

# Share of Public and Private Health Facilities: A Study among Hospitalised Cases at Two Different Socio-Economic Settings of Indian States

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**Abstract-** In India, healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players. The practice of public health has been dynamic in India and has witnessed many hurdles in its attempt to affect the lives of the people of this country. Here an attempt is made to analyse the utilisation of public and private health facilities for the hospitalised cases at two different socio-economic statuses of Indian states. Data for the analyses are drawn from the 71<sup>st</sup> round of the National Sample Survey held in 2014. It is inferred from the study that the people residing at more developed states are believed on private institutions for medical care services whereas the less developed states are partly depend upon private sector services.

**Index Terms-** Health facilities, Private sector, Public sector, Hospitalization

## I. INTRODUCTION

One longstanding and polarized debate in global health concerns the appropriate role and balance of the public and private sector in providing healthcare services to populations in low- and middle-income countries (Berendes, Heywood, Oliver and Garner, 2011). The public health sector in low and middle income countries is not always sufficiently well-equipped and financed to provide high quality health care that is accessible to all citizens (Basu, 2012 and Logomarsino, 2009). The consequence of this public sector failure has been a proliferation in private providers of healthcare services in most of the countries (Forsberg, 2011; Levin, 2011 and Scott, 2011).

In India, healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players. Indian healthcare delivery system is categorised into two major components - public and private. Public health care is usually provided by the government through national healthcare systems. Public healthcare system comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centres (PHCs) in rural areas. Private health care can be provided through 'for profit' hospitals and self-employed practitioners and 'not for profit' non-government providers, including faith-based organizations. During the survey, the information about medical institution from where they received the health care services was collected (Basu, Andrews, Kishore, Panjabi and Stuckler, 2012).

The practice of public health has been dynamic in India, and has witnessed many hurdles in its attempt to affect the lives of the people of this country. Since independence, major public health problems like malaria, tuberculosis, leprosy, high maternal and child mortality and lately, HIV have been addressed through a concerted action of the government. Social development coupled with scientific advances and health care has led to a decrease in the mortality rates and birth rates (Ministry of Health and Family Welfare, Government of India, 2002).

With this backdrop, here an attempt is made to analyse the utilisation of public and private health facilities for the hospitalised cases at two different socio-economic statuses of Indian states.

## II. DATA METHOD

Data for the analyses are drawn from the 71<sup>st</sup> round of the National Sample Survey held in 2014. Though the survey covered the whole of the Indian Union, this study made an attempt to classify the states into two different socio-economic settings. The latest Human Development Index (2011) was used to group the study states. The top five HDI states were grouped as High HDI states viz Kerala (0.625), Punjab (0.569), Himachal Pradesh (0.558), Maharashtra (0.549) and Haryana (0.545). The bottom five HDI states were grouped as Low HDI states like Orissa (0.442), Bihar (0.447), Chhattisgarh (0.449), Madhya Pradesh (0.451) and Jharkhand (0.464).

During the survey, the details on level of care (public or private) for all current and former members who hospitalized for treatment were collected for last 365 days (hospitalisation occurred from January 2013 to June 2014). Totally 9,746 persons who hospitalized during the reference period were considered for this analysis – including 6,124 from the high HDI group of states and 3,622 from the low HDI group of states. In this analysis, all these medical institutions that having provision for admission of sick persons as in-patients for treatment are grouped into two major heading – Public sector and Private sector. The public sector includes PHC/dispensary/ CHC/ mobile medical unit, HSC/ANM/ASHA/AWW and public hospital. The private sector covers the private doctor/clinic and private hospital. By using SPSS, a bivariate analysis technique has been used to understand the variations in socio-economic and demographic parameters of level care. A logistic regression model also used to assess the determinants such as socio-economic and demographic indicators on selection of health facilities.

