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Pattern of Health Expenditure in India: A Household Perspective

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Abstract

India is a country with huge population, and with that the problem of health care in India is also vast. India spends almost 1.23% of their GDP in healthcare, but there remain many differences in quality between rural and urban areas as well as between public and private health care system. The gap between rural and urban health care system is large where in rural areas there is shortage of proper medical facilities like medicine, doctor etc. Also the disparities between private health care system and private health care system dividend. The public health care system lacks in manifold such as deficient infrastructure, deficit manpower, equivocal quality of services etc. Whereas the condition of private health services in India is good and provide good facilities to patients but in this we have expensive health services. Almost 75% of healthcare expenditure comes from the pockets of households. In this back drop, this study try to investigate the patterns of healthcare expenditure in India from household perspective. The study is based on secondary data collected from NSS 75th Round data on Key Indicators of Social Consumption in India: Health. The pattern of healthcare expenditure is studied using tabular and graphical representation. Also, to investigate the status of disparity between rural and urban areas t test is used. The result signifies that the cost of treatment for hospitalised treatment both for rural and urban areas, cancer consumes highest level of expense. In terms of hospitalized treatment, there are various categories of expenditure like doctor's fee, medicines, diagnostic tests etc. In both rural and urban areas, the expense on medicine is more in public hospitals while in private hospitals package component has highest share of expenses. The t-test result confirmed that there is significant difference between the medical expenditure pattern of rural and urban areas.

1. Introduction

India has the second most populated country in the world. The healthcare model in India is mostly administered at the state level rather than the federal level. The Indian Constitution makes the provision of healthcare in India the responsibility of the state governments, rather than the central federal government. It makes every state responsible for "raising the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties("Healthcare in India", 2021). Since the country's independence, the public healthcare system has been entirely funded through general taxation. Expenditure on healthcare pushes a large number of families into poverty in India as they do not have sufficient spending power due to low level of income or sometimes, no fixed source of income (Prinja,2007, Duggal,2012) as majority of workforce is engaged in informal economic activities and are not covered under any social protection scheme, in case of ill health, these households have to spend from their own pockets. The Indian healthcare scenario presents a spectrum of contrasting landscapes. With the rapid pace of change currently being witnessed, this spectrum is likely to widen further, presenting even more complexity in the future. Inequalities are related to socioeconomic status, geography, and gender, and are compounded by high out-of-pocket expenditures, with more than three-quarters of the increasing financial burden of health care being met by households. (Balarajan et. al., 2011). This has led to a situation where at one end of the spectrum are the glitzy steel and glass structures

delivering high tech medicare to the well-heeled, mostly urban Indian, at the other end are the ramshackle outposts in the remote reaches of the "other India" trying desperately to live up to their identity(Kasthuri,2018). So, an analysis of the recent pattern of healthcare expenditure in India becomes necessary with special emphasis on rural and urban sector.

2.Review of literature

Chauhan et.al.(2020) estimates the total and unit cost of services at community health centers (CHCs) and district hospitals (DHs) across India. The study was undertaken in 19 CHCs and ten DHs across the four Indian states using a bottom-up methodology. Gupta et.al. (2016) undertook economic costing of fourteen public health facilities (seven PHCs and CHCs each) in three North-Indian states. Analysis was undertaken using a health system perspective. Bahuguna et. al. (2014) evaluated a publicly financed and privately delivered model of ERS in Punjab state, India, to assess its extent and pattern of utilization, impact on institutional delivery, quality and unit cost. Purohit (2004) observes the performance of healthcare sector in 15 major States in India. This is attempted through a comparative analysis of various parameters depicting availability of health services, their utilization and health outcomes. Verma (2017) made an attempt to determine the unit cost of an outpatient visit consultation, inpatient bed-day of hospitalization, surgical procedure and overall per-capita cost of providing secondary care through district hospitals. Thus, there is dearth of studies which reflects the overall healthcare expenditure patterns in India from household perspective with specific emphasis on rural and urban sector.

