocket payments and India's poor. *Health Policy Plan.* **2012**, *27*, 213–221. [CrossRef]
16. Dwivedi, R.; Pradhan, J. Does affordability matter? Examining the trends and patterns in health care expenditure in India. *Health Serv. Manag. Res.* **2020**, *33*, 207–218. [CrossRef]
17. Das, S.K.; Ladusingh, L. Why is the inpatient cost of dying increasing in India? *PLoS ONE* **2018**, *13*, e0203454. [CrossRef]
18. Mohanty, S.K.; Dwivedi, L.K. Addressing data and methodological limitations in estimating catastrophic health spending and impoverishment in India, 2004–2018. *Int. J. Equity Health* **2021**, *20*, 85. [CrossRef] [PubMed]
19. Selvaraj, S.; Farooqui, H.H.; Karan, A. Quantifying the financial burden of households' out-of-pocket payments on medicines in India: A repeated cross-sectional analysis of National Sample Survey data, 1994–2014. *BMJ Open* **2018**, *8*, e018020. [CrossRef] [PubMed]
20. Ghosh, S.; Gupta, N.D. Targeting and effects of Rashtriya Swasthya Bima Yojana on access to care and financial protection. *Econ. Political Wkly.* **2017**, *52*, 61–70.
21. A crisis of plenty: The poor in india have access to surgeries but not basic healthcare. *Econ. Political Wkly.* **2016**, *51*, 8. Available online: www.scopus.com (accessed on 19 October 2022).

22. Peters, D.H.; Muraleedharan, V.R. Regulating India's health services: To what end? What future? *Soc. Sci. Med.* **2008**, *66*, 2133–2144. [CrossRef]
23. Betrán, A.P.; Ye, J.; Moller, A.B.; Zhang, J.; Gülmezoglu, A.M.; Torloni, M.R. The increasing trend in caesarean section rates: Global, regional and national estimates: 1990–2014. *PLoS ONE* **2016**, *11*, e0148343. [CrossRef]
24. Dieleman, J.L.; Squires, E.; Bui, A.L.; Campbell, M.; Chapin, A.; Hamavid, H.; Horst, C.; Li, Z.; Matyasz, T.; Reynolds, A.; et al. Factors associated with increases in US health care spending, 1996–2013. *JAMA* **2017**, *318*, 1668–1678. [CrossRef] [PubMed]
25. Niino, Y. The increasing cesarean rate globally and what we can do about it. *Biosci. Trends* **2011**, *5*, 139–150. [CrossRef]
26. Bonu, S.; Bhushan, I.; Rani, M.; Anderson, I. Incidence and correlates of 'catastrophic'maternal health care expenditure in India. *Health Policy Plan.* **2009**, *24*, 445–456. [CrossRef]
27. Mohanty, S.K.; Kastor, A. Out-of-pocket expenditure and catastrophic health spending on maternal care in public and private health centres in India: A comparative study of pre and post national health mission period. *Health Econ. Rev.* **2017**, *7*, 31. [CrossRef] [PubMed]
28. Storeng, K.T.; Baggaley, R.F.; Ganaba, R.; Ouattara, F.; Akoum, M.S.; Filippi, V. Paying the price: The cost and consequences of emergency obstetric care in Burkina Faso. *Soc. Sci. Med.* **2008**, *66*, 545–557. [CrossRef]
29. He, Z.; Cheng, Z.; Wu, T.; Zhou, Y.; Chen, J.; Fu, Q.; Feng, Z. The costs and their determinant of cesarean section and vaginal delivery: An exploratory study in Chongqing Municipality, China. *BioMed Res. Int.* **2016**, *2016*, 5685261. [CrossRef]
30. Hsia, R.Y.; Antwi, Y.A.; Weber, E. Analysis of variation in charges and prices paid for vaginal and caesarean section births: A cross-sectional study. *BMJ Open* **2014**, *4*, e004017. [CrossRef] [PubMed]
31. Khan, A.; Zaman, S. Costs of vaginal delivery and Caesarean section at a tertiary level public hospital in Islamabad, Pakistan. *BMC Pregnancy Childbirth* **2010**, *10*, 2. [CrossRef] [PubMed]
