

# Patterns And Determinants of Utilizing In-Patient Medical Care in Uttar Pradesh and Kerala Across Public and Private Hospitals

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## Abstract:

The healthcare institutions in India providing inpatient medical care are broadly classified into public/government hospitals, private hospitals, and NGO/Charitable run hospitals. The state of Kerala predominantly had public hospitals for providing health care facilities right from its formation till the late 1980s. Since the 1990s private hospitals have outpaced public hospitals in terms of the number and availability of beds whereas Uttar Pradesh despite being largest state of the country its performance on health is very poor and always come low in the NITI Aayog index. Using the latest unit-level data from NSSO 75th round on Social Consumption: Health, the study examines the pattern and determinants of availing of inpatient medical care in Kerala and Uttar Pradesh across public and private hospitals and the expenditure differences involved. The study finds out that the proportion of people who are hospitalized in Kerala is much higher compared to the all-India average and 66 percent of those hospitalized are in the private sector. Socioeconomic factors determine the choice of a public or private hospital for inpatient care, with people belonging to the highest socioeconomic category depending more on the private sector but in both states lower income households are seeking treatment in the public hospitals.

## Introduction:

India's health system is a mixture of public and private health care systems. Public health care expenditures are funded by general taxation and centrally sponsored public health insurance schemes. Whereas, private health spending is incurred by households through out of pocket expenditure (OOPE), which is the biggest problem for all countries these days, especially developing countries like India where government efforts are to reduce these out of pocket expenditures and encourage individuals to seek treatment in government hospitals. According to (Singh et al., 2018) private healthcare for OOPE was 89 percent of private expenditures and 60 percent of the country's expenditure on health in 2012 (NHA, 2019). OOPE is one of the major barriers to health care accessibility which causes society to choose private, expensive health care, which leads to impoverishment.

It is estimated that more than 6 percent of India's population is in poverty due to OOPE. Reducing poverty created by health expenditure on private care has been advocated as a primary goal for health system financial reforms.

To ensure the accessibility and availability of public hospitals to the needy and rural people who cannot afford expensive private medical care, governments need to create health infrastructure, which is primarily done through increased health expenditure. The low level of spending in India is the biggest problem for

the country; its health spending as a share of its own GDP is less than 1 percent, whereas developed countries like China, US, Germany are spending more than 20 percent on their GSDP. To resolve the problem of low health spending, the government has taken many steps.

The three- tiered public health system in India gained strength after India signed the "Health for All" declaration in Alma Ata in 1987 which resulted in a drastic change in demographic and epidemiological trends. After this success the government of India has taken the biggest step to improve the situation of the health system by introducing the concept of universal health coverage (UHC). The primary goal of the UHC is to ensure the availability of promotional, preventive, curative, rehabilitative and palliative health care services to all citizens without undue financial hardship with a focus on equity increasing coverage of interventions and protection from financial risk (Singh et al., 2018). After that, several steps have been taken, like setting up a High level committee action group and increasing health spending by 2-3 percent, but despite all efforts by the government the performance of health status of India is not what we have desired and considered to be poor.

In India, health is a subject of state constitutions. It defines states as being primarily responsible for the regulation and health level spending in their own state which reflects on their health outcomes and the central government's role is confined to sponsored health related schemes, providing funds through various routes and regulating major health schemes. Due to the state's own decision to spend on health, it leads to disparity in public health spending and results in inter-state disparity in health outcomes.

The study was carried out to understand this inter-state variation in health seeking behaviour patterns of expenditure on various health care services and utilization of public and private hospitals by households on the basis of their socio-economic variables as in-patient in the states of UP and Kerala.

### **Data collection:**

The study is based on unit-level data extracted from the 75th round of the NSSO on Household Social Consumption: Health. It was conducted from June 2017 to 2018 which is the largest available data in this regard. In the 75th round of NSSO health survey, Kerala is data from 4467 households, covering 2075 urban and 2392 rural households with a total population of 19801 (9119 urban and 10682 rural). For Uttar Pradesh, data on in-patient households was collected from 3458 households, of which 2195 are from rural areas and 1263 are from urban households.

Data on socio-economic status, morbidity, profile of ailments, type of medical institution where inpatient medical care is available, health expenditure incurred, etc. are analyzed for the objectives.

The proportion of persons treated as inpatients (receiving medical treatment as an inpatient out of every 1000 people during 365 days), nature of the ailment, type of hospital- whether public or private), household expenditure incurred for inpatient medical care, etc. are the indicators selected for analyzing the first objective. Education, income status, social category, and gender of the people availing of inpatient facility are examined to understand the socio-economic correlates of inpatients of public and private hospitals.