3.Objectives

1. To know the pattern of Healthcare Expenditure both for hospitalization and non-hospitalization in India.
2. To investigate whether there is any difference between rural and urban healthcare expenditure both for hospitalization and non-hospitalization in India.

4.Methodology

4.1. Pattern of Healthcare Expenditure in India

To know the pattern of healthcare expenditure in India tabular and graphical representation of data are used.

4.2. Rural and urban healthcare expenditure in India.

To investigate whether there is any difference is there in between rural and urban healthcare expenditure we have resorted to t test.

4.2.1. Examining the status of disparity between rural and urban sector for hospitalized medical expenditure

We set up our hull hypothesis,

H_{01}: there is no significant difference between rural and urban healthcare expenditure in hospitalized treatment.

Against, the alternative hypothesis,

H_{11}: there is a significant difference between rural and urban healthcare expenditure in hospitalized treatment.

Under the null hypothesis **H_{01}**, we use the test statistic,

$$t = \frac{\bar{x}_1 - \bar{y}_2}{s\sqrt{(\frac{1}{n_1}+\frac{1}{n_2})}} \quad \ldots(1)$$

Where,

$\bar{x}_1$ = *Mean expenditure on health in Rural areas for hospitalized treatment.*

$\bar{y}_2$ = *Mean expenditure on health in urban areas for hospitalized treatment.*

n_1 = *Number of cases consider in health expenditure in rural areas in hospitalized treatment.*

n_2 = *Number of cases consider in health expenditure in rural areas in hospitalized treatment.*

4.2.2. Examining the status of disparity between rural and urban sector for non-hospitalized medical expenditure

For the test we set up our hull hypothesis,

H_{02}: there is no significant difference between rural and urban healthcare expenditure in non-hospitalized treatment.

Against, the alternative hypothesis

H_{12}: there is a significant difference between rural and urban healthcare expenditure in non- hospitalized treatment.

Under the null hypothesis **H_{02}**, we use the test statistic

$$t = \frac{\bar{x}_3 - \bar{y}_4}{s\sqrt{(\frac{1}{n_3}+\frac{1}{n_4})}} \ldots(2)$$

Where,

$\bar{x}_3$ = *Mean expenditure on health in Rural areas for non-hospitalised treatment.*

$\bar{y}_4$ = *Mean expenditure on health in urban areas for non-hospitalised treatment.*

n_3 = *Number of cases consider in health expenditure in rural areas for non-hospitalized treatment*

n_4 = *Number of cases consider in health expenditure in rural areas for non-hospitalized treatment.*

5.Results And Discussion

5.1.Cost of Treatment

Generally, treatment can be of two types- hospitalized and non-hospitalized. So, an analysis of expenditure incurred on medical treatment is made separately for hospitalized and non-hospitalized treatment.

5.1.1.Hospitalised Treatment

We first look at the average medical expenditure by various categories of ailments is presented in Table 1. In rural areas, cancer consumes highest level of expense followed by cardiovascular ailments, psychiatric and neurological ailments and Genito-urinary ailments in public hospitals. In case of private hospitals, cancer consumes highest level of expense followed by cardiovascular ailments, Musculo-skeletal ailments. In urban areas, cancer consumes highest level of expense followed by psychiatric and neurological ailments in public hospitals. In case of private hospitals, cancer consumes highest level of expense followed by cardiovascular ailments(Table 1).

Table 1: Average Medical Expenditure Incurred By Various Categories Of Ailments During Stay At Hospital

