

Healthcare Choices in Assam: Exploring Household Behaviour between Private and Public Hospitals

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Abstract

Assam is in a critical state of affairs as per the public health. The infant mortality rate stands at 31.9 against the national average of 35.2. Assam records the highest infant mortality rate among eight states in the Northeast. The situation is even worse in the Under-Five mortality rate. As per the National Sample Survey in 2014, it has been noted that the total average household out-of-pocket health expenditure is found to be Rs. 14810 in Assam, which is higher than the NER average of Rs. 8770, as a large number of households chooses private hospitals for general treatment. With the rapid expansion of the population and shortages of healthcare facilities in government hospitals, private hospitals in society have been playing an important role. The National Family Health Survey report reveals that 18.4 households choose private hospitals for general treatment in Assam. In this context, this study uses binary logistic regression to explore the factors associated with household choices of private hospitals for general treatment. The study carried out on the basis of National Family Health Survey unit-level data, which was published in 2015-16. The investigation found the factors like type of place of residence, age of household head, wealth index, household's religion, social category of household, household head's education and also member of household whether covered by a health scheme or not are found statistically significant to choose private hospital for treatment in the state Assam.

Keywords: Health, Private Hospital, Logit Model, Assam.

1. Introduction

Health is an important constituent of human resource development. Good health is the real wealth of society. As we all know, health is an important factor in everyone's life, so it is our sole responsibility to keep ourselves healthy. As per the Sustainable Development Goal (SDG) – 3, which states good health and well-being, i.e., ensuring healthy lives and promoting well-being for all at all ages by 2030. In the framework of human development, health is considered as an individual right. Healthcare is essential not only to obtain demographic privilege by providing a healthy and prolific labour force and common well-being but also to achieve the objective of population stabilization (Government of India 2007). Considering this background, accessibility to appropriate and worthy healthcare services turns out to be an important factor in developing the quality of human life, particularly in developing and underdeveloped countries. Populations usually get healthcare services from different sources, such as the government healthcare providers, the private healthcare providers, the voluntary healthcare providers and so on. But, due to overpopulation and a tremendous incidence of diseases, along with inadequate resources and policies, there has been a perpetual demand-supply gap between medical professionals as well as healthcare resources in most parts of the country, especially in rural India, with demand always exceeding supply (Khandelwal, 2014). Deficiency of healthcare amenities in government, private and other healthcare providers in the

society has been playing a crucial role; even though a good number of government healthcare providers are providing healthcare services to the population of the vicinity, the quantity of the delivered services is insufficient. In addition to public service providers, the requirement for private healthcare providers is increasing every day due to state-of-the-art facilities and services offered by such institutions to service consumers. Public hospitals are mostly beneficial for poor and low-income household members of society. Most of the patients in India use private hospitals because public hospitals have so many crowds, insufficient doctors and poor hospital services, rude behaviour of the medical staff, lack of hygienic conditions, etc. On the other hand, a private hospital provides a high standard of treatment and hygienic conditions. It is mostly seen that hospital preference is affected by social, economic, racial, and environmental factors. The government sector typically focuses on basic primary healthcare, whereas the private sector concentrates on secondary and tertiary health services. The patient preference among hospitals, however, depends on the quality standards of these service providers, self-affordability and accessibility. In conditions of emergency, it is, however, seen that accessibility becomes a priority rather than affordability, whereas, for lower income groups, affordability is a forever priority. Therefore, it becomes important to study patient behaviour/preference. Hence, a present survey has been run with the specific purpose of evaluating the reason behind the preference between public and private hospitals for the treatment of disorders. It is the choice of healthcare services that decides the magnitude of out-of-pocket health spending. The utilization of private or public health services largely depends on the socioeconomic and demographic characteristics of the elderly population. In India, private healthcare providers dominate the healthcare facilities. In the early 1950s, the share of the private sector was merely 8% of the total healthcare market, which has now risen to 70% of all hospitals and 40% of total hospital beds. According to the National Sample Survey estimates, the private sector caters to 75% of the outpatients and 62% of the inpatients that turn up for medical care. NSS survey results showed that 12 out of 20 states in rural areas and 17 out of 21 states in urban areas registered a decline in government services utilization for inpatient hospitalization. Furthermore, another study employing data from the NSS over the last two decades showed a decline in the share of utilization from public hospitals. The utilization data of a government-sponsored health insurance scheme indicate that 70% of India's hospitalizations take place in the private sector. According to WHO, in India, private expenditures constitute up to 70% of total health expenditures, and more than 40% of these expenditures are in Russia and China. As the health sector grew, it became less reliant on out-of-pocket spending. Total out-of-pocket expenditures more than doubled in low and middle-income countries from 2000 to 2017 and increased by 46% in high-income countries. However, it grew slower than public spending in all income groups. In India, private healthcare services are almost four times costlier than public ones. Still, more than 61% of the elderly seek health services from private hospitals. For the oldest-old group (80 years and above), private hospitalization is close to two-thirds of the total. A cross-country study reveals that private inpatient healthcare utilization among older Indians is the highest among countries like China, Ghana, Russia, and South Africa. There is, however, contrary evidence that with increasing age, people are likely to avail themselves of public health services. In this context, it is pertinent to investigate further the choice of inpatient health care services (public vs. private) for the elderly in India and the factors determining the same. Preference of the consumer for access to a particular type of hospital for getting healthcare service differs from patient to patient due to the location of the healthcare provider, cost involvement in the service delivery process, existing infrastructure of the healthcare provider, reference by doctors or any other important demographic phenomenon. The preference of the patients for the selection of a hospital for treatment varies from patient to patient. It also varies from time to time. The variation may be due to several reasons. Preference may be because of locations of the hospitals, cost