### **Methodology:**

To understand the determinants of hospitalization patterns, a logistic regression model is used, considering the dependent variables categorized (public hospitals as 0 and private hospitals as 1). To examine the socio-economic variables, we have selected a number of independent variables, such as place of residence, gender, education level, social caste, health insurance coverage, and asset index.

Estimation of Logistic Regression:

$$Li = \ln ( Pi / (1 - Pi) ) = \beta_0 + \beta_i X_i + u_i$$

$$Li = \ln ( Pi / (1 - Pi) ) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + u_i$$

Where X1, X2, X3, X4, and X5 represent sector, gender, economic status, health insurance coverage, etc.

**Results:**

We have divided our results into three sections in this paper. In the first section we have discussed descriptive statistics of UP and Kerala their pattern of utilization of public and private hospitals by socio and demographic variables. The second section deals with results from logistic regression model of both the states and combined too. Last section deals with conclusion and discussion and policy recommendations for both states.

Table.1 (a) shows the utilization of private hospitals for private care by Muslim and other caste individuals in both states. Other caste individuals are seeking in-patient treatment in private hospitals by 78 percent in UP and 92 percent in Kerala. In Kerala, sample results have shown individuals who are not insured are utilizing private hospitals more often than those who are insured. The important finding we have seen is that illiterate and pro-poor individuals are seeking more care in private hospitals in both of the selected states.

Table 1 (b) captures the pattern of public hospital utilization by the socio-economic categories for both the selected states and sample results showed for UP that rural (63 percent) residents are utilizing more public hospitals than urban residents, and similar trends are also captured in Kerala by 59 percent. We have also found a similarity in both states Hindu religions utilization of public hospitals is less as compared to Muslims, who are utilizing public care by 78 percent (UP) and 64 percent in Kerala. Nevertheless, SC individuals seek treatment in public hospitals, whereas in Kerala, other castes visit public hospitals. Those who are not insured in UP are utilizing public care, and vice-versa for other states. With increasing educational levels in both states, the use of public hospitals has decreased, and each variable is significant at the 1 percent level. The results showed with significance level 0.01 the poorer quintile seek treatment more in private hospitals by 37 percent in Uttar Pradesh and 38 percent in Kerala , poorest to richer quintile also seeking treatment in private hospitals in both the state.

Table 2 discusses the results of the logistic regression model. The combined estimate shows urban residents (in reference to rural areas) and Muslims and other religions (in comparison to Hindus) have a higher likelihood of utilizing private hospitals. Also in the results, it is revealed that with higher education and even poorer to richest quintiles in reference to (poorest), their utilization for public hospitals decreases. We have gathered from our results from descriptive statistics that in Uttar Pradesh Poorest to poorer quintile are seeking treatment more in public hospitals and similar observations have also been made in Kerala poorest to poorer households are also seeking treatment in public hospitals and an interesting revelation have been made for both the state that richer quintile also visited public hospitals for in-patient treatment .

However, the results indicate females who have education up to the primary level (in comparison to the illiterate) have a higher probability of utilizing public hospitals.

**Table 1(a): Utilization of Private hospitals by Socio-economic variables for UP and Kerala**

| Categories         |       | Uttar Pradesh (5549) | Kerala (3308) | p-value |
|--------------------|-------|----------------------|---------------|---------|
| Place of Residence | Rural | 2979 (53.7%)         | 1783 (53.9%)  | 0.84    |

|                  |                           |              |              |        |
|------------------|---------------------------|--------------|--------------|--------|
|                  | Urban                     | 2570 (46.3%) | 1525 (46.1%) |        |
| RELIGION         | Hindu                     | 57 (1.0%)    | 759 (22.9%)  | <0.001 |
|                  | Muslim                    | 4391 (79.1%) | 1561 (47.2%) |        |
|                  | Other                     | 1101 (19.8%) | 988 (29.9%)  |        |
| Social Caste     | ST                        | 41 (0.7%)    | 21 (0.6%)    | <0.001 |
|                  | SC                        | 1175 (21.2%) | 231 (7.0%)   |        |
|                  | Others                    | 4333 (78.1%) | 3056 (92.4%) |        |
| Marital Status   | No                        | 1430 (25.8%) | 651 (19.7%)  | <0.001 |
|                  | Yes                       | 4119 (74.2%) | 2657 (80.3%) |        |
| Health insurance | No                        | 5004 (90.2%) | 2084 (63.0%) | <0.001 |
|                  | Yes                       | 545 (9.8%)   | 1224 (37.0%) |        |
| Education        | Not literate              | 1669 (30.1%) | 427 (12.9%)  | <0.001 |
|                  | Primary                   | 1244 (22.4%) | 800 (24.2%)  |        |
|                  | Secondary                 | 1153 (20.8%) | 905 (27.4%)  |        |
|                  | Up-to higher              | 596 (10.7%)  | 444 (13.4%)  |        |
|                  | Up-to graduation          | 662 (11.9%)  | 590 (17.8%)  |        |
|                  | Up-to Post grad and above | 225 (4.1%)   | 142 (4.3%)   | <0.001 |
| Asesst Index     | Poorest                   | 1342 (24.2%) | 831 (25.1%)  |        |
|                  | Poorer                    | 671 (12.1%)  | 376 (11.4%)  |        |
|                  | Middle                    | 666 (12.0%)  | 830 (25.1%)  |        |
|                  | Richer                    | 2413 (43.5%) | 1176 (35.6%) |        |
|                  | Richest                   | 457 (8.2%)   | 95 (2.9%)    |        |

