Health Care Disparities in the Selected Major States of India

Ibalarilin Lyngdoh[1] **and Farhat Hossain**[2]

Abstract

The present study focuses on healthcare disparity in the selected major states of India. It analyses the current scenario of health care among major states of India. Further, it aims to identify the socio-economic factors on the health disparities between major states. The major states of India include Kerela, Tamil Nadu, Maharashtra, Assam, Rajasthan and Madhya Pradesh. These states were selected based on the demographic profile and the other indicators were mainly the health outcomes. Data were collected and analysed based on the secondary sources data from Census of India 2011, SRS, 2022, Special Bulletin on Maternal Mortality in India 2018-20, India's Central Bank, 2023, Rural Health Statistics, 2021-22. Descriptive statistics such as percentage, mean, coefficient of variation (CV) and so on has been used in analysing the data to measure the disparities levels. This paper shows that the level of variations for the MMR and IMR is relatively high. The states with better performance in literacy rate and Gross State Domestic Product have surplus of health care institutions and best health care outcomes. In contrary to that, the states with low performance in literacy and Gross State Domestic Product having shortage in health care institutions and worst health care outcomes. The government intervention is needed to meet the requirements of health care institutions in these states for effective health care outcomes.

Introduction

India has one of the most complex healthcare systems in the world. This is because the country is a vast and the most diverse in the world with huge population, different density of areas, different cultural practices and so on. Therefore, the practices and outcomes of Health Care differ from one state to another. These type variations are known as inherent variations that occur among people, locations, and situations. It also refers to these conditions of inherent differences as disadvantages. Instead of being called differences, the divisions that people make in their lives as a result of social, economic, political, religious, and cultural circumstances are called disparities or inequalities.

[1] Research Scholar, Dept. of Economics, University of Science and Technology Meghalaya, Ri Bhoi, Meghalaya, Email: ibalarilinlyngdoh20@gmail.com

[2] Assistant Professor and Post-Doctoral Fellow (ICSSR), Dept. of Economics, Falakata College, West Bengal Email farhat.hossain88@gmail.com

These distinctions are called, in that order, social, economic, political, religious, and cultural divisions. However, in order to go along the path of growth, humanity has always made an effort to lessen these barriers. (Rajalakshmi,2013). On the other hand, given its expanding economy, India is sometimes referred to as a powerhouse. It is one of the major economies in the world growing at the fastest rate. India may be able to fully utilize a few of its advantages in the future decades. This is not the case in India, which is home to the majority of the world's poor and underprivileged people. Additionally, India has the largest proportion of illiterates and unemployed individuals. Its rates of maternal, newborn, and child mortality are relatively high, and its rates with maternal and child mortality rate (Kurian,2007). Therefore, health is considered as an important component of human development. Good health is not only a prerequisite for well-being of people; it also augments labour productivity and stimulates economic growth.

India has a Maternal Mortality Rate of 97/100,000 live births. Though there is a decline in MMR from 301/100,00 live births during 2001-03 to 97/100,000 live births during 2018-20, India is still behind from the 3rd Sustainable Development Goals set by the United Nations aiming or targeting at reducing the MMR to exactly or less than 70/100,000 live births by the end of 2023 (SRS,2022). According to the World Health Organisation, 2023 around 2,87,000 women died during and following pregnancy and childbirth in the year 2020. Particularly in India, in 2020 about 23,800 maternal deaths (Meh.C. et.al., 2022). Therefore, it has become important for the government to come up with special schemes, subsidies and policies to look upon the particular problems facing in the country (Nongkynrih,2013). Over the years Government of India has taken many initiatives to improve the health in the country by introducing various special schemes, subsidies and policies. However, it has been found out that not all regions of the nation gain equally from it and stated that the gain it is 'uneven across regions' (Saikia, 2014).

Therefore, this study investigates the differences of health performance between one state and another. It measures and analyses the disparities through the lens of outcomes, services and socio-economics gaps in healthcare and has three sections. The first section examines the current scenario of health care outcomes among major states of India. The second section broadly understands the availability of health facilities for proper accessible health services through various levels. It examines the extent of disparities in the availability of health care facilities among different regions of the country. Lastly, this study identifies how the socio-economic factors create an impact on the health performance disparities between major states.

