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AN ECONOMIC ANALYSIS ON INEQUITIES IN OUT OF POCKET EXPENDITURES IN ANDHRA PRADESH AND TELANGANA STATE

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Introduction

The United Nations' Sustainable Development Goals (SDGs) have made financial risk protection for healthcare expenditures a top priority by strengthening national health-care systems. Both developed and developing countries need policies.The importance of essential healthcare has become a crucial condition to consider achieve Universal Health coverage (UHC)(World-Bank, 2019). According to reports, more than 150 million individuals face financial hardship, with another 100 million on the risk of doing so. Every year, thousands of people are forced into poverty as a result of out-of-pocket expenditure spending on healthcare around the world(C, Arcaya, L., & Subramanian1, 2015).Out-of-pocket expenditure (OOPE) cost of health care has a negative impact on family income allocation to vital needs such as food, education, shelter, utilities, and other necessities. The economic development -health labour participation and resources utilisation, this process involves a lot of uncertainties. As a result, there is a requirement for healthcare systems to provide financial insurance for the general public against the costs of health problems. Providing equal access to healthcare services, particularly when they are needed, with no financial constraints, this entails a variety of strategies, such as the percentage of health-care costs covered, the range of services covered, and the number of persons covered.

Many of India's health inequalities can be addressed by public policy by raising living conditions and providing more equitable opportunities, for instance in health. However, the options for resolving these issues are limited. Programs and interventions must be targeted that are aimed at both the poorest and most marginalised people, as well as across groups in order to address a variety of socioeconomic indicators in society. Health inequalities are acknowledged to be a major issue in all of the nations analysed, with many reporting increases over the 1980s and 1990s. Inequalities in health are most typically shown as a disparity in health outcomes. There are differences in health status between socioeconomic categories, but there are also health inequalities.(Balarajan, Selvara, & sv, 2011)

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Out-of-pocket spending accounts for around 62.6 percent of overall health expenditure in India, making it one of the highest in the world. High out-of-pocket health expenses are caused by a lack of health insurance coverage or inadequate coverage. The implementation of the Rajiv Aarogyasri Scheme in undivided Andhra Pradesh in 2007, which was designed to safeguard disadvantaged families from poverty and reduce the burden of inpatient health-care costs and catastrophic expenses.(Mala, Prabal, Anuradha, & Amit, 2015).

The correlation between economic growth and health differs based on the aspects such as morbidity mortality, age, gender, and socioeconomic level of the affected person. India's heterogeneous healthcare delivery system is quite diverse. It has expanded alongside India's growing economy and liberalised healthcare sector. But the development of this health delivery system has been uneven in both the public and private domains, and a wide range of service quality coexists at the same time. There are several providers, including individuals, super specialty hospitals, and public-delivery systems that are not fully integrated. Collaboration between public and private systems is minimal, but some progress has been made through purchase mechanisms like PMJAY and State-level schemes. Important factor to consider is the financial risk associated with healthcare expenses and social protection through insurance.

History of health insurance

After independence, health care grew importance and made significant developments. The Employees State Insurance Scheme was India's first medical insurance programme, established in 1948. Coverage against OPD, IPD, and other medical emergencies was part of this plan. Under the Central Government Health Schemes (CGHS), a contributory health plan was introduced in 1954 with the specific goal of serving the medical needs of Central Government employees and their families. The General Insurance Corporation introduced the first medical policy in India in 1986 with the purpose of standardising the conditions associated with health insurance.Andhra Pradesh and Telangana, the Rajiv Arogyasri Community Health Insurance (RACHI) played a crucial role. Arogyasri is one of the most significant health insurance programmes, involving both government and private hospitals that offer free medical care. Arogyasri plan promotes public-private collaboration model to meet the demands of the people. The scheme's goal is to increase BPL families' access to high-quality medical services for the treatment of known diseases that need hospitalisation, operations, and therapies through a predetermined network of healthcare professionals and introduced ayushman Bharat by cental government

Literature Review

Health inequalities have impact on consumption expenditure. In India, OOP (out of

pocket) costs account for about 71.1% of total health care costs one of the highest rates in the world(Hooda, 2017). Prinja(2012) used the 2004-2005 consumption expenditure survey to study incidents of cost of health care costs based on rural / urban areas and the socio-economic status of households in different states. The results showed that the incidence of catastrophic health costs was highest among the poorest categories Kerala's rural areas (9.71%), and the highest among the richest rural areas of Madhya Pradesh (21.82%). Among the poorest quintiles, catastrophic costs were highest in Rajasthan (13.34%) in urban areas and among the richest quintiles in urban areas of Orissa.