involvement in the treatment, infrastructure available with the hospitals, peer suggestion, doctors' references, astoundingly growing population and shortage of healthcare service providers are the important bottlenecks for the growth of the human society. As such, with the rapid expansion of the population and shortages of healthcare facilities in government hospitals, private hospitals in society have been playing a vital role. Even though many government hospitals are providing health services to the region's populace, the services rendered are inadequate in terms of quantity and quality. The demand for health services in private hospitals is increasing day by day because of certain factors like better amenities and facilities provided to the patients. Visiting a private hospital will speak for itself, as well as the difference one can find from the government's help. No doubt, it is markedly different from a public one. Focusing on the issue, this study explores the scenario of how private hospitals are dominated in the state of Assam and also examine the factors associated with choosing a private hospital by the household for general treatment.

2. Review of the Literature

A good number of research works have been done in this filed though the studies are similar but it helps to make on overview on the specific area. Some of the studies like (Saeed 1998) explored the influencing factors of patient's choice of hospitals on the basis of patients assessment in hospitals in Riyadh considering both government and private hospital. The study identified the factors of a patient's preferences of hospital type and results found the indicators employment, treatment cost, services, etc. which are mainly associated and socio-demographic variables also found responsible. (Halasa and Nandakumar 2009) studied the responsible factors of patient's choice of provider for outpatient health care services in Jordan. Through the multinomial logit model the study found socioeconomic and demographic features affected provider choice. Insurance was also included but not significant responsible in choosing Ministry of Health care facilities over other providers. (Tembon 1996) spotted on the study which undertaken in a rural health district, the author shows that many factors are there that affected to choice of health care services. Among all the included factors the quality of care is one of them which is the most important and largely influenced to choice of health care provider. It has been seen that due to increases quality of care in governmental healthcares, the probability of choice also increases. Others factors also covered like time spent seeking treatment; household size, their income; distance from home; and, actual health care cost involved etc. The study found with higher incomes tendency to prefer private hospital and those with larger numbers of family members tend to choose government hospital for treatment. (Hazarika 2020) studied Sivasagar and Kamrup (Rural) district from Assam and logistic regression statistically tests the associated factors with the choice of healthcare services by the respondents. The investigation remarks that the people who are elder age group, with minimum level income group, with minimum level of education and having large family members are generally prefer for treatment the public healthcares. (Chatterjee and Laha 2019) study on institutional choice by the patients in accessing healthcare facilities in the state of West Bengal, India. Using Principal component analysis and probit analysis the researchers find influencing factors to choose healthcare by the patients, the results highlighted factors like patient's economic status, schooling, income and some other decision variables have a significant influence on access of healthcare services. (Jain et al. 2020) discussed the patient perception on preferring private and government health institute in Hyderabad and identify the factors like demographic, social and economic associated with selecting private and government healthcares. The analysis found factors like quality of service and diagnostic equipment availability affects in prefer hospital selection, experience of doctors and proximity as well also plays a role but this is insignificant. (Paul et al, 2019) presents health condition in Assam