32. Althabe, F.; Sosa, C.; Belizán, J.M.; Gibbons, L.; Jacquerioz, F.; Bergel, E. Cesarean section rates and maternal and neonatal mortality in low-, medium-, and high-income countries: An ecological study. *Birth* **2006**, *33*, 270–277. [CrossRef] [PubMed]
33. Betrán, A.P.; Merialdi, M.; Lauer, J.A.; Bing-Shun, W.; Thomas, J.; Van Look, P.; Wagner, M. Rates of caesarean section: Analysis of global, regional and national estimates. *Paediatr. Perinat. Epidemiol.* **2007**, *21*, 98–113. [CrossRef]
34. Molina, G.; Weiser, T.G.; Lipsitz, S.R.; Esquivel, M.M.; Uribe-Leitz, T.; Azad, T.; Shah, N.; Semrau, K.; Berry, W.R.; Gawande, A.A.; et al. Relationship between cesarean delivery rate and maternal and neonatal mortality. *JAMA* **2015**, *314*, 2263–2270. [CrossRef]
35. Ronsmans, C.; Holtz, S.; Stanton, C. Socioeconomic differentials in caesarean rates in developing countries: A retrospective analysis. *Lancet* **2006**, *368*, 1516–1523. [CrossRef]
36. World Health Organization. *WHO Statement on Caesarean Section Rates*; (No. WHO/RHR/15.02); World Health Organization: Geneva, Switzerland, 2015.
37. Roberts, C.L.; Nippita, T.A. International caesarean section rates: The rising tide. *Lancet Glob. Health* **2015**, *3*, e241–e242. [CrossRef]
38. Boatin, A.A.; Schlotheuber, A.; Betran, A.P.; Moller, A.B.; Barros, A.J.; Boerma, T.; Torloni, M.R.; Victora, C.G.; Hosseinpoor, A.R. Within country inequalities in caesarean section rates: Observational study of 72 low and middle income countries. *BMJ* **2018**, *360*, k55. [CrossRef]
39. Kyu, H.H.; Shannon, H.S.; Georgiades, K.; Boyle, M.H. Caesarean delivery and neonatal mortality rates in 46 low-and middle-income countries: A propensity-score matching and meta-analysis of Demographic and Health Survey data. *Int. J. Epidemiol.* **2013**, *42*, 781–791. [CrossRef] [PubMed]
40. Volpe, F.M. Correlation of Cesarean rates to maternal and infant mortality rates: An ecologic study of official international data. *Rev. Panam. Salud Pública* **2011**, *29*, 303–308. [CrossRef] [PubMed]
41. Huang, X.; Lei, J.; Tan, H.; Walker, M.; Zhou, J.; Wen, S.W. Cesarean delivery for first pregnancy and neonatal morbidity and mortality in second pregnancy. *Eur. J. Obstet. Gynecol. Reprod. Biol.* **2011**, *158*, 204–208. [CrossRef] [PubMed]
42. Marshall, N.E.; Fu, R.; Guise, J.M. Impact of multiple cesarean deliveries on maternal morbidity: A systematic review. *Am. J. Obstet. Gynecol.* **2011**, *205*, 262.e1–262.e8. [CrossRef] [PubMed]
43. Mi, J.; Liu, F. Rate of caesarean section is alarming in China. *Lancet* **2014**, *383*, 1463–1464. [CrossRef]
44. Timor-Tritsch, I.E.; Monteagudo, A. Unforeseen consequences of the increasing rate of cesarean deliveries: Early placenta accreta and cesarean scar pregnancy. A review. *Am. J. Obstet. Gynecol.* **2012**, *207*, 14–29. [CrossRef]
45. Mascarello, K.C.; Horta, B.L.; Silveira, M.F. Maternal complications and cesarean section without indication: Systematic review and meta-analysis. *Revista Saude Publica* **2017**, *51*, 105. [CrossRef]
46. Souza, J.P.; Gülmezoglu, A.M.; Lumbiganon, P.; Laopaiboon, M.; Carroli, G.; Fawole, B.; Ruyan, P. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: The 2004–2008 WHO Global Survey on Maternal and Perinatal Health. *BMC Med.* **2010**, *8*, 71. [CrossRef]