Review of Literature

Health care disparities in India represent significant inequities in access to health services, quality of care, and health outcomes. These disparities are influenced by a complex interplay of socioeconomic, geographic, demographic, and systemic factors. This literature review explores key themes and findings from research on health care disparities in India.

Socioeconomic Disparities

Socioeconomic status is one of the most significant determinants of health care access and outcomes in India. The poor often have limited access to health care services, both in terms of affordability and availability. A large portion of India's population, especially in rural areas, relies on out-of-pocket expenses, leading to financial hardship and exacerbating inequality in health care access. A study by Gupta et al. (2018) emphasize that financial constraints often force individuals to rely on inadequate public health facilities, resulting in poorer health outcomes compared to wealthier counterparts who access private care. Another study by Selvaraj et al, (2021) found that individuals in the lowest wealth quintile were significantly less likely to access basic health services compared to those in the highest quintile, leading to poorer health outcomes. Reddy et al. (2011) examined the inequalities in health service utilization across different economic groups in India and found that poor households are more likely to avoid or delay seeking health care due to financial constraints, resulting in higher morbidity and mortality rates. Then Borooah (2012) noted that poverty and low levels of education are significant barriers to accessing health care.

Health Infrastructure Disparities

Health infrastructure in India, including the availability of health care facilities is unevenly distributed across states. Baru et al. (2010) found that rural health care facilities, especiallyin Northern and Eastern states, are often under-resourced, with lack of medical equipment, medicines, and train staff. This leads to poor service delivery, delayed treatment, and reliance on informal or traditional healers. According to the National Rural Health Mission (NRHM) Review (2015), the lack of adequate rural health infrastructure, particularly in states like Uttar Pradesh, Bihar and Madhya Pradesh, results in high rates of maternal mortality, child mortality and communicable diseases. Saikia (2017) reported that rural health care centres often face absenteeism of medical staff and a lack of specialists, contributing to poor health outcomes for rural populations.

Health Outcomes

Disparities in health care access manifest in varied health outcomes across different populations. India faces a dual burden of diseases, with poorer populations suffering from both communicable diseases and an increasing prevalence of non-communicable diseases. Also, Bhutta et al. (2015) found that the availability of immunization and child health services is much higher in southern states, contributing to lower child mortality rates in these regions compared to northern and eastern states.

The literature on health care disparities in India reveals profound inequalities in both health infrastructure and health outcomes, driven by socioeconomics status. These disparities have resulted in unequal access to health care services. A study by Vikram and Vanneman (2014) showed that states with higher levels of poverty, lower literacy rates and poor health infrastructure have higher levels of maternal mortality and infant

mortality. The authors emphasized the need for targeted state level interventions to address these disparities. While government programs like the National Health Mission and Ayushman Bharat have made some progress in reducing these disparities, significantly gaps remain.

Database and Methodology

According to the NITI AAYOG, Government of India, 2019-20 there are 19 larger states in health. However, for the present study only six major states of India like Kerela, Tamil Nadu, Maharashtra, Assam, Rajasthan and Madhya Pradesh. These states were selected based on the demographic profiles of the states and also mainly looking into the health care indicators such as IMR and MMR of each state collected from SRS,2022. Three states were selected such as Kerela, Maharashtra and Tamil Nadu based on having better performance in health care and three states were selected such as Assam, Rajasthan and Madhya Pradesh having worst performance in health care.The data were collected and analyse purely based on secondary sources of data only. Regarding the socio-economics factor the study looks at the literacy rate and Gross State Domestic Product only which may be the limitation of this study. Demographic profile of all the six states were compiled from Census of India, 2011. The present analysis of health care infrastructure, health care outcomes and socio-economics factors are collected from Rural Health Statistics, 2021-22 published by the Government of India Ministry of Health and Family Welfare Statistics Division, SRS Bulletin, 2022 and Special Bulletin on Maternal Mortality in India, 2018-2020 published by Office of The Registrar General, India, Census of India, 2011 published by Office of The Registrar General & Census Commission, India and Handbook of Statistics on Indian States , 2023 published by Reserve Bank of India respectively. Descriptive statistics such as percentage, mean, coefficient of variation (CV) and so on has been used in analysing the data to measure the disparities levels