Source: Author’s own calculation from NSSO 75<sup>th</sup> round

**Table 1(b) Utilization of Public Hospitals by Socio-economic Variables for UP and Kerala**

| Categories         |        | UP (3458)    | Kerala (1678) | p-value |
|--------------------|--------|--------------|---------------|---------|
| Place of Residence | Rural  | 2195 (63.5%) | 984 (58.6%)   | <0.001  |
|                    | Urban  | 1263 (36.5%) | 694 (41.4%)   |         |
| Religion           | Hindu  | 20 (0.6%)    | 225 (13.4%)   | <0.001  |
|                    | Muslim | 2726(78.8%)  | 1076 (64.1%)  |         |
|                    | Others | 712(20.6%)   | 377 (22.5%)   |         |
| Social Caste       | ST     | 27 (0.8%)    | 44 (2.6%)     | <0.001  |
|                    | SC     | 1029 (29.8%) | 247 (14.7%)   |         |
|                    | Others | 2402(69.5%)  | 1387 (82.7%)  |         |
| Marital Status     | No     | 543 (16%)    | 345 (20.6%)   | <0.001  |
|                    | Yes    | 2915 (84.3%) | 1333 (79.4%)  |         |
| Health insurance   | NO     | 3229(93.4%)  | 797 (47.5%)   | <0.001  |
|                    | Yes    | 229 (6.6%)   | 881 (52.5%)   |         |

|              |                          |              |             |        |
|--------------|--------------------------|--------------|-------------|--------|
| Education    | Illiterate               | 1103 (31.9%) | 214 (12.8%) | <0.001 |
|              | Up-to primary            | 842(24.3%)   | 565 (33.7%) |        |
|              | Up-to secondary          | 884(25.6%)   | 528 (31.5%) |        |
|              | Up-to higher             | 350(10%)     | 207 (12.3%) |        |
|              | Up-to graduation         | 234 (6.8%)   | 137 (8.2%)  |        |
|              | Up-to postgrad and above | 45 (1.3%)    | 27 (1.6%)   |        |
| Assest Index | Poorest                  | 1298 (37.5%) | 638 (38.0%) | <0.001 |
|              | Poorer                   | 395 (11.4%)  | 289 (17.2%) |        |
|              | Middle                   | 457 (13.2%)  | 383 (22.8%) |        |
|              | Richer                   | 1063 (30.7%) | 319 (19.0%) |        |
|              | Richest                  | 245 (7.1%)   | 49 (2.9%)   |        |

Source: Author’s Own calculation from NSSO 75<sup>th</sup> Round

**Table 2 : Results from Logistic Regression Model For UP and Kerala**

|                           |                 | Uttar Pradesh        | Kerala             |
|---------------------------|-----------------|----------------------|--------------------|
| Categories                |                 | OR (95%, CI)         | OR (95%, CI)       |
| Place of Residence        | Rural           | <b>Reference</b>     | <b>Reference</b>   |
|                           | Urban           | 1.69(1.43,1.98) **   | 1.15(0.83,1.6)     |
| Religion                  | Hindu           | <b>Reference</b>     | <b>Reference</b>   |
|                           | Muslim          | 1.02(0.85,1.23)      | 2.38(1.7,3.33) **  |
|                           | Others          | 0.74(0.38,1.47)      | 2.06(1.46,2.91) ** |
| Social Caste              | ST              | <b>Reference</b>     | <b>Reference</b>   |
|                           | SC              | 0.71(0.31,1.64)      | 0.71(0.21,2.46)    |
|                           | Others          | 1.09(0.48,2.49)      | 1.18(0.35,3.92)    |
| MPCE Index                | Poorest         | <b>Reference</b>     | <b>Reference</b>   |
|                           | Poorer          | 1.0 (1.11,1.15) **   | 1.24(0.69,2.24)    |
|                           | Middle          | 1.43 (1.14, 1.11) ** | 1.72(0.95,3.1) *   |
|                           | Richer          | 1.95 (1.65, 2.43) ** | 1.29(0.72,2.31)    |
|                           | Richest         | 2.68 (2.03,3.43) **  | 1.64(0.94,2.88) *  |
| Gender                    | Male            | <b>Reference</b>     | <b>Reference</b>   |
|                           | Female          | 0.78(0.65,0.93) **   | 0.78(0.6,1.03) *   |
| Health insurance coverage | Yes             | <b>Reference</b>     | Reference          |
|                           | No              | 1(0.66,1.52)         | 0.78(0.6,1.03) *   |
| Per Capita hospital bed   |                 |                      |                    |
| Education                 | Illiterate      | <b>Reference</b>     | <b>Reference</b>   |
|                           | Up-to Primary   | 0.82(0.68,1.01) *    | 0.44(0.29,0.67) ** |
|                           | UP-to secondary | 0.87(0.73,1.04)      | 0.81(0.54,1.22)    |