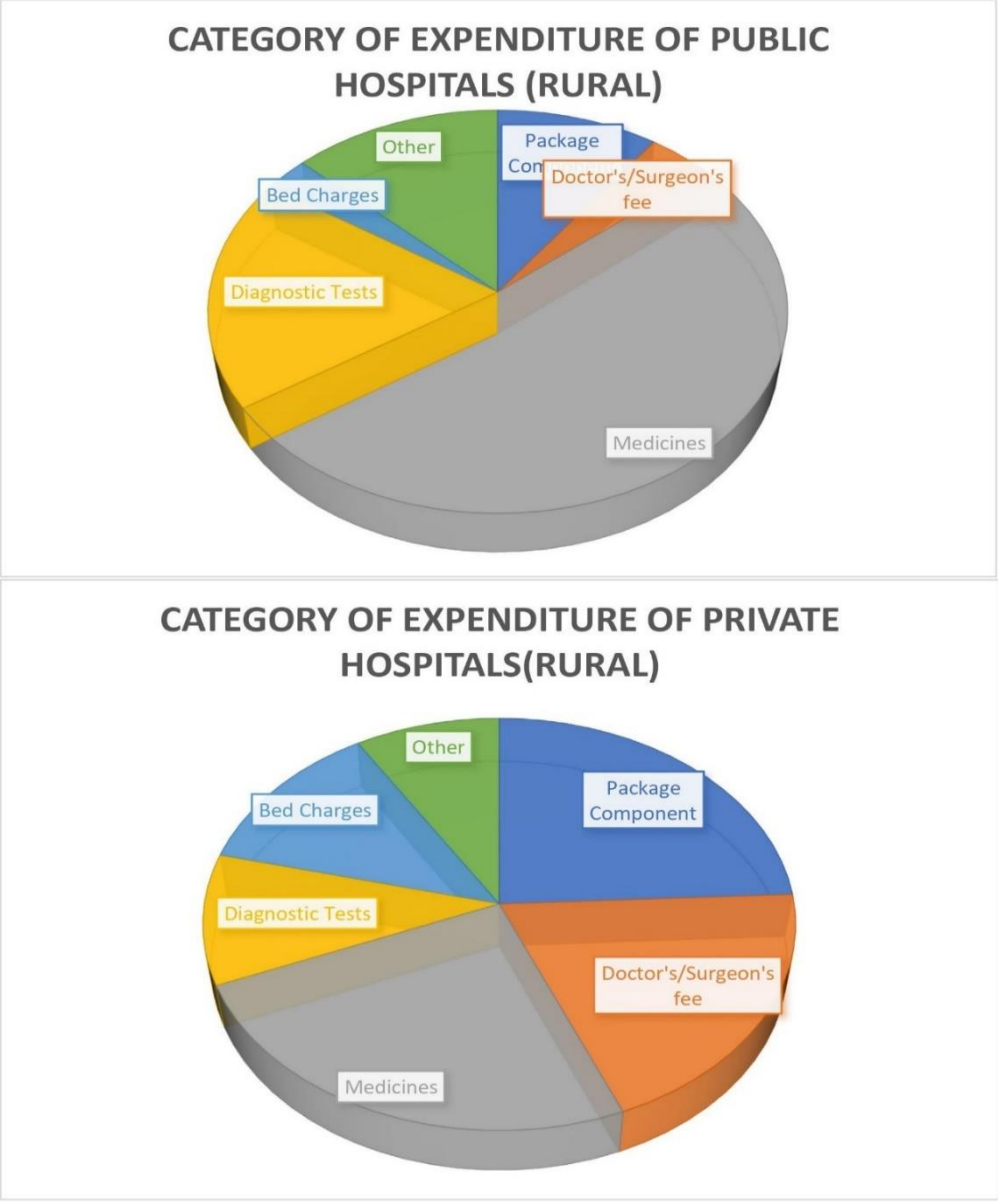
Category of Ailment	Average Medical Expenses(Rs)			
	Rural		Urban	
	Public Hospitals	Private Hospitals	Public Hospitals	Private Hospitals
Infections	2149	14102	1822	16843
Cardio-vascular ailments	6919	42759	6152	68920
Gastro-intestinal ailments	3456	26745	5003	35442
Respiratory ailments	3386	19846	3274	30111
Genito-urinary ailments	5284	26611	5468	44001
Musculo-skeletal ailments	4722	37729	8164	60657
Psychiatric and neurological ailments	6868	33654	8052	53420