Catastrophic health costs (CHE) occur when OOP health costs exceed the maximum amount of household expenses. There have been different lessons used different methods to select this value threshold. Many methods have been used to estimate whether OOP health costs are catastrophic. The most common way to calculate OOP the cost of health care is a percentage of income (xu, 2003), A Study by Fan, Karan and Mahal(2012) to assess the impact of the Arogyasri Health Insurance Program in the Andhra Pradesh state, where health insurance program was found to have significantly reduced OOP for hospitalization but in reducing out-patient has no effect on health expenditure OOP Health Expenditure. Another study by (Anup, Yip, & Mahal, 2017) in the RSBY impact assessment using the NSSO data for (1999, 2004 and 2011) with 'difference-variance' ways to measure the effects of RSBY on OOP health costs found that the RSBY did not succeed in reducing OOP's burden health costs of poor families.

Research Gap

Many studies have worked on the out of pocket expenditures in India with various hypothesis like hospitalization and out of pocket expenditures, and insurance and the out of pocket expenditures. Inequalities in health have been examined in different of situations, but few researches have looked at social economic health disparities in India and within the social groups. Additionally, there are no studies focusing on Andhra Pradesh and Telangana for 71st and 75th rounds of NSSO.

Hypothesis

H0: There are no inequalities in out of pocket expenditures within the social groups in Andhra Pradesh and Telangana.

H1: There are inequalities inout of pocket expenditures within the social groups in Andhra Pradesh and Telangana.

H0: There are no inequalities in out of pocket expenditures in Rural and Urban areas in Andhra Pradesh and Telangana.

H1: There are inequalities inout of pocket expenditures in Rural and Urban areas in Andhra Pradesh and Telangana.

Objective of the Study

1. To assess how government insured households are accessing health care utilisation and position of expenditure in Andhra Pradesh and Telangana.
2. To understand Government insured households and the status of inequities across Rural and Urban areas and inequalities across economic classes and acrossand within social groups.

Data and methodology

We have used unit level data from NSSO's 71st and 75th Round to analyse the changes in OOPME (Out of Pocket Medical Expenditure) and the inequalities pertaining to the various economic classes and social groups. We have conducted econometric tests using Concentration Index to identity the changing nature of inequalities in Andhra Pradesh and Telangana State.

Concentration Index

Concentration Index is widely used measure of inequality. We have use Concentration Index to analyse inequalities in healthcare burden across various groups. Concentration indices assess the disparity between the distributions of two variables (Kakwani, 1977). The concentration index measures the degree to which people's health differs depending on their socioeconomic position. A general concentration(GC) index is expressed as:

$$GC(\ \setminus y) = \frac{1}{n}\sum_{i=1}^{n}\{\ _i(2R_i\quad 1)\}$$

where $h_i$is the health variable,$2R_i$ -1 is the fractional rank and ranges between maximal poor and maximal rich that is, between $^{-}$\{(1-n)/n\} and $^{-}$\{(n-1)/n\}.

An inequity index must meet three essential requirements: i) it must reflect the economic aspect of health inequalities; ii) it must depict the perspectives of the entire population; and iii) it must be responsive to fluctuations in population distribution among socioeconomic categories. The first criteria are not met by index like the Gini coefficient. Others, like ranking, work in a similar way do not consider the other two: they only consider the experiences of groups at the extremes of the spectrum. They do not represent the population distribution and the pattern in several categories. In this regard, the concentration indices have the advantages of meeting basic requirements and being simple to use a method of comparing inequalities between countries(O'Donnell, S, Van, & B., 2016).

The Lorenz curve's bivariate analogue is the concentration curve. It plots one variable's cumulative proportion against another variable's continuous proportion of the population. We'll refer to the interest variable as healthy as well as the ranking parameter as income to make things easier to understand. The average proportion of health across persons ranked from lowest to richest can be used to analyse income-related health inequality. The concentration curve, unlike the Lorenz curve, may be above the 45° line if the measure of ill-health is highly concentrated among variable with lower earnings. The concentration index is the area between the concentration curve and the 45-degree angle divided by two.

The real burden of OOP spending, as assessed by the Kakwani Index, is more important than the distribution of nominal OOP spending. The KI compares the distributions of consumption expenditure and OOP.On in-patient and out-patient, or chronic diseases, OOP health expenditures included doctor consultations, hospital and market-purchased pharmaceuticals, diagnostic tests, bed costs.