Results and Discussion

Profile of Health Care Outcomes in the Major States of India

The current study includes only six health indicators such as the Crude Birth Rate (CBR), Crude Death Rate (CDR), Infant Mortality Rate (IMR), Maternal Mortality Rate (MMR), and Institutional Delivery, The CBR of Madhya Pradesh and Rajasthan is more compared to other major states of the country with 24.1 and 23.5 per 1000 population respectively while Kerela and Tamil Nadu is lesser than other major states of India with 13.2 and 13.4 per 1000 population respectively. The CDR is higher in Kerela and Madhya Pradesh with 7 and 6.5 per 1000 population respectively, on the other hand, Maharashtra and Rajasthan has low CDR with 5.5 and 5.6 per 1000 population respectively. Also, the IMR and MMR of states like Assam, Rajasthan and Madhya Pradesh has shown at a higher rate exceeding the national average level of 28 per 1000 live birth and 97 per 1,00,000 live birth respectively with 36 and 195 of IMR and MMR in Assam, 32 and 113 of IMR and MMR in Rajasthan, and 43 and 173 of IMR and MMR in Madhya Pradesh resulting far from achieving Sustainable Development Goals to achieve 70 per 1,00,000 live births 28 per 1000 live birth in IMR while Kerela,

Maharashtra and Tamil Nadu has shown lower rate of IMR and MMR with 6 and 19 of IMR and MMR in Kerela, 16 and 33 of IMR and MMR in Maharashtra, and in Tamil Nadu there is 13 and 54 of IMR and MMR achieving the Sustainable Development Goals. In case of Institutional Delivery Kerela and Tamil Nadu has the highest with 99.8 percent and 99.6 percent respectively. Whereas Assam has the lowest among the major states of India with 84.1 percent.

Table:1. Status of Health Care in Major States of India

Major States/ Indicators	CBR per 1000 population (2020)	CDR per 1000 population (2020)	IMR per 1000 live birth (2020)	MMR per 1,00,000 live birth (2018-20)	ID in %(2018-20)
Kerela	13.2	7	6	19	99.8
Maharashtra	15	5.5	16	33	94.7
Tamil Nadu	13.8	6.1	13	54	99.6
Assam	20.8	6.2	36	195	84.1
Rajasthan	23.5	5.6	32	113	94.9
Madhya Pradesh	24.1	6.5	43	173	90.7
All India	19.5	6	28	97	88.6

Source: Computed from SRS Bulletin 2022 and Special Bulletin on Maternal Mortality 2018-20

Status of Health Care Infrastructure in Major States of India

An essential tool for understanding a nation's health care delivery system and mechanisms is its health infrastructure (Hossain, 2019).Primary, secondary, and tertiary levels make up India's three tiers of health care infrastructure or system. Primary Health Centres (PHCs) and Sub Centres (SCs) are included at the primary level. Community Health Centres (CHCs) and smaller Sub-District hospitals are included in the secondary level. At the tertiary level it comprises District Hospitals and Medical Colleges (Chokshi, et al., 2016). Only the primary and secondary health care systems which include SCs, PHCs, and CHCs in each of India's six major states were included in this analysis. Table 2 shows the total population and the current status of health care facilities of each major states of India. It is seen that Kerela and Tamil Nadu are the only two states among the selected major states with surplus in health care infrastructure in both primary and secondary level i.e. CHCs, PHCs and SCs. Rajasthan have surplus at CHCs and SCs levels but a slightly shortfall at PHCs level of 0.14 per cent. The highest shortfall of health infrastructure is found in Maharashtra, Assam and Madhya Pradesh in all the three levels. Hence, from the study it is found out that states like Kerela and Tamil Nadu having better performance in health care outcomes can be seen having surplus in health care facilities. On the other hand, Maharashtra also is having better health outcomes performance, however they fail to meet the requirement in the availability of health care infrastructure showing shortage in all the three tier levels with 56 per cent in CHCs, 20 per cent in PHCs and 25 per cent in SCs. States like Assam, Madhya Pradesh and Rajasthan which are the worst performance in health outcomes are found out that they cannot meet the requirement for the health care facilities only with an exception for Rajasthan showing surplus of health care facilities in the two levels which include

CHCs and SCs and lower percentage of shortfall in PHCs with 0.14 percent. Assam and Madhya Pradesh have a shortfall in all the three tier levels with 36 per cent and 42 per cent in CHCs respectively, 14 per cent and 45 per cent in PHCs respectively, 29 per cent and 29 per cent in SCs respectively. Though (Sharma, 2014) mention that the severe lack of public health facilities in the states may be one of the causes of the low improvement in health indicators, therefore to achieve the desired outcomes in lowering the IMR and MMR, the government must first strengthen the health care systems.This study, however, reveals that while states such as Maharashtra perform better in terms of health care outcomes, there is a shortage of health facilities in all three tier levels, and states such as Rajasthan, which perform the worst in terms of health care outcomes, have surpluses in two tier levels CHCs and SCs and only a minor shortage of 0.14 percent in the PHCs level. Therefore, variables other than health care facilities cannot be the only cause of improved health outcomes.