III. RESULTS

Table 1 gives the share of public and private sectors in treating the hospitalised cases in the high and low HDI group of states. It is found that the public sector/institutions slightly dominated in treating the in-patients in the low HDI group of states whereas in the high HDI group of states the phenomenon was differed that the private sectors played a major role in treating the in-patients. It is seen that the private and public sector shared more or less equally in providing medical services

at the low HDI group of states. On contrast, more than two-third of the hospitalised cases were treated at private health facilities (70.1 percent) among the high HDI group of states. It is inferred that the people residing at more developed states are believed on private institutions for medical care services whereas the less developed states are partly depend upon private sector services. Further, the table 1 is analysis the share of private and public sectors in treating the inpatients by individual state in each of the HDI group of state.

**Table No. 1 Percentage distribution of hospitalized Population by Level of care in High and Low HDI states**

STATES	Level of Care			
	Public Sector		Private Sector	
	%	No.	%	No.
<b>HIGH HDI STATES</b>				
Himachal Pradesh	73.5	478	26.5	172
Punjab	25.0	250	75.0	750
Haryana	31.5	310	68.5	675
Maharashtra	21.1	780	78.9	2924
Kerala	33.0	789	67.0	1603
<b>Total</b>	<b>29.9</b>	<b>2607</b>	<b>70.1</b>	<b>6124</b>
<b>LOW HDI STATES</b>				
Bihar	37.5	675	62.5	1127
Jharkhand	36.8	298	63.2	512
Orissa	73.6	1129	26.4	406
Chhattisgarh	46.9	325	53.1	368
Madhya Pradesh	47.5	1093	52.5	1209
<b>Total</b>	<b>49.3</b>	<b>3520</b>	<b>50.7</b>	<b>3622</b>

Private institutions played a vital role in providing medical treatment for in-patients in all the states in the high HDI group (except the Himachal Pradesh) – it ranges from 78.9 percent at Maharashtra to 67.0 percent at Kerala. It is quite surprise to note that among the high HDI group of states, a major proportion of Himachal Pradesh people get hospitalised at the government health facilities (73.5 percent). It is again established among the low HDI group of states that the private intuitions were dominated in providing in-patient services in all the states (except Orissa), however the range is lesser when compared to the high HDI states – it varied from around 63 percent at Bihar

and Jharkhand states to 53 percent at Chhattisgarh and Madhya Pradesh states. On contrast, more than seventy percent of hospitalized cases admitted at public sectors in Orissa state.

The analyses of hospitalized cases with their background conditions at both the study locations are presented in table 2. As expected, the private health facilities played a dominating role in providing the treatment for hospitalised urban population, irrespective of the HDI status of the states. With regard to rural area, private hospitals contributes more in the high HDI group of states and public institutions played a major role in the low HDI group of states.

**Table No. 2 Percentage distribution of hospitalized Population by Level of care with SED of the hospitalized population in High and Low HDI states**

SED of the hospitalized population	HIGH HDI STATES				LOW HDI STATES			
	Public		Private		Public		Private	
	%	No. P	%	No. P	%	No. P	%	No. P
<b>SEX</b>	<b>NS</b>				<b>***13.037</b>			
Male	29.4	1331	70.6	3190	47.2	1736	52.8	1941