Brief Summaries of States under study

Andhra Pradesh

Andhra Pradesh is constituted of 13 districts and is projected to have a population of around 8.45 crores, or roughly 6.98% of all of India (RHS 2019-20). According to the 2011 Census, there are 1.38 crores (16.41%) of Scheduled Caste (SC) and Scheduled Tribe (ST) people and 0.59 crores (7%), the rural population is 66.64% of the total population, while the urban population is 33.36%. State's birth sex ratio is higher than the national average of 899, with 920 females for every 1000 males. According to estimates, 12% of the population is above the age of 60, while 59% of the population is between the ages of 20 and 59. Crude birth and mortality rates have decreased from 19.1 and 7.3 in 2005 to 15.9 and 6.4 in 2019, respectively, the literacy rate increased, According to the ESAG 2018 data, the Gross Enrolment Rate (GER)I is 30.8% for higher education and 60.16% for senior secondary.

Telangana

Telangana has a population of 3,50,03,674 crores, or almost 2.90 percent of all Indians. According to the 2011 Census, there are 0.54 crore SC people in the State (15.62%), and there are 0.32 crore ST people. The State's population is divided between the rural and urban is 61.3% and 38.7% . The State's birth ratio of 901 females to every 1000 men is higher than the average for the country, which are 899 members. An estimate that 10.8% of the population is under the age of 10, 59.2% is between the ages of 20 and 59, and 11% is over the age of 60. . Crude rates of birth and death have decreased from 19.1 and 7.3, respectively, in 2005 to 16.7 and 6.1, in 2019. The Gross Enrolment Rate (GER) for higher

education is 36.3%, for senior secondary education it is 61.32%, for secondary education it is 82.53%, for elementary education it is 97.79%, and for primary education it is 103.02%, according to the ESAG 2018 report

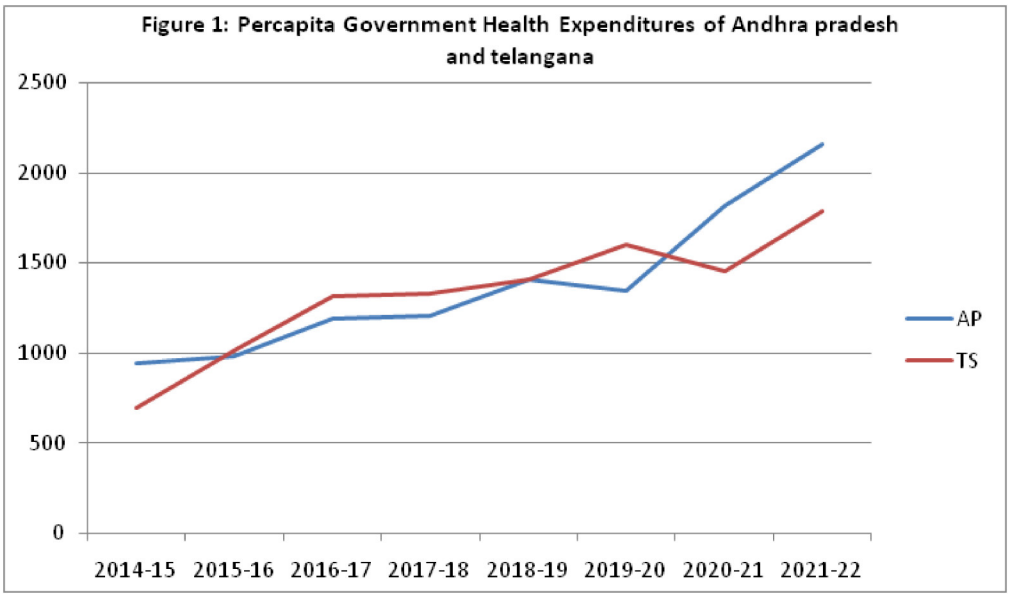
Public Health Expenditure trends

Table 1:

Public Health Expenditure trends in Andhra Pradesh and TS. 2014-15 to 2021-22

	GHE as % GSDP		*Per capita GHE*		*GHE*		*Population*		*GSDP*	
Year	**AP**	**TS**	**AP**	**TS**	**AP**	**TS**	**AP**	**TS**	**AP**	**TS**
2014-15	**0.9**	**0.5**	**942**	**698**	**4805**	**2559**	**5.01**	**3.67**	**524976**	**505849**
2015-16	**0.8**	**0.6**	**981**	**1012**	**4945**	**3758**	**5.04**	**3.71**	**604229**	**577902**
2016-17	**0.9**	**0.8**	**1192**	**1317**	**6044**	**4939**	**5.07**	**3.75**	**684416**	**658325**
2017-18	**0.8**	**0.6**	**1203**	**1330**	**6140**	**5030**	**5.1**	**3.78**	**786135**	**750050**
2018-19	**0.8**	**0.6**	**1409**	**1407**	**7229**	**5375**	**5.13**	**3.82**	**870849**	**850596**
2019-20	**0.8**	**0.6**	**1346**	**1602**	**7352**	**6181**	**5.16**	**3.86**	**971224**	**965355**
2020-21	**0.9**	**0.5**	**1816**	**1452**	**9426**	**5665**	**5.19**	**3.9**	**986611**	**978373**
2021-22	**1.0**	**0.6**	**2159**	**1786**	**11271**	**6750**	**5.22**	**3.78**	**1133837**	**1148115**

Source: Estimates from states budget reports



The Government health expenditures of Andhra Pradesh and Telangana for the 2014-15 to 2021- 22 is less than 1 per cent. Per capita government health expenditure for AP is Rs.942 in 2014-15 and increased to 2159 in 2021-22. Telangana spending impact towards

health is higher.Percapita of government health expenditure of Telangana has increased from Rs. 698 in 2014-15 to Rs.1786 in 2021-22.

OOPE and Financing

Table 2: Major Source of finance and Out of Pocket Expenditures of Andhra Pradesh

Major Source of Finance	AP 71st Round NSSO			AP 75th Round NSSO		
	Govt. Insured	Uninsured	Total	Govt. Insured	Uninsured	Total
HH Income/Savings (%)	54.36	56.57	55.45	56.72	59.23	57.49
Borrowings (%)	40.93	37.85	39.41	21.02	21.24	21.09
Physical Assets Sold (%)	0.01	0.01	0.01	0.00	0.00	0.00
Friends & Relatives' contribution (%)	0.02	0.03	0.03	0.10	6.57	8.68
Other sources (%)	0.01	0.01	0.01	12.48	12.69	12.55
Total number of samples	1192 (100%)	1165 (100%)	2357 (100%)	2507 (100%)	1111 (100%)	3618 (100%)
Mean OOP ExpenditureRS.	17649.77	16938.83	17298.07	21947.82	19160.32	21092.80
SD OOP ExpenditureRs	35754.59	33372.53	34591.20	39673.85	32351.10	37597.27
Rural (Rs)	14125	15621	14885	21407	17891	20254
URBAN (RS)	21246	18438	19897	22986	22514	22862

With regard to the sources of finance for meeting health expenditure, the major chunk of spending came from household income or savings followed by borrowings. While, as a whole the share of drawing from savings and incomes have risen, but there is a major fall in borrowings to meet the health expenditure. Wherein the uninsured households have drawn higher amount from income/savings and borrowings in comparison to households insured under government schemes. Borrowings have decreased from 40% to 20% in government insured households and for uninsured households 37% to 21%. Selling physical assets for health expenditure are very low in two rounds, this may be due to high incidence of landlessness in the state.

Table 3: Major Sources of Finance and Out of Pocket Expenditures of Telangana

Major Source of Finance	TS 71st Round NSSO			TS 75th Round NSSO		
	Govt. Insured	Uninsured	Total	Govt. Insured	Uninsured	Total
HH Income or Savings (%)	58.15	54.88	55.73	77.94	74.07	76.58
Borrowings (%)	37.84	42.19	41.06	13.77	14.23	13.95
Physical Assets Sold (%)	0.54	0.60	0.56	0.11	0.40	0.21
Friends & Relatives' contribution (%)	1.62	2.77	1.92	1.22	2.52	1.67
Other sources (%)	0.61	0.7	0.72	6.96	8.72	7.59
Total number of samples	325 (100%)	922 (100%)	1247 (100%)	1881 (100%)	991 (100%)	2872 (100%)
Mean OOPME (Rs.)	23407	27572	24492	25445.24	25154	25344
SD OOPME (Rs.)	47687	54242	49490	44543.17	44365	44474
Rural (Rs.)	21824	25527	22766	21208	22904	21809
Urban (Rs.)	25757	30377	27003	33377	29916	32245

In Telangana out-of-pocket expenses for households with government insurance and those without have risen by 3.4% and 8.7%, respectively. In both rural and urban areas, health-care spending has fallen. The primary sources of funding for health care are household income or savings, followed by borrowings. Government-insured families have drawn more from income/savings and borrowings than uninsured households. Borrowing has dropped from 38% to 14% in government-insured families and 42% to 14% in uninsured households. Selling physical assets for health spending is very low in two rounds, but higher when compared to AP. Health-related characteristics and socioeconomic factors influence the availability of various financing sources. Out-of-pocket spending (OOPE) has fallen from 64.2% in 2013-14 to 48.8% in India.