Eye ailments	2421	15767	3031	23568
Cancers	23905	85326	19982	106548

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

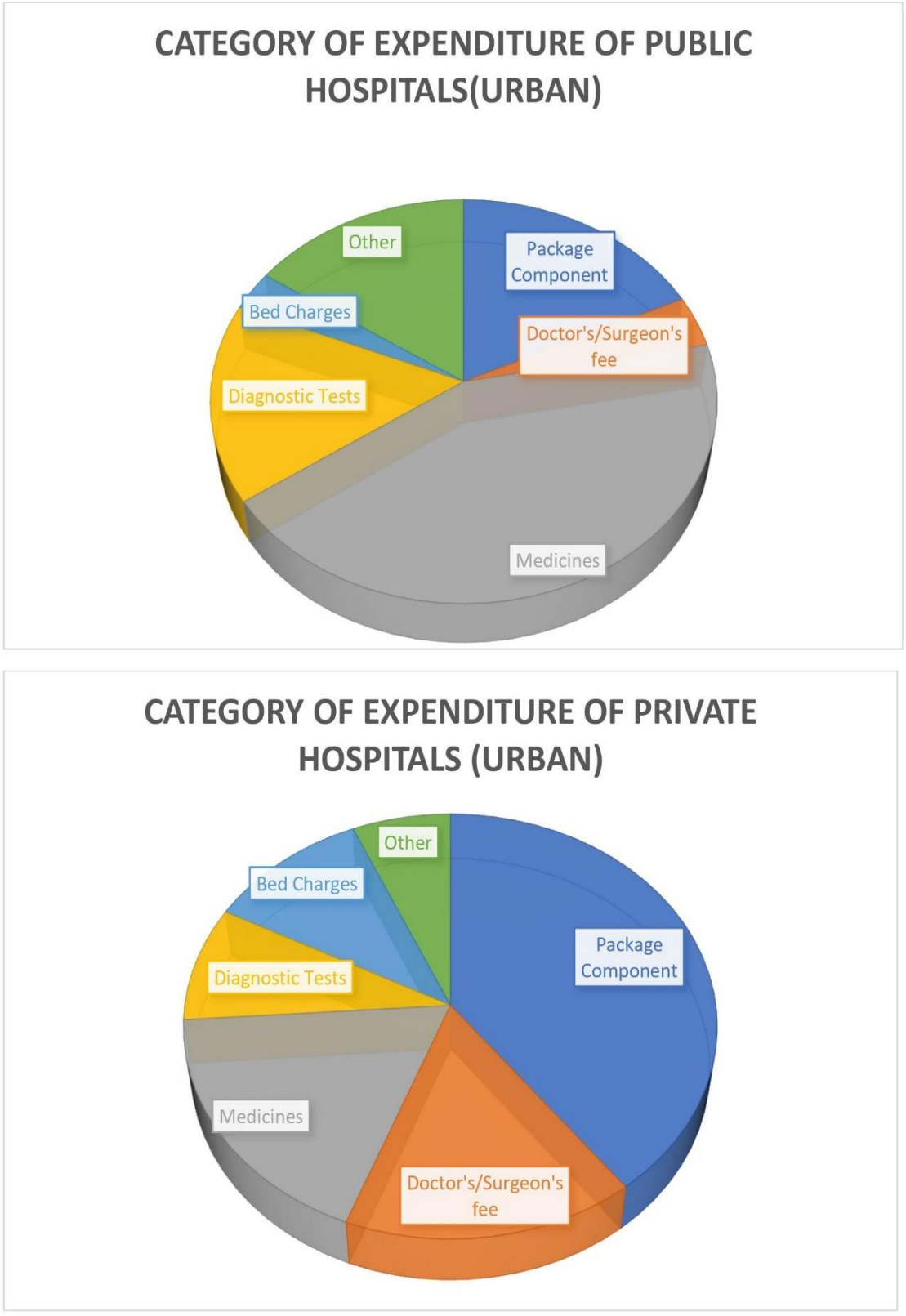
In case of hospitalized treatment, there are various categories of expenditure like doctor's fee, medicines, diagnostic tests etc. So an analysis of average medical expenditure by various category of expenditure is carried out in Figure1. In rural areas, the expense on medicine is more followed by diagnostic test in public Hospitals. In Case of Private Hospitals medicine expense is more followed by package component. Similarly in urban areas for Public Hospitals medicine expense is more followed by package component, while in private Hospitals package component has highest share expenses(Figure 1).