considering the indicators sex ratio, birth rate, IMR, life expectancy etc. and also Assam compared with North Eastern part and India. (Singh and Shah 2011) explored the patient's choice of hospital and say hospital location, cost consideration, infrastructure, friends' recommendation, doctors' direction, etc. are really matters to choose healthcare services. (Gangopadhyay and Ghosh 2011) also studied privately owned hospitals in West Bengal and identify the responsible factors for patient satisfaction and thereby to gauge its effect on the brand-image of the hospitals. The study clearly shows a strong association between the factors such as care, quality of treatment and cost of service with the customers i.e., patients satisfaction. The study concludes a paradigm shift in the Indian hospital industry as the customer preference to choose a service is changing. (Nair et al. 2017) examined the preference for private and public healthcare service by the people and analyse the factors influencing the choice of healthcare services and understand the pattern of health expenditure across types of healthcare institutions in Panangad and Kaloor as well. (Rani and Seilan 2019) shows a collective acceptance with regard to hospital usage is that most of the people prefer to use private hospital even if the cost of private hospital tends to be high. Public hospital are not preferred by the majority of the respondents in the study area due to some of the reasons which are listed in this paper, even though these services are provided at low cost. The study also revealed that in private hospitals, patients could easily approach anyone including the reception staff and all are helpful, and the private hospitals are equipped with modern equipment, and doctors treat patients in a friendly manner. (Dharmesh and Shrimali 2011) identified the factors affecting patients' decision while selecting hospital. The analysis highlighted the four important factors which affect the patients' decision while selecting the hospital are Qualified & experienced Doctors, 24x7 & Emergency Service, Past Experience with Hospital and Trained Nursing Staff respectively (Al-Balushi and Khan 2017) analyze the factors which influence patients to go to private hospitals against public hospitals of Oman and to analyze the expectations of patients from the integrated public hospitals in Oman. The results of the study reveal that there is an association between the selection of hospital and services and the cost of the services offered in the hospital and it is found that the cost of services incurred makes an impact in the selection of hospital for medical treatment. The study also revealed that in private hospitals patients could easily approach anyone including the reception staff and all are helpful, and the private hospitals are equipped with modern equipment, and doctors treat patients in a friendly manner. (Dey and Mishra 2014) examine the determinants that lead an individual to choose between public and private healthcare service providers in India. The determinants considered like gender, age, education, income class, access, caste, marital status and exposure to mass media. Findings reveal that people with increasing age, females, lower income group people, uneducated, weaker sections of society and those having access to primary public health care are more likely to utilize public healthcare services as compared to private ones in India.

3. Objectives of the Study

The following are the objectives of the study

1. To explore the scenario of hospital choice by the household for general treatment in Assam.
2. To analyze the factors affecting the choices of hospital types by the household for general treatment in Assam.

4. Data and Methodology

The study is based on National Family Health Survey (NFHS) unit-level data, which was published in 2015-16. In the state of Assam, 24542 households are considered for this study to analyze household hospital types that are preferred for general treatment. A binary logistic regression model has been employed to identify the determinants of choosing private hospitals generally for treatment or preferred by the household in the state of Assam. Logistic regression applies maximum likelihood estimation after transforming the dependent into a logit variable. In the analysis, the dependent variable is Y, is a binary variable, Y=1 when the household chooses the private hospital and Y=0 otherwise. Now, the Logit model may be presented as in equation 1.

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + u_i \dots\dots\dots (Eq-1)$$

L_i , the log of the odds ratio, is not only linear in X but also linear in the parameters. L is called the logit, and hence the name logit model (model like equation 1). X_i 's are independent variables. The coefficients of the model β_i 's represent the change in the value of the *logit* for a unit change in the covariate (when continuous) or the difference from one category to the next if the covariate is binary; u_i represents the error term. The independent variable's description is given in the before logit regression results analysis.

5. Results and Discussion

Over the years, the private health sector in India has grown remarkably. Given the overwhelming presence of the private sector in health, various state governments in India have been exploring the option of involving the private sector and creating partnerships with it to meet the growing healthcare needs of the population.

