DETERMINANTS OF HEALTHCARE UTILIZATION IN RURAL NORTH-EAST INDIA

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ABSTRACT

The aim of this paper is to examine the factors that affect the utilization of healthcare services by the rural population of the north eastern states. The region is one of the heavily populated tribal regions in the country where socio-economic and cultural factors play a dominant role in the lives of the population. A review of some of the existing literature reveals that multiple factors such as income, literacy levels and education, the availability of healthcare services and geographical accessibility have influenced the patterns of healthcare utilization. For this study a multivariate linear regression has been adopted to ascertain the same. The findings show that female literacy is one of the strongest determinants of healthcare utilization in the region.

KEYWORDS: *Healthcare utilization; North East India,*

INTRODUCTION

Bridging the gap in the utilization of public healthcare is one of the main focus areas of public health research. Similarly every public health care system must ensure that the public receives its services without external factors to hinder the utilization of these services. Healthcare policies have, over the years, tried to drastically increase accessibility and the utilization of healthcare services. This gap will be felt most by the rural population because of the structural, financial and socio-cultural barriers which they experience (Graves, 2012).

Access to healthcare has been looked upon by many social scientists as the key indicator of the utilization of healthcare services by those who need. It also serves as an important indicator for health policy making. Therefore access to healthcare must concern itself with the relationship between need, provision and the utilization of healthcare services (Gulliford *et al*, 2002). The ever increasing demand for healthcare makes it imperative to look into the various factors that play a role in influencing an individual's decision to utilise the health services (Saurina *et. al*, 2012).

Although the availability of healthcare facilities is crucial for adequate access, it is not however adequate if additional barriers stand in the way of actual access. Donabedien (1972) argued that mere presence of facilities does not translate to access but proof of access comes with the utilization of these facilities. This in turn is not only determined by the availability (structural factors) but there are other social and economic factors such as level of education, income levels as well as cultural factors. Patients' and providers' attitudes and beliefs may affect the individual's perceptions of the accessibility and utilization of healthcare services (Cunningham *et al.*, 1998). Therefore, there is every possibility that a population may have access to healthcare services but not utilize them.

OBJECTIVES

In terms of geographical size, the north east region constitutes about eight per cent of India's total size. Its population (all 8 states combined) is approximately 40 million (Census, 2011), which represents 3.1 per cent of the total Indian population .Since most of the states are tribal dominated; the socio-cultural factors play a crucial role in determining the utilization of healthcare services. The aim of this paper is to therefore examine the factors determining the healthcare utilization in a rural setting in the north eastern region of India.

REVIEW OF LITERATURE

Empirical studies have showed that a number of factors have been found to determine the level of accessibility of healthcare among the rural households. These factors include education, level of awareness among the public, distance to the nearest health centre, income of a household and various other socio-cultural factors as well as structural factors. The Commission on the Social Determinants of Health (CSDH, 2008) stated that the social determinants of health include the conditions in which people are born, grow, live, work and age including the health system. Social determinants of health such as poverty, unequal access to health care, lack of education, stigma, and racism are some of the underlying factors contributing to health inequities.

Inequality, as such has been one of the major problems for most countries while formulating health policies. Therefore, the challenge is how to make healthcare equitable in its distribution and sustainable with the efficient use of the resources available. The vulnerable group with regard to access and utilization of healthcare are usually the rural communities. MacKinney *et.al* (2014) stated that the access to healthcare by the rural communities is not merely a 'provider-to-population ratio issue'.

DeLeon, Wakefield, and Hagglund, (2003) attributed this to poorly developed and fragile health infrastructures; high prevalence rates of chronic illness and disability; socio-economic hardships; and physical barriers such as distance and availability of transportation, including a lack of public transportation. Rural populations also differ in many ways from their urban counterparts. For instance, Graves, (2012) noted that the distinctiveness of the rural environment creates barriers to healthcare access. Kirby and Kaneda, (2006) also emphasized on the community level characteristics as important determinants of access to health care. They argued that neighborhood disadvantage does affect the access to healthcare by reducing the likeliness of having a usual source of care

and of attaining preventive services, while it increases the likelihood of having unmet medical need. Further, due to the socio-economic disadvantage at the neighborhood level, it also leads to situations that prevent residents from finding, traveling to, and affording health care services.

Societal and individual determinants therefore need to be taken into account for viewing health services utilization (Anderson and Newman, 2005). The societal determinants of utilization affect the individual determinants both directly and through the health services system.

Balajaran et.al (2012) however, argued that despite progress in trying to improve the physical accessibility of healthcare services, various inequalities such as socio-economic status, geography and gender still continue to persist. Factors such as imbalanced resource allocation, limited physical access to quality health services and inadequate human resources for health; high out-of-pocket health expenditures and health spending inflation were factors that affected the demand for healthcare. Sanneving *et.al* (2013), also cited economic status, gender, education, social status (registered caste or tribe), and age as the five most important determinants that emerged in understanding the health inequalities in maternal and reproductive health in India.