Female	30.3	1276	69.7	2934	51.5	1784	48.5	1681
<b>Total</b>		<b>2607</b>		<b>6124</b>		<b>3520</b>		<b>3622</b>
<b>Residence</b>	<b>***41.816</b>				<b>***65959</b>			
Rural	32.8	1519	67.2	3106	53.4	2220	46.6	1941
Urban	26.5	1088	73.5	3018	43.6	1300	56.4	1681
<b>Age</b>	<b>***35.278</b>				<b>***20.020</b>			
0-14	24.8	383	75.2	1162	52.7	615	47.3	551
15-29	32.9	465	67.1	948	52.8	734	47.2	656
30-44	33.3	532	66.7	1065	48.1	776	51.9	837
45-59	28.8	542	71.2	1338	47.0	725	53.0	817
Above 60	29.8	685	70.2	1611	46.8	670	53.2	761
<b>Caste</b>	<b>***274.749</b>				<b>***293.809</b>			
ST	52.0	204	48.0	188	67.2	638	32.8	311
SC	41.4	647	58.6	916	61.1	732	38.9	467
OBC	29.2	973	70.8	2364	45.6	1531	54.4	1823
Others	22.8	783	77.2	2656	37.7	619	62.3	1021
<b>Education</b>	<b>***64.729</b>				<b>***164.547</b>			
Illiterate	31.7	765	68.3	1648	53.8	1440	46.2	1238
Primary	32.5	712	67.5	1481	53.6	854	46.4	739
Middle/Sec.	28.1	651	71.9	1664	46.6	695	53.4	798
Higher sec/Diploma	27.8	217	72.2	564	36.9	188	63.1	322
Degree	16.5	95	83.5	480	26.1	116	73.9	328
<b>Wealth Index (Rural)</b>	<b>***105.663</b>				<b>***122.493</b>			
Poorest	52.8	152	47.2	136	63.0	821	37.0	482
Poorer	42.9	188	57.1	250	57.0	510	43.0	385
Middle	33.9	183	66.1	357	50.6	355	49.4	346
Richer	34.6	377	65.4	713	45.0	343	55.0	419
Richest	27.3	619	72.7	1650	38.3	191	61.7	308
<b>Wealth Index (Urban)</b>	<b>***144.068</b>				<b>***127.801</b>			
Poorest	42.5	178	57.5	241	56.2	520	43.8	406
Poorer	32.8	219	67.2	449	46.3	306	53.7	355
Middle	30.1	239	69.9	554	39.6	204	60.4	311
Richer	25.5	262	74.5	766	33.9	152	66.1	296
Richest	15.9	190	84.1	1008	27.4	118	72.6	313

\*\*\*Refers to significant at 1 % level

(Chi-square results – Level of Care and SED at different HDI states) NS-Non Significant

Almost an equal proportion of male and female population (around 70 percent each) get admitted at private hospitals for their ailments among the high HDI group of state. The survey results do not show any gender differentials in the high HDI group of states. On contrast, more number of female approached the public sector for their hospitalized services (51.5 percent) in the low HDI group of states than the counterpart. It shows the gender differentials in this respect among the low HDI group of states. The survey results for the high HDI group of states reveals that around three-fourth of the 0-14 age group population received the services from private sectors. Similarly a higher proportion of the elderly people also hospitalized at private health facilities for the treatment (70.2 percent among 60+ yrs and 71.2 percent among 45-49 yrs). On the other hand, more than half of the people in the respective age-groups were depended on the public health sectors for their medical treatment among the low HDI group of states. It is inferred that the public health facilities played a major role in providing in-patient services for

the low HDI group of states whereas in the high HDI group of states the private health sectors provide key contribution.

Data presents in table 2 examine the relationship between the type of hospital (for hospitalisation cases during the 365 days preceding the date of survey) and social groups, separately for the high and low HDI group of states. Data on high HDI group of states shows that in ST category, more than fifty percent of hospitalization took place in public hospitals (52.0 percent) and the remaining in private medical institutions. On contrast, more than seventy percent of the OBC and 'other' categories population were admitted at private hospitals (70.8 and 77.2 percent respectively). Among the low HDI group of states, the percentage share of the public sectors in hospitalized treatment was quite high for ST and SC household members (67.2 and 61.1 percent respectively). As expected, the private hospitals role was slightly higher among the OBC (54.4 percent) and 'others' (62.3 percent) categories household members. Irrespective of the HDI status of the states, a steady decline in the use of Government

sources and a corresponding increase in the use of private sources for hospitalization cases over the literacy condition of the household members.