Table 1: Households Choice of Hospital Types for General Treatment in Assam

Hospital Type	No of Households	Percentage
Public Hospital	20032	81.6
Private Hospital	4510	18.4
Total	24542	100

Source: NFHS Unit Level Data

It has been seen from Table 1 that most households above 80 per cent go to government hospitals for general treatment as per the National Family Health Survey 4th round. The remaining percentage of households goes to private hospitals, though it is 18.4 per cent; this is very remarkable because governments cannot fulfil the requirements of the people. The tendency of the household to spend money on the private sector is an unfair threat to the household's out-of-pocket expenditure, which may further fall into the category of catastrophic health expenditure.

Table 2: Region-wise Choice of Hospital Types by Households in Assam

Hospital Type	Urban		Rural	
	No of HHs	% of HHs	No of HHs	% of HHs
Public Hospital	2229	64.3	17803	84.5
Private Hospital	1238	35.7	3272	15.5
Total	3467	100	21075	100

Source: NFHS Unit Level Data

Table 2 shows a household's tendency to go for general treatment in both urban and rural regions in the state of Assam when they feel unwell. The urban results are very shocking, as a more significant percentage of households, which is 35.7 per cent, are ready to go into private hospitals. Although in urban regions, health and other infrastructure are more available as compared with backward or rural regions, people have more tendency to go to private health institutes for general treatment, whereas, on the other side, it has been seen that in the rural region, private hospital chosen by the household for treatment is 15.5 per cent in the state Assam.

Figure 1: Social Category-wise Choice of Hospital Types by Household in Assam

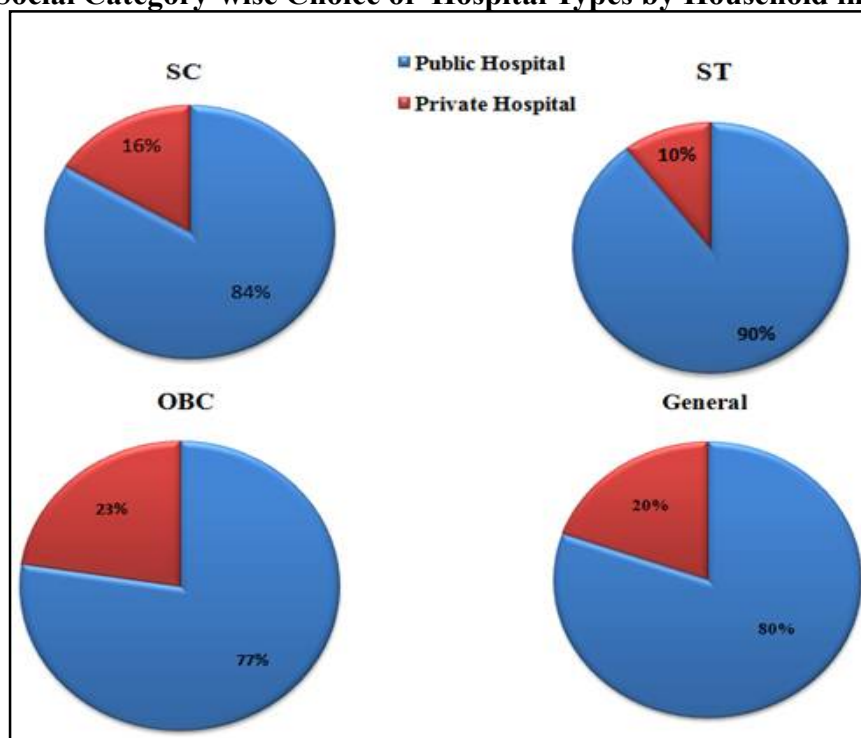
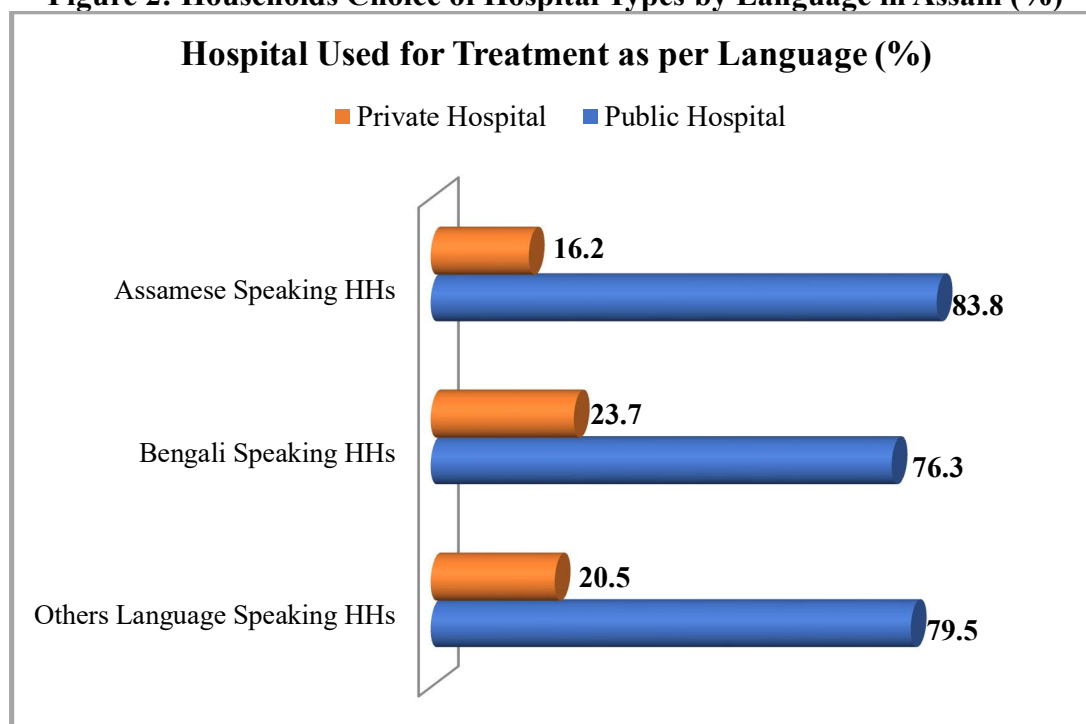