47. Vogel, J.P.; Betrán, A.P.; Vindevoghel, N.; Souza, J.P.; Torloni, M.R.; Zhang, J.; Tunçalp, Ö.; Mori, R.; Morisaki, N.; Ortiz-Panozo, E.; et al. Use of the Robson classification to assess caesarean section trends in 21 countries: A secondary analysis of two WHO multicountry surveys. *Lancet Glob. Health* **2015**, *3*, e260–e270. [CrossRef]
48. Bangal, V.B.; Thorat, P.S.; Patel, N.H.; Borawake, S.K. Caesarean sections-are we doing right. *IJBR* **2012**, *3*, 281–284. [CrossRef]
49. Feng, X.L.; Xu, L.; Guo, Y.; Ronsmans, C. Factors influencing rising caesarean section rates in China between 1988 and 2008. *Bull. World Health Organ.* **2012**, *90*, 30–39A. [CrossRef]
50. Gould, J.B.; Davey, B.; Stafford, R.S. Socioeconomic differences in rates of cesarean section. *N. Engl. J. Med.* **1989**, *321*, 233–239. [CrossRef]
51. Lin, H.C.; Xirasagar, S. Institutional factors in cesarean delivery rates: Policy and research implications. *Obstet. Gynecol.* **2004**, *103*, 128–136. [CrossRef]

52. Leone, T.; Padmadas, S.S.; Matthews, Z. Community factors affecting rising caesarean section rates in developing countries: An analysis of six countries. *Soc. Sci. Med.* **2008**, *67*, 1236–1246. [CrossRef] [PubMed]
53. Mazzoni, A.; Althabe, F.; Liu, N.H.; Bonotti, A.M.; Gibbons, L.; Sánchez, A.J.; Belizán, J.M. Women's preference for caesarean section: A systematic review and meta-analysis of observational studies. *BJOG Int. J. Obstet. Gynaecol.* **2011**, *118*, 391–399. [CrossRef] [PubMed]
54. Pang, S.M.; Leung, D.T.; Leung, T.Y.; Lai, C.Y.; Lau, T.K.; Chung, T.K. Determinants of preference for elective caesarean section in Hong Kong Chinese pregnant women. *Hong Kong Med. J.* **2007**, *13*, 100. [PubMed]
55. Sufang, G.; Padmadas, S.S.; Fengmin, Z.; Brown, J.J.; Stones, R.W. Delivery settings and caesarean section rates in China. *Bull. World Health Organ.* **2007**, *85*, 755–762. [CrossRef] [PubMed]
56. Zwecker, P.; Azoulay, L.; Abenhaim, H.A. Effect of fear of litigation on obstetric care: A nationwide analysis on obstetric practice. *Am. J. Perinatol.* **2011**, *28*, 277–284. [CrossRef] [PubMed]
57. Cavallaro, F.L.; Cresswell, J.A.; França, G.V.; Victora, C.G.; Barros, A.J.; Ronsmans, C. Trends in caesarean delivery by country and wealth quintile: Cross-sectional surveys in southern Asia and sub-Saharan Africa. *Bull. World Health Organ.* **2013**, *91*, 914–922D. [CrossRef] [PubMed]
58. Neuman, M.; Alcock, G.; Azad, K.; Kuddus, A.; Osrin, D.; More, N.S.; Nair, N.; Tripathy, P.; Sikorski, C.; Saville, N.; et al. Prevalence and determinants of caesarean section in private and public health facilities in underserved South Asian communities: Cross-sectional analysis of data from Bangladesh, India and Nepal. *BMJ Open* **2014**, *4*, e005982. [CrossRef] [PubMed]
59. Sreevidya, S.; Sathiyasekaran, B.W.C. High caesarean rates in Madras (India): A population-based cross sectional study. *BJOG Int. J. Obstet. Gynaecol.* **2003**, *110*, 106–111. [CrossRef]
60. Khunpradit, S.; Tavender, E.; Lumbiganon, P.; Laopaiboon, M.; Wasiak, J.; Gruen, R.L. Non-clinical interventions for reducing unnecessary caesarean section. *Cochrane Database Syst. Rev.* **2011**. [CrossRef] [PubMed]
61. Althabe, F.; Belizán, J.M.; Villar, J.; Alexander, S.; Bergel, E.; Ramos, S.; Romero, M.; Donner, A.; Lindmark, G.; Langer, A.; et al. Mandatory second opinion to reduce rates of unnecessary caesarean sections in Latin America: A cluster randomised controlled trial. *Lancet* **2004**, *363*, 1934–1940. [CrossRef] [PubMed]