The percentage share of the public sector for hospitalised treatment in different level of literacy varied over a very wide range – from 53.8 percent for illiterates to 26.1 percent for the degree holders in the low HDI group of states and from 31.7 percent to 16.5 percent in the high HDI group of states for the respective literacy level. Table 2 also discloses the linkage between the type of hospital for hospitalisation cases during the 365 days preceding the date of survey and usual monthly per capita consumption expenditure (UMPCE), separately for the rural and urban areas of the high and low HDI group of states. Considering UMPCE as a proxy for level of living, the data shows a positive association between level of living and type of hospital used in both the rural and urban areas, The percentage share of the public sector in hospitalised treatment in different quintile classes varied over a wide range – from 27.3 percent to 52.8 percent in rural areas of the high HDI group of states and from 38.3 percent to 63.0 percent in the low HDI group of states. Data in table 5.55 reflects a steady decline in the reliance on public provider for hospitalised treatment with a rise in UMPCE for both the HDI groups of states. Data presents in the above table shows a steady increase in the reliance on private provider

for hospitalised treatment with a rise in UMPCE. The percentage share of the private sector in hospitalised treatment in different quintile classes varied over a very wide range – from 57.5 percent to 84.1 percent in the urban areas of the high HDI group of states. The corresponding percentage for the low HDI states was 43.8 percent to 72.6 percent. Overall, the poorer households appear to depend more on the public sector for hospitalised treatment than the better-off sections of the population, both in the high and low HDI group of states, which conform to the general notion. The bi-variate analysis show a significant association between the level of care (private or public) and all the background conditions of the hospitalised persons both at the low and high HDI group of states.

**Determinants of Type of health facility**

There are certain factors which affect the selection of type of health facility. To know the net effect of independent variable on dependent variables (type of health facility), binary logistic regression model has been applied. The odds ratios show the effect of one unit change in the independent variable on the odds of the response variable, keeping other variables constants. In Table 3 two models have applied separately for the high and low HDI group of states and for the rural and urban settings.

**Table No. 3 Results of logistic regression for determinants of place of care received in High HDI states (Rural and Urban separately)**

SED of HIGH HDI States	RURAL			Urban		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)
<b>Age</b>						
0-14 (ref)		.000	1.000		.000	1.000
15-29	-.540	.000	0.583	-.756	.000	0.470
30-44	-.564	.000	0.569	-.755	.000	0.470
45-59	-.243	.036	0.784	-.597	.000	0.551
60+	-.561	.000	0.571	-.367	.005	0.693
<b>Sex</b>						
Male (Ref)			1.000			1.000
Female	-.096	.169	0.908	.116	.135	1.123
<b>Religion</b>						
Hindu (Ref)		.004	1.000		.016	1.000
Muslim	.187	.130	1.206	-.109	.317	0.897
Christian	-.199	.172	0.820	.148	.403	1.160
Others	.331	.004	1.392	.447	.004	1.564
<b>Caste</b>						
ST (Ref)		.000	1.000		.000	1.000
SC	.481	.001	1.617	-.097	.708	0.908
OBC	1.013	.000	2.754	.370	.140	1.447
Others	1.183	.000	3.264	.515	.040	1.673
<b>Education</b>						
Illiterates (Ref)		.076	1.000		.000	1.000
Primary	-.029	.739	0.971	-.067	.536	0.935

Middle/Sec	.210	.046	1.233		.208	.083	1.231
Hr.sec/Dip	.065	.668	1.067		.398	.015	1.490
Degree	.393	.058	1.481		.850	.000	2.340
<b>Occupation</b>							
Agri activities (Ref)		.000	1.000	Self.emp		.005	1.000
Non-agri activities	-.530	.000	0.589	Reg. wa	-.209	.023	0.811
Agri. Casual lab	-.582	.000	0.559	Cas. lab	-.311	.002	0.733
Others	-.358	.012	0.699				
<b>UMPCE (Rural)</b>							
Poorest (Ref)		.000	1.000			.000	1.000
Poorer	.348	.033	1.416		.442	.001	1.555
Middle	.742	.000	2.100		.505	.000	1.658
Richer	.691	.000	1.995		.728	.000	2.071
Richest	1.074	.000	2.926		1.240	.000	3.456
<b>Household Size</b>							
Less than 4 (Ref)		.000	1.000			.000	1.000
4-6 members	.306	.001	1.358		.264	.011	1.302
Above 6	.588	.000	1.801		.601	.000	1.823
Constant	-.620	.002	.538		.158	.594	1.171
-2 log likelihood	5137.323 <sup>a</sup>				4217.691 <sup>a</sup>		
Cases	4375				3902		