Table: 2. Status of Health Care Facilities in the Selected Major States of India, 2019

		In Position Public Health Care Facilities			Required No. of Public Health Care Facilities			Shortfall/Surplus in Public Health Care Facilities			% of Shortfall in Public health Care		
Major States	Population	CHC	PHC	SC	CHC	PHC	SC	CHC	PHC	SC	CHC	PHC	SC
Kerela	3,34,06,061	211	780	4933	78	314	1893	133	466	3040	*	*	*
Maharashtra	11,23,74,333	256	1853	10,673	580	2323	14,255	-324	-470	-3582	56	20	25
Tamil Nadu	7,21,47,030	385	1422	8713	300	1202	7235	85	220	1478	*	*	*
Assam	3,12,05,576	172	920	4667	267	1068	6546	-95	-148	-1879	36	14	29
Rajasthan	6,85,48,437	616	2133	13,523	534	2136	13,152	82	-3	371	*	0.14	*
Madhya Pradesh	7,26,26,809	332	1266	10,287	577	2311	14,421	-245	-1045	-4134	42	45	29
All India	1,21,08,54,977	5480	24,935	1,57,935	7894	31,640	1,93,310	-2852	-974	-48,060	36	31	25

Sources: Computed from Rural Health Statistics, 2021-22& Census of India, 2011

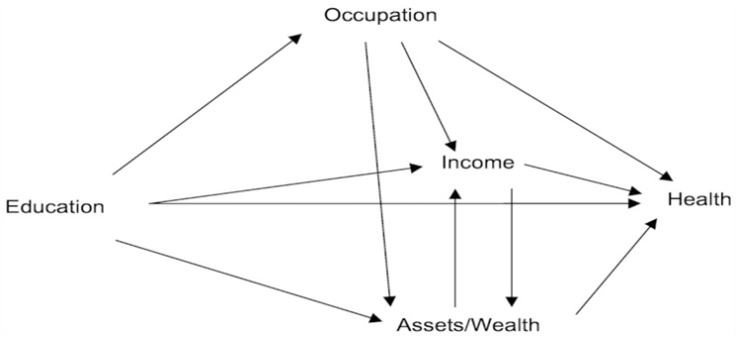
Notes:*As per IPHS norms, one SC established for every 5,000 population in plain areas and for every 3,000 population in hilly/tribal/ desert areas whereas a PHC covers a population of 20,000 in hilly, tribal or difficult areas and 30,000 populations in plain areas and each CHC, thus catering to approximately 80,000 populations in tribal/hilly areas and 1,20,000 populations in plain areas.*

Socio-Economic Profiles in the Major States of India

The term “socioeconomic status” describes a person’s place in a social stratification structure that distributes the primary resources in a way that allows people to attain their intended goals, including good health. Within a causative paradigm related to health was first presented by Blau

and Duncan in 1967, these resources include money, assets, income, occupation, and education shown in **figure 1**. It shows how all these resources lead to health. However, for the present study only education and income were taken into consideration. Table 3 below shows the literacy rate of both male and female, as well as the Gross State Domestic Product (GSDP) of each major states of India. In Kerela and Maharashtra it is seen of having the highest literacy rate in comparison to others state with 94 per cent and 82.34 per cent in total respectively, while Rajasthan and Madhya Pradesh have the lowest literacy rate among the major states with 66.11 per cent and 69.2 per cent in total respectively. On the other hand, the GSDP in the major states of India is found to be higher in the state of Maharashtra and Tamil Nadu with 202.7 million and 134.3 million respectively which is 13.52 per cent and 13.43 per centout of India GDP which is 1499.6 million. However, Assam has the lowest GSDP among others with 26.2 million, i.e., 1.75 per cent out of the country GDP. It shows that the major states like Kerela, Maharashtra and Tamil Nadu have higher literacy rate and GSDP, while Assam, Rajasthan and Madhya Pradesh have lower literacy rate and GSDP.