Pandey (2013), who attempted to examine the barriers to accessing healthcare facilities in a rural setting found that the acceptance of maternal health services by the people was a major impediment to the utilization of maternal and child health services. Lack of general physicians, lady doctors as well as other supply-side issues served as major barriers. Retention was looked at as a major problem in these health centres.

The limited studies that have been reviewed revealed that the major determinants of healthcare utilization were factors such as income, availability of healthcare services, distance to the nearest healthcare centre, education or literacy. Thus, keeping these factors in mind this study proposes to explore the relationship between the above mentioned factors and the trends in the health utilization patterns of the rural population of the north eastern region.

TRENDS IN HEALTHCARE UTILIZATION: SOME SELECT INDICATORS

As far as the utilization patterns of healthcare services are concerned, a few indicators have been looked into in order to get a better understanding of healthcare services utilization among the rural population. These are the percentage of women having institutional delivery or

births that have been delivered in a hospital, percentage of women that have received antenatal care and the percentage of children (12-23 Months) who received all vaccinations (including BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth). The indicators correspond to the three rounds of the National Family Health survey i.e. 1992-93, 1998-99 and 2005-06 respectively.

Figure 1 shows the changing trends of institutional deliveries among the rural population in the north eastern states. The state of Nagaland shows the lowest percentage of women seeking births in health facilities for all three rounds of the survey. Meghalaya's performance is also relatively poor whereby the percentage of women seeking institutional deliveries decreased from 19 per cent to 7 per cent the period 1992-93 to 1998-99. Improvements were however made in 2005-06. The position of Tripura, among the north eastern states is by far the highest in the region followed by Sikkim However, for the state of Sikkim the NFHS rounds were carried out only from the second phase. Assam also shows a very dismal performance.

Figure 2 shows the percentage of women who received antenatal care. The smaller states of Sikkim, Tripura, Mizoram and Manipur show better performance. Meghalaya and Assam reveals poor performance as compared to the other states in the region. The Survey also revealed that women who received no antenatal care were more likely to have home births.

Figure 3 shows the percentage of children (12-23 months) who received all vaccinations. These include BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth). Among the north eastern states, the smaller states of Sikkim, Tripura, and Mizoram shows a comparatively better performance. Meghalaya and Nagaland are among the poorest performers in the region. In the first phase of NFHS round it is seen that only 9 per cent of the children in rural Meghalaya received all vaccinations. Improvements were however made in the subsequent periods whereby it increased to 14.3 per cent and 32.9 per cent in the third phase of the survey. Sikkim tops the region with 69.6 per cent children who received all vaccinations by the third phase of the survey.

METHODOLOGY

In order to measure the utilization of health services, indicators such as maternal and child health indicators have been used The data for these indicators will primarily consist of the National Family and Health Survey –I, II and III corresponding to the years 1992-93,

1995-96 and 2005-06. These surveys cover more than 99 per cent of the Indian population .The indicators for health care utilization selected for our analysis are the percentage of birth delivered in a health facility, percentage of women who received antenatal care and percentage of children who received all vaccinations up to 23 months (including BCG, measles, and three doses each of DPT) and polio vaccine (excluding polio vaccine given at birth).

Input variables:-

For availability of healthcare services the major sources are the Bulletin on Rural Health Statistics published annually by the Govt. of India. The other sources include the various rounds of the Census surveys, State Finances: A Study of Budgets published by the Reserved Bank of India. The other data reservoirs which have been used are the indiastats.com database and the Centre for Monitoring the Indian Economy (CMIE) database.

- **Per Capita Income:** Studies have shown that poverty and low levels of income have a negative impact on the utilization of healthcare services. Elo 1992; Gage 2002; Montgomery and Hewett, 2005 also reported the positive impact that an increase in income has on the utilization of modern health facilities. The state wise per capita income used for the analysis in our study has been converted to a single base year.

- **Female Literacy Rate:** Educational attainment is one of the factors that help explain disparities in health and access to healthcare (Litaker et.al 2005). Barrera (1990) reported that families of educated mothers had better access to healthcare as they were more likely to take advantage of these services more than the uneducated women. Education therefore has the potential to change women's beliefs about disease causation and cure thereby influencing the use of modern health-care service. Caldwell 1979; Becker et al., 1993; Fosu, 1994 and Schultz 1984 in their studies also showed the strong influence of woman's education on maternal healthcare utilization.

- **Distance to Nearest Healthcare Centre:** Abbas and Walker (1986) argued that one of the most important determinants of maternal and child health services were the physical accessibility. The geographical proximity of a healthcare centre plays a very crucial role in the utilization of these services (Airey, 1989; Chacraborty et. al 2003; Paul,1991; Stock, 1983)

- **Availability of Healthcare Centres**:
The availability of, and access to, healthcare is one important factor that has the potential to impact health (Bissonnette et. al 2010). The dearth or lack in healthcare facilities was one of the major barriers that prevented women from seeking prenatal care in rural Mali (Gage 2007).