Figure 1A: Average Medical Expenditure By Category of Expenditure(Rural)



Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

Figure 1B: Average Medical Expenditure By Category of Expenditure(Urban)



Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

5.1.1.1 Expenditure on Hospitalisation and Level of Living

A mere simple analysis of expenditure on hospitalisation is a fruitless exercise, so we have analysed the expenditure on hospitalisation by level of living for in-depth understanding about the impact of medical expenditure on household in Table 2.

Table 2: Average Medical Expenditure incurred by various quintile class of household expenditure during stay at hospital

Quintile class of Household Expenditure	Rural		Urban	
	Public hospitals	Private Hospitals	Public Hospitals	Private Hospitals
1st	3863	22595	4195	25030
2nd	4387	27383	4091	30357
3rd	3632	25281	3924	37040
4th	3876	24706	5919	36646
5th	5356	31331	7774	52674
all	4290	27347	4837	38822

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

In both rural and urban areas, average medical expenditure for hospitalized treatment varies and does not signify any particular trend. For 1st quintile of household expenditure it is Rs. 3863, rose to Rs. 4387 for second quintile class and then falls for 3rd quintile class until it finally rose to Rs. 3876 and Rs. 5356 for the 4th and 5th quintile class(for public hospitals). While for private hospitals, 1st quintile of household expenditure it is Rs. 22595, rose to Rs. 27383 for second quintile class and then falls for 3rd and 4th quintile class until it finally rose to Rs. 31331 for the 5th quintile class(Table 2).

In case of urban areas, for 1st quintile of household expenditure it is Rs. 4195, rose to Rs. 4091 for second quintile class and then falls for 3rd quintile class until it finally rose to Rs. 5919 and Rs. 7774 for the 4th and 5th quintile class(for public hospitals). While for private hospitals, 1st quintile of household expenditure it is Rs. 25030, rose to Rs. 30357 for second quintile class and Rs 37040 for third quintile class and then falls for 4th quintile class until it finally rose to Rs. 52674 for the 5th quintile class(Table 2).

5.1.2 Non-Hospitalized Treatment

For non-hospitalised treatment, medical expenditure depends crucially on the nature of treatment. So, an analysis of Average Medical Expenditure per spell of ailment for non-hospitalised treatment by nature of treatment(During 15-day period) was made separately for urban and rural areas in Figure 2(A & B). In case of Rural area, for public hospital Allopathy costs more and Homeopathy is least costlier. While for urban areas, yoga and Naturopathy is most costly way of treatment. In case of charitable Hospitals, ISM costs heavily for rural area, Allopathy for urban areas. While Homeopathy is cheap mode of treatment for both rural and urban areas. For private hospitals, Allopathy is most costlier in rural areas, while Homeopathy in case of urban areas. On the other hand, Homeopathy is cheap mode for rural areas and Yoga and Naturopathy for urban areas. In case of private clinics, ISM is most costlier and Homeopathy is most affordable for rural areas. While Allopathy is more costlier & yoga and neuropathy is most affordable in urban areas. In case of Informal Health Care provides ISM costs more while Homeopathy is least costly for rural areas. ISM is most costly and Homeopathy is most affordable mode of treatment for rural areas.