|                         |                      |                   |                     |
|-------------------------|----------------------|-------------------|---------------------|
|                         | Graduation and above | 2.23(1.7,2.91) ** | 1.79(1.08,2.98) *   |
| Employment of household | Labour               | <b>Reference</b>  | <b>Reference</b>    |
|                         | Wage/Salaried        | 0.87(0.64,1.17)   | 1.68(1.14,2.47) **  |
|                         | Self employed        | 1.01 (0.81,1.25)  | 2.53 (1.74,3.69) ** |
|                         | Others               | 1.13(0.77,1.66)   | 2.2 (1.42 ,3.42) ** |

Source : Author’s Own calculation from NSSO 75<sup>th</sup> Round

**Discussion:**

Our results for in-patient care analyses suggested that those belonging to lower households, weaker sections of society (SC, ST) and in Kerala the Muslim population and females for both in-patient and out-patient have a higher probability of utilizing public hospitals.

We have also found In UP, seeking care in public hospitals is expensive; the OOPE is higher in comparison to Kerala, especially for medical expenses. But an educated and belonging to the richest quintile seeks private over public hospitals for out-patient services Even poorer section seeks private care, where we have seen higher OOPE is incurred in private facilities (Prinja et al., 2018). Results from both the state have showed that in both the state individuals of in-patient seek are utilizing private hospitals more than public hospitals.

Several studies for Kerala reported that a positive relationship between economic status and the risk of hospitalization has been noted in Kerala and is an attribute of unequal access to inpatient care services within this population (Dilip 2002). According to KSSP (2006) another study in rural Kerala found that better facilities were the reason for the preference for the private sector, while economic considerations formed the major reason for seeking care from a government hospital.

A study (Dilip 2019) reported that lower poor-households have a higher probability of utilizing public health care in comparison to richer households. They are poor, and casual worker households tend to use public services while the wealthier tend to consult private practitioners. This means a strict choice of source of care among those who have less, a situation that is worrisome for individuals living in households headed by a casual worker, which represent a growing proportion of poor urban households (Radhakrishnan et al. 2004)

The study suggested that the major reasons for the selection of healthcare services by respondents utilizing government hospitals were specifically free service and being less expensive than those utilizing private hospitals. As a result, we can conclude that the alternative hypothesis is correct; lower-income households in Uttar Pradesh and Kerala are more likely to use public hospitals.

**Conclusions and Policy Recommendations:**

The paper examines the patterns and determinants of the choice of medical institution for inpatient medical care in Kerala and Uttar Pradesh using unit-level data extracted from NSSO Comprehensive Health Survey. Kerala has a whopping proportion of her population as inpatients during the last year of the survey, i.e. 196/1000 as against 26/1000 for all India. The results showed that the lower income households in both the states are seeking public hospitals but in Kerala we have found a trend of privatization and several policy makers have suggested that over the several year there are rise in the utilization of private care in Kerala resultant a leading to OOPE.

Despite the huge medical expenditure that one has to incur for inpatient medical care in private hospitals, people prefer private hospitals because the majority feel that trust and quality issues prevent them from going to private hospitals.

This calls forth public policies to improve the credibility of public hospitals, enhance the quality of services, avoidance of long delays in getting treatment, etc. The Government of Kerala realizing these issues has come up with several programs, including the Aadram Mission, during the last five years for the provision of health care services to the population. Similarly, government of Uttar Pradesh should concentrate on creating more public health infrastructure and improve the quality of the health professionals.

The study calls for furthering public policy in this regard to provide affordable, accessible, and quality healthcare services to the population.

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