Concentration Index Results

Table 4: Concentration Index values for the State of Andhra Pradesh

Particulars	AP 71st		AP 75th	
	CI	SE	CI	SE
Total	-0.0066	0.0047	-0.00803	0.0009
Rural	-0.0165	0.0115	-0.0740	0.1447
Urban	0.0177	0.0123	-0.0385	0.0190
Bottom 20%	-0.0274	0.2230	-0.0385	0.0190
Second 20%	-0.009	0.0223	-0.0739	0.0186
Middle 20%	-0.0671	0.0234	-0.0031	0.0210
Fourth 20%	0.0357	0.0248	0.0768	0.0243
Top 20%	0.0654	0.0248	0.1058	0.0262
ST	-0.0749	0.0481	-0.0877	0.0368
SC	0.0095	0.0251	0.0175	0.0240
OBC	0.0031	0.0131	-0.0181	0.0085
OC	0.0027	0.0175	0.1003	0.0261

Note: CI is Concentration Index; SE is Standard Error

We took the dependent variable as the out of pocket expenditure and independent variable as ST,SC OBC , OC, RURAL , URBAN , MPCE is ordered in quintiles as bottom , second bottom, middle, fourth, top etc. using the concentration index we got the results. Overall inequalities have increased from 71st round to the 75th round.Within AP, for the 71st Round, the expenditure burden is unequally high on households with low MPCE. That is, the inequality is high if we take MPCE on proxy for wealth. Similarly, in rural sector, the inequalities are higher in comparison to the urban areas. That is, they are extreme inequalities in rural sector towards spending on health care where as the expenditure burden is uniform across urban samples with little inequalities. When we look at the quintiles, the burden is disproportionately higher for lower 60% of the population. Within social groups, there are inequalities within among Scheduled Tribes is higher followed by SC, BC and OC. For the 75th round, the inequalities have increased in comparison to the previous round. Similarly, inequalities were increased in rural, urban areas, across all quintiles groups and among the social group. Additionally, extreme inequalities are found within the OBCs.

Table 5: Concentration Index values for the State of Telangana State

Particulars	TS 71st		TS 75th	
	CI	SE	CI	SE
Total	-0.0089	0.00610	-0.0009	0.0007
Rural	-0.0195	0.0137	-0.0100	0.0066
Urban	0.0284	0.0199	0.0213	0.0141
Bottom 20%	-0.0828	0.0302	-0.0222	0.0186
Second 20%	0.04513	0.0307	-0.0071	0.0188
Middle 20%	0.0311	0.0308	0.0384	0.0176
Fourth 20%	-0.0124	0.0365	-0.0066	0.0205
Top 20%	0.02496	0.03592	0.1058	0.0262
ST	0.0488	0.0660	0.1011	0.0399
SC	-0.0159	0.0363	-0.0016	0.0186
OBC	0.0103	0.0137	-0.0142	0.0103
OC	-0.0020	0.0362	0.0485	0.0156

Note: CI is Concentration Index; SI is Standard Index

In Telangana, for the 71st Round, the expenditure burden is unequal high on households with low MPCE. That is, the inequality is high if we take MPCE as proxy for wealth. Similar is the case with rural areas where spending for medical expenditure is highly unequal compared to urban areas. When we look at the quintiles, the burden is disproportionately higher for lower 20% of the population and fourth quintile of the population. Within social groups, there are inequalities within among SC and OC groups. However, when we move towards 75th round, the inequalities have risen across broad spectrum, despite marginal decrease in overall inequality. That is, across quintile groups, it could be said the expenditure burden is higher for the lower 80% of the population, with the top 10% of the spending moving towards another extreme.

Limitations of the study

We have used the unit level data of NSSO rounds which is based on sample surveys. So, all the errors associated with applying sample results to population exists. The data is used is here are households with government insured and uninsured, does not take into account private health insurance.

Conclusion and policy suggestions

In many nations, the impact of various health insurance programmes on utilisation is generally beneficial. This is consistent with the supply-demand hypothesis, which states that health insurance lowers the cost of health care services, hence increasing demand. To

enhance budget allocation for health spending and reduce the amount of OOPE, policy actions that should be adapted to the needs of backward communities by both the centre and the states are required. Packages of public health insurance cover should be increased. Government should bring policies to reduce inpatient costs and outpatient costs.Because of the high out-of-pocket costs, the study's findings suggest that impoverished people may be discouraged from seeking critical medical care.

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