62. Joe, W.; Perkins, J.M.; Kumar, S.; Rajpal, S.; Subramanian, S.V. Institutional delivery in India, 2004–2014: Unravelling the equity-enhancing contributions of the public sector. *Health Policy Plan.* **2018**, *33*, 645–653. [CrossRef]
63. Singh, P.; Hashmi, G.; Swain, P.K. High prevalence of cesarean section births in private sector health facilities-analysis of district level household survey-4 (DLHS-4) of India. *BMC Public Health* **2018**, *18*, 613. [CrossRef]
64. Vellakkal, S.; Reddy, H.; Gupta, A.; Chandran, A.; Fledderjohann, J.; Stuckler, D. A qualitative study of factors impacting accessing of institutional delivery care in the context of India's cash incentive program. *Soc. Sci. Med.* **2017**, *178*, 55–65. [CrossRef]
65. International Institute for Population Sciences. *India National Family Health Survey NFHS-4 2015-16*; Mumbai IIPS ICF; International Institute for Population Sciences: Deonar, Mumbai, 2017; pp. 1255–1259.
66. Ghosh, S.; James, K.S. Levels and trends in caesarean births: Cause for concern? *Econ. Political Wkly.* **2010**, *45*, 19–22.
67. Mishra, U.S.; Ramanathan, M. Delivery-related complications and determinants of caesarean section rates in India. *Health Policy Plan.* **2002**, *17*, 90–98. [CrossRef]
68. Mohanty, S.K.; Panda, B.K.; Khan, P.K.; Behera, P. Out-of-pocket expenditure and correlates of caesarean births in public and private health centres in India. *Soc. Sci. Med.* **2019**, *224*, 45–57. [CrossRef]
69. Trivedi, M.; Saxena, D.B. Third angle of RSBY: Service providers' perspective to RSBY-operational issues in Gujarat. *J. Fam. Med. Prim. Care* **2013**, *2*, 169.
70. Chowdhury, S.; Ramandeep, A.R.; Indrani, G. *Ayushman Bharat Costs and Finances of the Prime Minister's Jan Arogya Yojana. Project Report*; Institute of Economic Growth: Delhi, India, 2019; Available online: https://fincomindia.nic.in/writereaddata/html_en_files/fincom15/StudyReports/Ayushman%20Bharat%20Costs%20and%20Finances.pdf (accessed on 23 October 2022).
71. Tripathi, N.; Saini, S.K.; Prinja, S. Impact of Janani Shishu Suraksha Karyakaram on out-of-pocket expenditure among urban slum dwellers in northern India. *India Pediatr.* **2014**, *51*, 475–477. [CrossRef] [PubMed]
72. Leone, T.; James, K.S.; Padmadas, S.S. The burden of maternal health care expenditure in India: Multilevel analysis of national data. *Matern Child Health J.* **2013**, *17*, 1622–1630. [CrossRef] [PubMed]
73. Garg, C.C.; Pratheeba, J.; Negi, J. Utilisation of health facilities for childbirth and out-of-pocket expenditure impact of government policies. *Econ. Political Wkly.* **2018**, *53*, 53–61.
74. Goli, S.; Rammohan, A. Out-of-pocket expenditure on maternity care for hospital births in Uttar Pradesh, India. *Health Econ. Rev.* **2018**, *8*, 5. [CrossRef]
75. Issac, A.; Chatterjee, S.; Srivastava, A.; Bhattacharyya, S. Out of pocket expenditure to deliver at public health facilities in India: A cross sectional analysis. *Reprod. Health* **2016**, *13*, 99. [CrossRef] [PubMed]
76. Horton, R.; Das, P. Indian health: The path from crisis to progress. *Lancet* **2011**, *377*, 181–183. [CrossRef]
77. Goli, S.; Moradhvaj Rammohan, A.; Shruti Pradhan, J. High spending on maternity care in India: What are the factors explaining it? *PLoS ONE* **2016**, *11*, e0156437. [CrossRef]