\*\*\*Sig. at 1% level, \*\*Sig. at 5% level, \* Sig. at 10% level; NS Not significant; (R) Reference category

Age of the persons has significant impact on type of health facility from where they received the medical care. The odds ratios show that the old age persons were 57 percent (OR=.571) significantly less likely to receive medical care from private health facilities in comparison to the 0-14 age group population. The odds ratio show that persons who belong to 'Others' had 39 percent more chances (OR=1.392) to get admitted at private health facilities in comparison to the Hindus which was considered as the reference category in the analysis. Among the social groups, a big difference can be seen in terms of level of care (public or private). Scheduled castes were 1.6 times (OR=1.617), Other Backward Castes were 2.7 times (OR=2.754) and others were 3.3 times (OR=3.264) more likely to get medical services from private sectors than Scheduled Tribes. The likelihood of receiving medical services from private hospitals for the rural degree holders were 48 percent higher (OR=1.481) in comparison to illiterates in the high HDI group of states. The probability of receiving private medical services persons working in non-agricultural sector was 58 percent (OR=0.589) lesser than that of persons engaged in agricultural activities. Similarly the persons working in agricultural casual labourers were 56 percent (OR=0.559) less likely to admitted at private hospitals with

reference to agricultural labourers. As household's wealth quintile increases, the likelihood of receiving medical services at private sectors also increases. The odds ratio show that in richest wealth quintile were 2.9 times (OR=2.926) significantly more likely to admitted at private hospitals in comparison to the poorest wealth quintile population at the rural area. Household with more than six members were 80 percent (OR=1.801) significantly more likely to receive medical care from private institution in comparison to households with less than four members. The results of regression analysis for the high HDI states (urban sector) show that the background variables such as age, religion, education, household size, UMPCE categories had an effect on the type of health facilities.

Results of odds ratios for type of health facility for the rural and urban area among the low HDI states are described separately in table 4. In the rural location, most of the variables that are considered in logistic regression for level of care are in the expected direction. However, some variables emerged as having opposite effect for level of care. For example, Christians and 'others' categories persons were less likely to approach private hospitals.

**Table No. 4 Results of logistic regression for determinants of place of care received in High HDI states (Rural and urban separately)**