Figure 1 represents the social category-wise outline of chosen hospitals for general treatment by the household in Assam where the shows from the ST category fewer households go to private hospitals, only 10 per cent go to private hospitals, and the remaining 90 per cent of households go to government-provided health institute. Households belonging to SC are a little larger portion of the households choose private health institutes; the result shows that OBC households have more tendency to go to private hospitals than the other social category that, is 23 per cent; in the case of the general category is 20 per cent, and the remaining portion go in the public health institute.

Figure 2: Households Choice of Hospital Types by Language in Assam (%)

Source: NFHS Unit Level Data

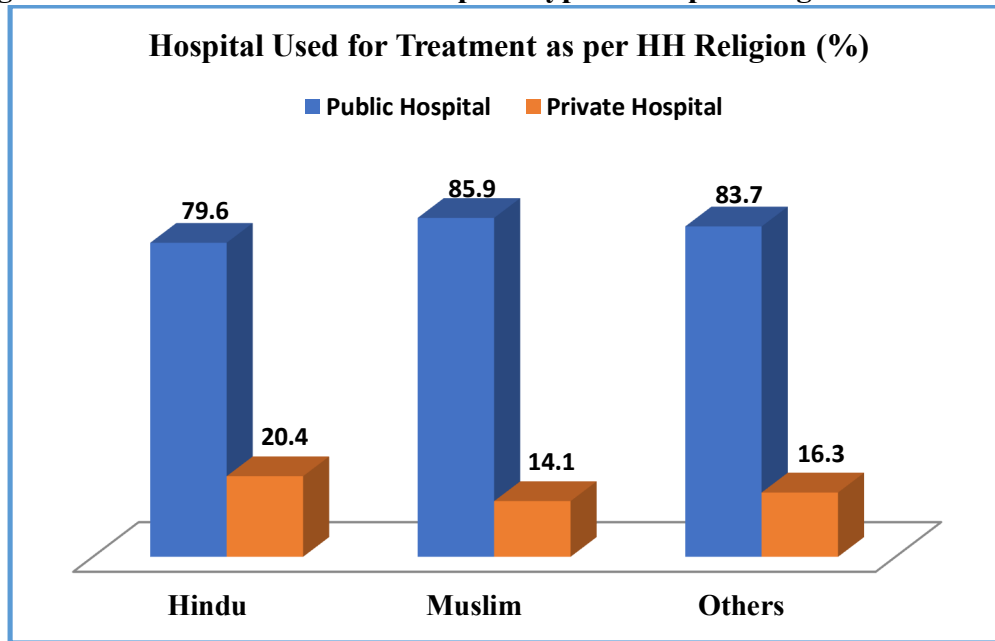
The analysis also shows that as per the particular speaking language by the household in the state Assam, the analysis classifies the entire sample household in three categories: Assamese speaking household, Bengali speaking household, and others language speaking included in a separate category. Figure 2 exhibits that although among all categories, there is a tendency to go to private hospitals for general treatment, Bengali-speaking households prefer to choose private hospitals, and Bengali households are 23.7 per cent prefer private health care.