Figure. 1: Simple Intragenerational Causal Model Relating Major Indicators of Socio-Economic Position To Each Other And to Health



Source: Cited from Blau and Duncan, 1967

Table: 3. Status of Socio-economics factor in Major States of India

	Literacy Rate in % (2011			Gross State Domestic Product at constant price (in millions) (2021-22)
	Male	Female	Total	
Kerela	96.11	92.07	94.00	57.2
Maharashtra	88.38	75.87	82.34	202.7
Tamil Nadu	86.77	73.44	80.09	134.3
Assam	77.85	66.27	72.19	26.2
Rajasthan	79.19	52.12	66.11	73.8
Madhya Pradesh	78.73	59.24	69.32	60
India	65.46	82.14	74.04	1499.6

Source: Computed from Census of India, 2011 and India's Central Bank, 2023

Disparities in Health Outcomes in Major States of India

Levels of Disparities in Health Profiles within the Major States of India

To measure level of variation in the health profiles within the major states of India, Coefficient of Variation (CV) is formulated (Table 4). As, CV has been widely utilized in the literature to calculate the health and economic inequalities among states and regions (Spinakis et al., 2011).The primary causes of the widening of the disparities among India's major states are the largest CVs for the MMR, which is 76.03 percent in the years 2018–21, and the IMR, which is 60.32 percent in the year 2020. With the exception of MMR and IMR alone, the variance in other health indices is also quite low—less than 30 per cent. Due to the distinct demographics and other features of each of India's main states, there is a lot greater range in MMR and IMR.

Table: 4. Levels of Variations of Health Profiles in the Major States of India

Health Variables/ Statistics	Mean	Std Dev	CV	Best Performing States	Least Performing States
CBR	18.4	4.98	27.07	13.2 (Kerela)	24.1 (Madhya Pradesh)
CDR	6.15	0.56	9.13	5.5 (Maharashtra)	7 (Kerela)
IMR	24.33	14.68	60.32	6 (Kerela	43 (Madhya Pradesh)
MMR	97.83	74.38	76.03	19 (Kerela)	195 (Assam)
ID	93.97	5.92	6.3	99.8 (Kerela)	84.1 (Assam)

Source: Author's own calculations (Calculated from Table. 1)

Note: CBR is per 1,000 populations, CDR is per 1,000 populations, IMR is per 1,000 live births, MMR is per 100,000 live births and ID is giving in %

Levels of Disparities in Socio-Economic Profiles within the Major States of India

When a region's education, per capita income, standard of life, consumption patterns, industrial and agricultural growth differ in different areas, it's referred to as inter-state inequalities. A state's backwardness could originate from disparities or from regional variety (Rajalakshmi, 2013). In this study it is found that three of the major states such as Kerela, Maharashtra and Tamil Nadu have the high literacy rate and GSDP, the health outcomes in these states also are seen to have better performance in comparison to other three major states of India like Assam, Rajasthan an Madhya Pradesh having low literacy rate and GSDP and the health outcomes in these states are seen to be worst among them. In the study of (Zajacova & Lawrence, 2018) bring up the connection between health and education, it is discovered that those with higher levels of education have longer and healthier lives than those with lower levels of education. It should come as no surprise that health disparities increased in connection with socioeconomic inequality. Over the years, the nation's health has improved, however the wealthiest states enjoy the majority of the gains. Also, in the study of (Kawachi & Kenedy, 1999)describe the correlation between health and income. It has been shown that greater health results from higher incomes and vice versa. The study revealed that the distribution of income within a society could also have an impact on health. Furthermore, the negative impact

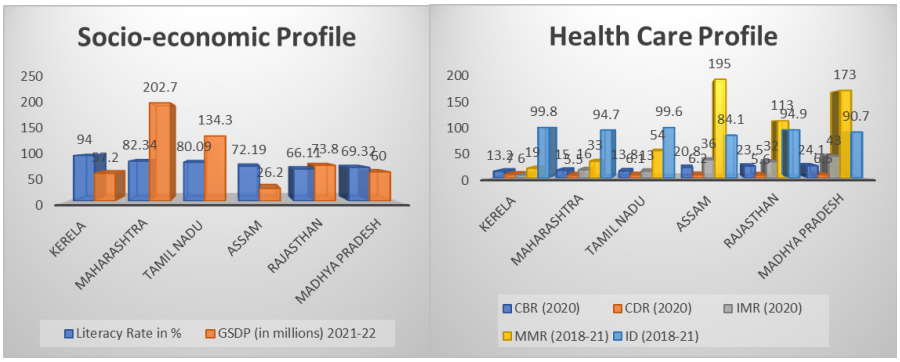
of economic inequality on health may be mitigated by inadequate investment in social goods like healthcare and public education. Figure 2 depicts those states with higher education and income, the better is the health performance. On the other hand, states with lower education and income are results in worth performance in health.