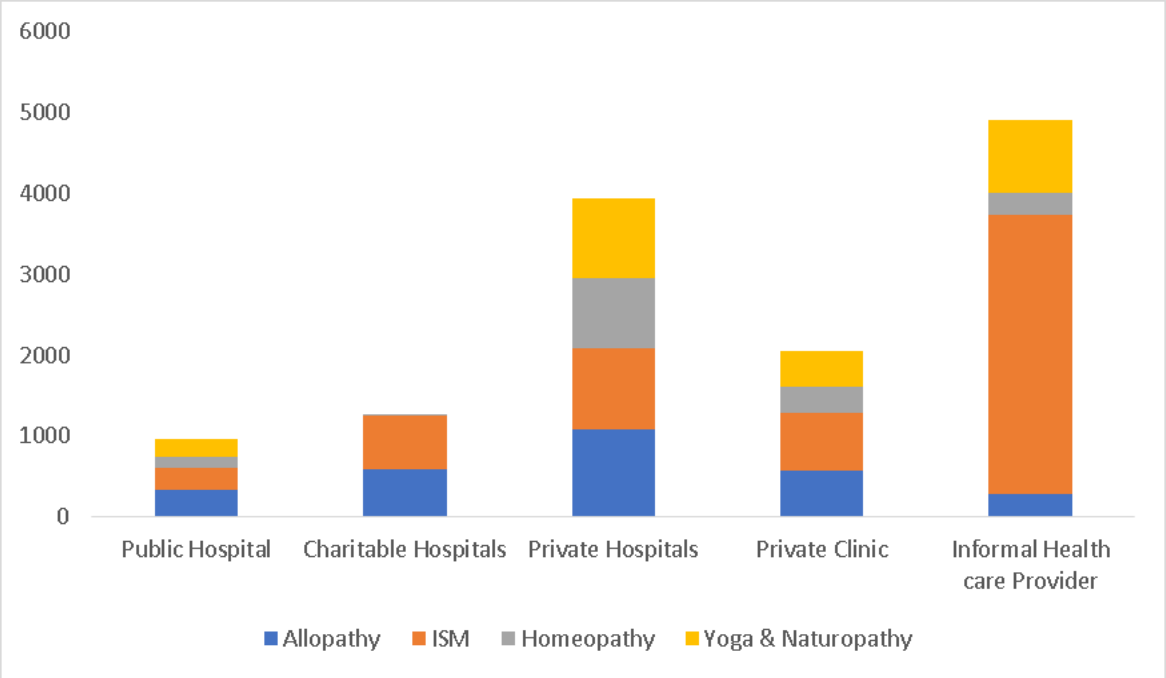


Figure 2 A : Average Medical Expenditure per spell of ailment for non-hospitalised treatment by nature of treatment for Rural areas.