Table 3: Households Choice of Hospital Types as per HHs Head Education Level in Assam

HH Head Educational level	Public Hospital		Private Hospital	
	No of Households	Percentage	No of Households	Percentage
No Education, Preschool	6404	86.2	1028	13.8
Primary	4496	83.6	885	16.4
Secondary	8232	81.0	1931	19.0
Higher	900	57.5	666	42.5

Source: NFHS Unit Level Data

Another interesting fact observed from the analysis is that education level is correlated with the choice of private hospitals for general treatment, which means that more educated people prefer private hospitals. Table 3 shows how the household head's education level is related to choosing the private hospital for general treatment in the state of Assam. As per the NFHS unit level data (2015-16), the results found that household heads with higher education levels are more likely to go into private hospitals. Where HHs head with no education or have preschool, nearly 14 per cent go for treatment in private hospitals. On the other side, when HH's head education is above secondary, 42.5 households prefer private hospitals for general treatment in Assam.

Figure 3: Households Choice of Hospital Types as per Religion in Assam (%)

Source: NFHS Unit Level Data (2015-16)

Figure 3 represents the household choice of the hospital as per the religion in Assam, and it has been seen that households belonging to Hindu families prefer to go to private hospitals than Muslim or other categories. More than 20 per cent of Hindu households go to a private hospital, and nearly 80 per cent of households go to public health institutes for normal treatment in the state of Assam, as per the NFHS 4th round unit level data. From Muslim households, only 14.1 per cent go to private hospitals, and for other religions like Christianity, Jain, etc., only 16.3 per cent prefer to go to private health institutes.

Table 4: Households Choice of Hospital Types as per HH Health Insurance Coverage in Assam

HHs Member Covered with Health Insurance Scheme	Public Hospital		Private Hospital	
	No of HHs	%	No of HHs	%
Not Covered with Health Insurance	18289	82.7	3813	17.3
Covered with Health Insurance	1743	71.4	697	28.6