Table: 5. Levels of Variations of Socio-Economic Profiles within the Selected States of India

Socio- Economic Variables/Statistics	Mean	Std Dev	CV	Best Performing States	Least Performing States
Literacy Rate in %	77.34	10.27	13.28	94	66.11
GSDP (in millions) 2021-22	92.37	64.71	70.06	202.7	26.2

Source: Author's Own Calculation computed from Table 4

Figure. 2. Socio-Economic Disparities in Health Care Within Selected State of India



Source: Author's own figure computed from table 1 and 3.

Conclusion

This paper examines the current status of health care outcomes and how socio-economic factors create disparities in health. The health care outcomes in indicators such as CBR, CDR, IMR, MMR and Institutional Delivery are better in states like Kerela, Maharashtra and Tamil Nadu are performing better in health care outcomes achieving the third objective of sustainable development goals. On the other hand, states like Assam, Rajasthan and Madhya Pradesh are performing worst in health care outcomes not achieving the third objective of sustainable development goals. The study found out that there is a high disparities of health outcomes especially the MMR and IMR where MMR is highest in Assam and IMR is highest in Madhya Pradesh. One of the factors that can lead to better performance of healthcare outcomes is the availability of healthcare infrastructure. However, in this study it has been found out that state like Kerela and Tamil Nadu are having surplus of health care infrastructure in all the three sectors. Rajasthan are having surplus in two sectors and a sightly shortfall of 0.14 per cent in PHCs sector. Maharashtra, Assam and Madhya Pradesh are having a shortfall of health care infrastructure in all the three sectors. From this it is seen that

though Maharashtra are having better performance in health care outcomes while there is shortfall of health infrastructure in all the three sectors, while Rajasthan which is performing worst in health care outcomes is having surplus in health care infrastructure in two sectors and a slightly shortfall in PHCs sector. Therefore, the availability of health care infrastructure cannot be the only leading factors to progress in health outcomes. There are other factors such as economic factors that depict the performance and disparities of health outcomes as revealed in the study that states with high literacy rate and GSDP are seen to have better performance in health outcomes while other states with low literacy rate and GSDP are seen to have worse performance in health outcomes. Therefore, the government needed to implement some policy in uplifting the socio-economic factors like education in order to generate skills and employment to increase the income in order to gain better health outcomes. Also, future study can look upon other socio-economic factors and enquiry on other major states of India.

References

Nongkynrih, P. K. (2013, January). Governance and Provision of Health Security: A CaseStudy of the Implementation of the National Rural Health Mission Programme in East Khasi Hills District of Meghalaya. *IOSR Journal of Humanities and Social Science, 8 (1)*, 1-6. doi:http://dx.doi.org/10.9790/0837-0810106

Baru, R., Acharya, A., Acharya, S., Kumar, S., & Nagaraj, K. (2010). Inequities in Access to Health Service in India: Caste, Class and Region. *Economic and Political Weekly, 45*(38), 49-58.

Bhutta, Z. A., Das, J. K., Bahl, R., Lawn, J. E., Salam, R. A., Paul , V. K., . . . Walker, N. (2014). Can available interventions end preventable deaths in mothers, newborn babies and stillbirths and at what cost? *The Lancet, 384*(9940), 347-370.

Blau, P., & Duncan, O. D. (1967). *The American Occupational Structure* . New York: Wiley.

Borooah, V. K. (2012). Social Identity and Educational Attainment: The Role of Caste and Religion in Explaining Disparities in Access to Education in India. *Development and Change, 43*(6), 1233-1261.

Chokshi, M., Patil, B., Khanna, R., Neogi, S. B., Sharma, J., Paul, V. K., & Zodpey, S. (2016). Health Systems in India. *Journal of Perinatology, 36*, S9-S12. doi:10.1038/jp.2016.184

Government , o. I. (2021-22). *Rural Health Statistics 2019.* National Health Mission. New Delhi: Ministry of Health and Family Welfare.