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

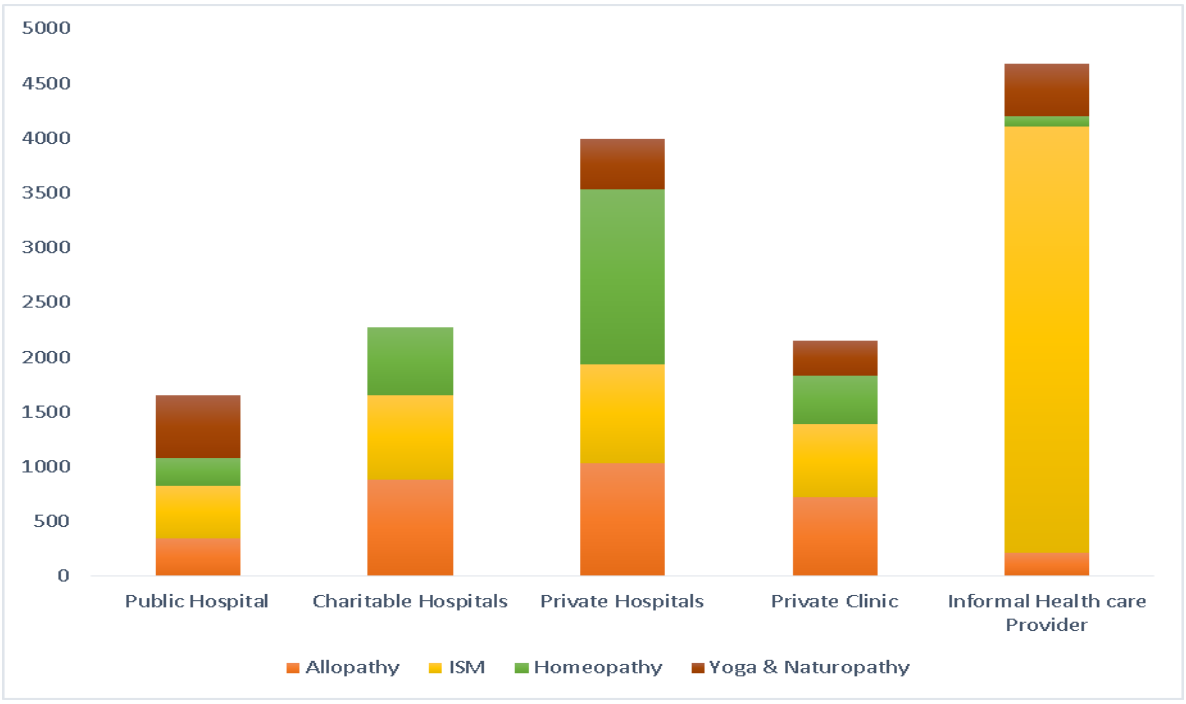


Figure 2 B : Average Medical Expenditure per spell of ailment for non-hospitalised treatment by nature of treatment for Urban areas.

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health.*

For a proper understanding of the pattern of expenditure on ailments for non-hospitalised treatment an analysis of the same on the basis of various healthcare service provider is done in Table 3.

The expense on medicines is more across all healthcare service provider in both rural and urban areas. Also among rural and urban areas medicine expense is more heavy on rural people. In terms of medicine expense it is more in government hospital followed by Informal Health care provider in rural areas. In rural areas doctor's fee is more in private clinic followed by in charitable hospital and private hospital. With regard to the expense on diagnostic tests, it is more in charitable hospital followed by in private hospital. In terms of medicine expense it is more in government hospital followed by Informal Health care provider in urban areas. In urban areas doctor's fee is more in Informal Health Care centers followed by in private clinic and private hospital. With regard to the expense on diagnostic tests, it is more in charitable hospital followed by in private hospital (Table 3).

Table 3. Pattern of Expenditure incurred on ailments for non-hospitalised treatment

Healthcare Service Provider		Percentage of Medical Expenses	
		RURAL	URBAN
Government/public Hospital	Doctor's/surgeon's fee	1.7	3.6
	Medicines	84.5	77.8
	Diagnostic Tests	9.5	13.6
	Other	4.2	5
Charitable Hospital	Doctor's/surgeon's fee	16	12.8
	Medicines	63.3	46.1
	Diagnostic Tests	17	39
	Other	3.7	2.1
Private Hospital	Doctor's/surgeon's fee	12.3	16.7
	Medicines	64.3	64.3
	Diagnostic Tests	16.8	14.3
	Other	6.5	4.8
Private Clinic	Doctor's/surgeon's fee	16.4	18
	Medicines	72.9	66.7
	Diagnostic Tests	9.4	12.8
	Other	1.3	2.6
Informal Health Care Provider	Doctor's/surgeon's fee	6.6	29.2
	Medicines	83.7	69.1
	Diagnostic Tests	7.1	1
	Other	2.5	0.7

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

5.1.2.1 Expenditure on Non-hospitalised Treatment and Level of Living

A mere simple analysis of expenditure on non-hospitalisation is a fruitless exercise, so we have analysed the expenditure on hospitalisation by level of living for in-depth understanding about the impact of medical expenditure on household in Table 4.