Source: NFHS Unit Level Data

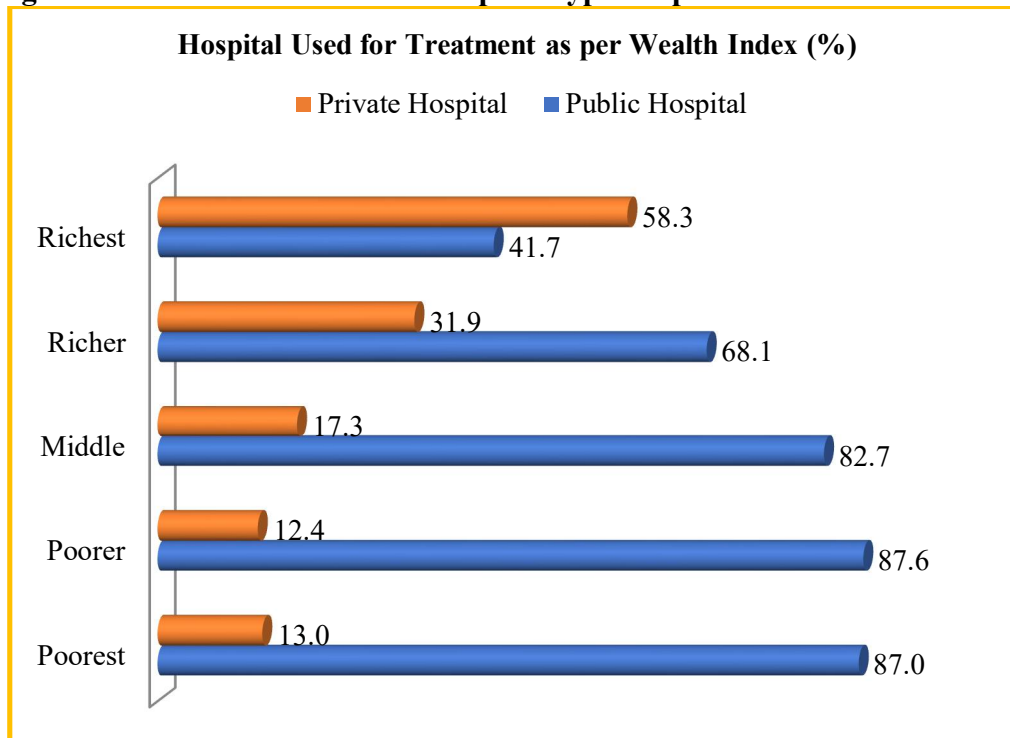
Table 4 gives the overview of the HHs who choose hospitals by the household whose members are covered with any health insurance or health security in Assam; the analysis found households covered with health insurance are more prefer to go to private institutes. Households who are not covered with health insurance, only 17.3 percent go to private hospitals, but whose HH members are secured with health insurance, 28.6 percent of households choose private hospitals for general treatment in the state of Assam. In this sense, it has been seen that private hospital households have to bear more expenses than public health centres, but due to insurance support, households are able to mitigate some portion of health expenses. Another reason is that households covered with health insurance are also economically better positioned in a general sense than non-covered households. Hence, they prefer to go to private hospitals.

Table 5: Household Choice of Hospital Types as per HH Structure in Assam

Household Structure	Public Hospital		Private Hospital	
	No of Households	Percentage	No of Households	Percentage
Nuclear	12533	81.5	2841	18.5
Non-nuclear	7499	81.8	1669	18.2

Source: NFHS Unit Level Data

It is predicted that nuclear household are normally better educated and economically sophisticated as well and hence it is also expected that household members belong from nuclear structure generally have tendency to private hospital for general treatment. Table 5 decoded the scenario of the nuclear and non-nuclear household preferences of private hospital for health care; it has been seen from both the categories more or less 18 percent household go for treatment in private hospital and remaining households go into public hospital in Assam as per the report of national family health survey 4th round.

Figure 4: Household Choice of Hospital Types as per Wealth Index in Assam

Source: NFHS Unit Level Data

Figure 4 illustrates the people's choice of hospital for general treatment as per their household wealth condition; the analysis found that households who are richest the most choose private hospitals, and this percentage is 58.3 per cent. With the reduction of wealth status, household preferences also changed from private hospitals to public hospitals for treatment; from the classification, it has been seen that poorer and poorest households, nearly 13 per cent go for treatment in private hospitals in the state of Assam where the big differences observed among the mention categories as per the national family health survey in 2015-16.

Table 6: Description of the Variables Included in the Logit Model

Variables Code	Description of the Variables
Hospital Type Choice	Household generally go for treatment (Private=1 Public=0)
Residence	Type of place of residence (Urban=1 Rural=0)
HH head Age	Age of household Head
Windex	Wealth index (Richest & Richer=1 otherwise=0)
Language Ass	Assamese Speaking HHs=1, Others=0
Language Bengali	Bengali Speaking HHs=1, Others=0
Religion Hindu	Households' religion (Hindu=1, Others=0)
Religion Muslim	Households' religion (Muslim=1, Others=0)
Social Category Gen	Social Category of HHs (Gen=1, Others=0)
HH Structure Nuclear	Household Structure (Nuclear=1, Non-nuclear=0)
HH Head Edu Years	HHs Head Education (Years)
Health Insurance	Member of household covered by a health scheme or health insurance (if yes= '1', and '0' otherwise)