SED of LOW HDI States	RURAL			Urban		
	B	Sig.	Exp(B)	B	Sig.	Exp(B)
Age						

0-14 (ref)		.148	1.000			.052	1.000
15-29	-.045	.715	0.956		-.384	.013	0.681
30-44	.138	.214	1.148		-.076	.597	0.927
45-59	.200	.072	1.221		-.056	.695	0.946
60+	.072	.543	1.074		-.148	.290	0.863
<b>Sex</b>							
Male (Ref)			1.000				1.000
Female	-.139	.051	0.871		-.061	.471	0.941
<b>Religion</b>							
Hindu (Ref)		.084	1.000			.885	1.000
Muslim	.352	.017	1.422		-.079	.536	0.924
Christian	-.171	.602	0.843		.084	.822	1.088
Others	-.378	.410	0.685		.186	.643	1.204
<b>Caste</b>							
ST (Ref)		.000	1.000			.000	1.000
SC	.132	.269	1.141		.408	.036	1.504
OBC	.741	.000	2.097		.801	.000	2.228
Others	.744	.000	2.104		.882	.000	2.415
<b>Education</b>							
Illiterates (Ref)		.013	1.000			.000	1.000
Primary	-.014	.866	0.986		-.113	.323	0.893
Middle/Sec	.151	.134	1.163		.174	.147	1.190
Hr.sec/Dip	.325	.069	1.384		.389	.013	1.476
Degree	.785	.003	2.193		.690	.000	1.993
<b>Occupation</b>							
Agri activities (Ref)		.329	1.000	Self.emp		.324	1.000
Non-agri activities	.020	.804	1.020	Reg. wa	-.097	.310	0.908
Agri. Casual lab	.239	.067	1.271	Cas. lab	.069	.516	1.072
Others	-.015	.921	0.985				
<b>UMPCE (Rural)</b>							
Poorest (Ref)		.000	1.000			.000	1.000
Poorer	.228	.016	1.256		.407	.000	1.502
Middle	.414	.000	1.513		.654	.000	1.923
Richer	.690	.000	1.993		.835	.000	2.306
Richest	.912	.000	2.489		1.128	.000	3.089
<b>Household Size</b>							
Less than 4 (Ref)		.000	1.000			.000	1.000
4-6 members	.332	.000	1.394		.177	.119	1.194
Above 6	.682	.000	1.977		.623	.000	1.864
Constant	-1.452	.000	.234		-1.140	.000	.320
-2 log likelihood	5088.768 <sup>a</sup>				3596.583 <sup>a</sup>		
Cases	3917				2800		

\*\*\*Sig. at 1% level, \*\*Sig. at 5% level, \* Sig. at 10% level; NS Not significant; (R) Reference category

At both the locations, females were less likely to be hospitalized at private sector. Rural females were about 87 percent and urban females were 94 percent less likely to be hospitalized at private hospitals than males (OR=0.871 and OR=0.941 respectively). At both locations, age and religion do not play any influences of level of care. The OBCs and 'others'

were more likely to be hospitalized at private health facilities when compared with ST population. Rural OBC and 'Others' were 2.0 times and 2.1 times respectively more likely to be hospitalized at private sectors than ST category. The corresponding figures for urban was 2.3 times and 2.4 times for urban social groups. It is noted that the effect of educational attainment was still significant when other background characteristics were controlled for; this indicated that persons with diploma holder (OR=1.384) and degree holders (OR=2.193) were 1.4 times and 2.2 times respectively more likely to be admitted at private sector in the rural area. The corresponding figures for urban was 1.5 times and 2.0 times for the urban educated. The analysis showed a positive association between the UMPCE and level of care. People from the highest UMPCE category were 2.4 times more likely to admit at private hospitals than those in the lowest UMPCE category at the rural locations. This probability of private hospitalization was 3.1 times higher among the urban area. Household size variable emerged as having opposite effect for private hospitalization. Households with more number of persons were more likely to be hospitalized at private hospitals.

#### IV. CONCLUSIONS

This study identified that the rural people, most marginalised population (ST/SC) and the most deprived societies (poorest and poorer) are mainly depend on the public health facilities for their medical care, irrespective of their HDI status. Therefore, it is suggest that various strategies should be adopted to improve quality and effectiveness of the public health care services and thereby it can be possible create a healthy nation that is one of the best places to live in.

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Teaching and the research are the two major components in my academic carrier. To my credit, I have guided 22 M.Phil and two PhD students on various topics which are mostly monitoring and evaluation of population and health related programmes and presently guiding 7 PhD scholars. Besides, I have completed two UGC, three ICSSR, one Ford Foundation and one POPCOUNCIL project and presently I am handling one UGC major research projects. In addition, I have published totally 73 research articles on various national, international journals and edited books. I have presented around 50 research papers at various national and international conferences held within India and outside India (Malta, Pakistan, France, Malaysia and Tanzania). I have continuously interacted with demographers, NGO personnel, and government officials at all levels to share and train personnel in various aspects of population and health projects.