In rural areas, average medical expenditure for non-hospitalized treatment varies and does not signify any particular trend. For 1st quintile of household expenditure it is Rs. 528, rose to Rs. 619 for second quintile class and then falls for 3rd and 4th quintile class until it finally rose to Rs. 619 for the 5th quintile class. In urban areas, for the 1st quintile class, it is Rs. 627, reduces to Rs. 602 for the second quintile class, rose for 3rd quintile class to Rs.752, then falls to Rs. 686 for the next quintile class and finally rose to Rs. 822 for the 5th quintile class of household expenditure (Table 4).

Table 4: Average Medical Expenditure incurred by various quintile class of household expenditure for non-hospitalised treatment

Quintile class of Household Expenditure	Rural			Urban		
	Male	Female	all	Male	Female	all
1st	500	552	528	620	631	627
2nd	657	589	619	589	612	602
3rd	631	597	613	734	768	752
4th	619	482	545	688	684	686
5th	645	597	619	834	810	822
all	621	567	592	711	710	710

Source: Compiled by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

5.2 Measurement of Rural Urban Disparity in healthcare Expenditure

For measuring the rural urban disparity in healthcare expenditure we have resorted to t test. t-test is a type of inferential statistic used to determine if there is a significant difference between the means of two groups, which may be related in certain features. The basic results are illustrated in Table 5.

Table 5: Measuring Rural Urban Disparity in Healthcare Expenditure

Medical Expenditure		N	Mean	Median	Standard Deviation	|t|	p-value
Hospitalised Treatment	Rural	30	13713	13740	6816.022	4.4767	0.0000374*
	Urban	30	22383	22271	8128.569		
Non-hospitalised Treatment	Rural	30	623.4	558.0	241.5362	2.8313	0.006615*
	Urban	30	845.6	748.5	355.6427		

Source: Calculation by authors from *NSS 75th round data on Key Indicators of Social Consumption in India: Health*

Note: *Difference is significant at 5 percent.

The estimated mean of medical expenditure for hospitalised treatment is almost double(1.63 percent higher) in urban areas compared to rural areas. The SD value of 6816 indicates that there is high variation in the cost of various modes of hospitalised treatment for rural areas, similar conclusions can be derived for urban areas, but the variation is 1.19 percent more in urban areas. The t-test result confirmed that there is significant difference between the medical expenditure pattern of rural and urban areas for hospitalised treatment. On the other hand, the estimated mean expenditure for non-hospitalised treatment is Rs.623 for rural areas and Rs. 845 for urban areas which is almost 1.35 percent higher in urban areas. The SD value indicates that the variation in the cost of various modes of non-hospitalised treatment is 1.47 percent more in urban areas. The t-test result confirmed that there is significant difference between the medical expenditure pattern of rural and urban areas for non-hospitalised treatment (Table 5).

6. Conclusion

The cost of treatment for hospitalised treatment indicates that in rural areas, cancer consumes highest level of expense followed by cardiovascular ailments, psychiatric and neurological ailments and Genito-urinary ailments in public hospitals. In urban areas, cancer consumes highest level of expense followed by psychiatric and neurological ailments in public hospitals. In case of hospitalized treatment, there are various categories of expenditure like doctor's fee, medicines, diagnostic tests etc. In rural areas, the expense on medicine is more followed by diagnostic test in public Hospitals. Similarly in urban areas for Public Hospitals medicine expense is more followed by package component, while in private Hospitals package component has highest share expenses.

For non-hospitalised treatment, medical expenditure depends crucially on the nature of treatment. In case of Rural area, for public hospital Allopathy costs more and Homeopathy is least costlier. While for urban areas, yoga and Naturopathy is most costly way of treatment. For private hospitals, Allopathy is most costlier in rural areas, while Homeopathy in case of urban areas. On the other hand, Homeopathy is cheap mode for rural areas and Yoga and Naturopathy for urban areas. The expense on medicines is more across all healthcare service provider in both rural and urban areas. Also among rural and urban areas medicine expense is more heavy on rural people. Thus, the performance of the healthcare sector has not been too rosy and there is large scale disparity between rural and urban areas. The t-test result confirmed that there is significant difference between the medical expenditure pattern of rural and urban areas for hospitalised and non-hospitalised treatment.

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