Table 6 shows the details description of the all the variables which are included with the model and all are associated with the dependent variable; here dependent variable is hospital type choice by the household for general treatment. The dependent variable is dichotomy in nature, if household generally go for treatment in private hospital than its value is '1' and '0' otherwise (when choose public hospital). Remaining are independent variables where maximum are dummy variable like residence for household, wealth index, religion, social category etc. and variables like age of the household head, HHs head education (years) are continuous variables. It is expected that household from urban region has more tendency to go private hospital for general treatment and that's why here urban households are coded as '1' otherwise '0' (for rural household). Household Headed by aged person is expected more prefer to go public hospital and hence negative sign is expected for HHs Head age, higher wealth index (if richest & richer = '1', and '0' otherwise) also positively related with household choosing private hospital. The investigation also interested to know the fact about the choice of hospital type by the Assamese and Bengali speaking household for general treatment. Moreover, the model included the variables households' religion, social category of household, household structure, HHs head education (Years) and status of health insurance coverage of household to know the predictors of household hospital choice in Assam.

Table 7: Logistic Regression results of Household Choices of Private Hospital for General Treatment by Socio-Demographic Characteristics in the State Assam

		Number of obs.	=	24542
		LR chi2(11)	=	1960.09
		Prob > chi2	=	0.0000
		Pseudo R2	=	0.0837
		Log likelihood	=	-10727.9
Independent Variable	Coef.	Std. Err.	z	P>z
Type of place of residence (Urban=1 Rural=0)	0.358	0.049	7.32	0.000
Age of household Head (Years)	-0.004	0.001	-3.03	0.002
Wealth index (Richest & Richer=1 otherwise=0)	1.137	0.050	22.68	0.000
Assamese Speaking HHs=1, Others=0	-0.387	0.053	-7.25	0.000
Bengali Speaking HHs=1, Others=0	0.275	0.062	4.43	0.000
Households' religion (Hindu=1, Others=0)	0.111	0.088	1.27	0.205

Households' religion (Muslim=1, Others=0)	-0.464	0.101	-4.58	0.000
Social Category of HHs (Gen=1, Others=0)	0.329	0.045	7.33	0.000
Household Structure (Nuclear=1, non-nuclear=0)	0.048	0.037	1.32	0.187
HHs Head Education (Years)	0.013	0.004	3.10	0.002
Member of household covered by a health scheme or health insurance (if yes= '1', and '0' otherwise)	0.499	0.052	9.63	0.000
cons	-1.366	0.123	-11.08	0.000

Source: Authors Estimation

The logistic regression results revealed the factors influences household to choose private hospital for general treatment in the state Assam. Likelihood contribution of each observation is between 0 and 1 (a probability), and so the log likelihood contribution is negative, and the model is fitted one. The results found most of the included variables in the model are significant, these variables have positive or negative impact on household to choose private hospital for general treatment. As shows in the table 7, the statistically significant factors i.e. responsible factors are like type of place of residence, age of household head (Years), wealth index, language speaking by the HHs, households' religion, social category of HHs, HHs head education (Years) and also member of household whether covered by a health scheme or not. In residential case it is expected that urban living household choose generally private health institute and the results also found that urban household are more likely to go private hospital for general treatment. Those household head's age are more they also more likely to choose government hospital, the investigation found that households from richer and richest category their tendency to in private hospital in the state Assam. In Assam, Assamese speaking household tendency to government hospital but Bengali speaking household are more likely to prefer private hospital and on average. Though Hindu household also more prefer private healthcare for treatment but that is not significant. Another important factor is household religion that is household belongs from Muslim category are more likely go for treatment in government hospital but who are from general category they more prefer private care. There is positive correlation found with household head education and to choose private hospital, same scenario observes of household coverage with health insurance that they also more likely to prefer private hospital in the state Assam.

6. Conclusion

The investigation has scrutinized the choice of hospital type by the household for the general treatment in the state Assam. In the recent time it has remark that government spending significantly increasing day by day and consequently the facilities also increasing in the public health care, but the thing is observed peoples tendency found in reverse direction, many people choose the private institute for general treatment and this tendency has keep growing for time being. Though many reasons and many factors are work behind to choose private undertaking hospital for general treatment, the study highlighted some of them like household location, socioeconomic condition, education level, social category etc which really matter to prefer to choose hospital types. However, in the developing country generally health out-of-pocket is larger and the people tendency to private hospital for general treatment will more increase to the family and create huge burden on the household which will affect household's food consumption. So, people and government both have to be more aware on to choose of hospital types when they go for general treatment.

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