Government, o. I. (2015). *National Rural Health Mission.* New Delhi: Ministry of Health and Family Welfare.

Government, o. I. (2022). *Sample Registration System- Bulletin, 2020.* Sample Registration System. New Delhi: Office of the Registrar General & Census Commissioner, India Ministry of Home Affairs. Retrieved from https://censusindia.gov.in/

Government, o. I. (2023). *Handbook of Statistics on Indian States.* India's Central Bank. Reserve Bank of India. Retrieved from https://m.rbi.org.in//Scripts/PublicationsView.aspx?id=22091

Gupta, I., Chowdhury, S., & Prinja, S. (2018). Health Inequities in India: Evidence, Determinants and Policy Implications. *Health Policy and Planning, 33*(1), 25-34.

Hossain, F. (2019). Levels of Health Care and Health Outomes in Northeast India. *Indian Journal*

of Human Development, 13(2), 221-232. doi:10.1177/0973703019870881

India, G. o. (2019-20). *Health.* Delhi: NITI Aayog.

Kawachi, I., & Kenedy, B. P. (1999). Income Inequality and Health: Pathways and Mechanisms. *HSR: Health Services Research, 34*(1), 215-227.

Kurian, N. J. (2007). Widening Economic and Social Disparities: Implications for India. *Indian J Med*, 374-380.

Meh, C., Sharma, A., Ram, U., Fadel, S., Correa, N., Snelgrove, J. W., . . . Jha, P. (2022, March). Trends in maternal mortality in India over two decades in nationally representative surveys. *BJOG: an international Journal of Obstetrics and Gynaecology, 129(4)*, 550-561. doi:https://doi.org/10.1111/1471-0528.16888

Rajalakshmi, K. (2013). Growing Disparities in India's Development. *International Journal of Educational Research and Technology, 4*(3), 47-55. Retrieved from www.soeagra.com/ijert/ijert.htm

Reddy, K. S., Selvaraj, S., Roa, K. D., Chokshi, M., Kumar , P., Arora, V., & Ganguly, I. (2011). A Critical Assessment of the Existing Health Insurance Models in India. *Public Health Foundation of India*.

Saikia, D. (2014). Health Care Infrastructure in the Rural Areas of North-East India: Current status and Future Challenges. *Journal of Economic And Social Development, X*, 83-98. Retrieved from https:www.researchgate.net/publication/265511171_Health_Care_Infrastructure_in_the_Rural_Areas_of_North-East_India_Current_Status_and_Future_Challenges

Saikia, D. (2017). Human Resource Challenges in the Public Health Sector in Rural India. *The Journal of Institute of Public Enterprise, 40*(1&2), 1-30.

Selvaraj, S., Karan, A., Mao, W., Farooqui, H. H., Bharali, I., Kumar, P., . . . Chaudhuri, C. (2021). Did the poor gain from India's health policy interventions? Evidence from benefit-incidence analysis, 2004-2018. *International Journal for Equity in Health*, 1-15.

Sharma, A. (2014). The National Rural Health Mission: A Critique. *Sage Publications, Ltd, 63*(2), 287-301. Retrieved from https://www.jstor.org/stable/24431852?seq=1&cid=pdf-reference#references_tab_contents

Spinakis, A., Anastasiou, G., Panousis, V., Spilopoulos, K., Palaiologou, S., & Yfantopoulos, J. (2011). Expert review and proposals for measurement of health inequalities in the Eurapean Union. *Luxembourg: Eurapean Commission, Directorate General of Health and Consumers*.

System, R. S. (2022). *Special Bulletin on Maternal Mortality in India, SRS, 2018-20.* New Delhi: Office of Registrar General, India.

System, R. S. (2022). *SRS Bulletin 2020.* New Delhi: Office of Registrar General, India.

Vikram, K., & Vanneman, R. (2014). Maternal Education and the Utilization of Maternal and Child Health Services in India. *Social Science and Medicine, 114*, 173-181.

Zajacova, A., & Lawrence, E. M. (2018). The relationship between education and health: reducing disparities through a contextual approach. *Annu Rev Public Health, 39*, 273-289. doi:10.1146/annurev-publhealth-031816-044628