Empirical Model:-

In order to find out the determinants of access to or the utilization of healthcare services a number of macro determinants or variables will be examined in our model. The variables have been selected keeping in mind the characteristics of a rural population.

The following are the empirical models that have been adopted for the study:

$$Indct1_{it} = \alpha + \beta_1 Distnc_{it} + \beta_2 FeLIT_{it} + \beta_3 Y_{it} + \beta_4 Hospi + \varepsilon_{it} \dots\dots\text{ (I)}$$
$$Indct2_{it} = \alpha + \beta_1 Distnc_{it} + \beta_2 FeLIT_{it+} \beta_3 Y_{it} + \beta_4 Hospi + \varepsilon_{it} \dots\dots\text{ (2)}$$
$$Indct3_{it} = \alpha + \beta_1 Distnc_{it} + \beta_2 FeLIT_{it} + \beta_3 Y_{it} + \beta_4 Hospi + \varepsilon_{it} \dots\dots\text{ (3)}$$

Where,
Indct1 = measure of access or utilization measured by percentage of birth delivered in a health facility
Indct2 = the percentage of women who received antenatal care (ANC) and
Indct3 = the percentage of children (12 -23 months) who received all vaccinations (BCG, measles, and three doses each of DPT and polio vaccine; excluding polio vaccine given at birth)
i and **t** = to state and time period respectively.

α = constant

= the estimated co-efficients of the independent variables
Distnc = the average distance covered by health centres including PHCs, CHCs and SCs
FeLiT = female literacy rate.
Y = state-wise per capita income.
Hospi = total number of hospitals which is taken as a proxy for availability of health centres. It includes CHC, PHCs and Sub Centres.
= error term.

The above equations have been estimated using multivariate linear regression analysis. The dependent variable will therefore be the utilization of maternal and child health care services. Factors such as income (per capita), female literacy rate, distance to nearest healthcare centre, and availability of healthcare facilities will be taken as explanatory variables in our model. Data has been pooled for all the north eastern states in order to arrive at a clearer picture of the determinants of healthcare utilization in the region as a whole. Thus an attempt has been made to include both individual level and community level factors to the utilization of healthcare services.

Empirical Findings:-

From our analysis, it can be seen that the first indicator of healthcare utilization .i.e., percentage of births delivered in a health facility, the R^2 value stands at 0.358 which is the proportion of variance in the dependent variable (percentage of births delivered in a healthcare facility) explained by the independent variables (distance to healthcare centre, female literacy, per capita income and availability of health care centres). From our study it is observed that the independent variables explain 35 per cent of the variability in the dependent variable.

The unstandardized coefficients derived also revealed that female literacy rate (0.538) has positive impact on institutional delivery, keeping all other things

constant, in the region as compared to the geographical distance and the availability of health care centres which were found to be statistically insignificant.

Looking at the percentage of women who received ANC, it was found that the independent variables explain 42 per cent of the variability in the dependent variable (R^2=.423) The unstandardized coefficient of female literacy rate was found to be 0.932 and statistically significant at 95 per cent confidence interval thus having a positive impact of women seeking antenatal care. The findings of other studies such as the DLHS-II also show that in some states like Arunachal Pradesh at least 86 per cent of the women seeking antenatal care had completed high school. The other factors that contributed to low utilization rates were the high costs of medical care, lack of transportation, time constraint, family problems and lack of knowledge about the presence of such services. From the study, female literacy is seen to be the most significant contributor to women seeking antenatal care in the region.

Lastly coming to the determinants of children's vaccinations, it can be seen that again female literacy is a stronger determinant (0.059) while distance and the availability of healthcare centres have little impact on the utilization of health care services. The R^2 value stands at 0.461, which explains 46 per cent in the variability in the dependent variable.

CONCLUSION AND IMPLICATIONS

Thus from the above analysis we can conclude that female literacy is one of the stronger determinants of health care utilization among women. As Navaneethama and Dharmalingam (2001) had pointed out that even though female education and literacy are strong predictors for maternal health care services, the degree of their impact is dependent upon the social setting. Similarly, home births were more prevalent in cases where women did not seek for any antenatal checkups, older women, and women with no education. The findings also indicate that a mere increase in per capita income showed little effect on health seeking behaviour of the rural population .However since most of the healthcare services under study are public services, income may not be a major determinant or barrier that would prevent women from seeking healthcare services. The impact, of female education can be seen in the reduction in infant and child mortality, population growth, fertility as well as an increasing participation in the labour force. Therefore female education is important not only in terms of health decision making but also for also for other opportunities that have far reaching consequences.
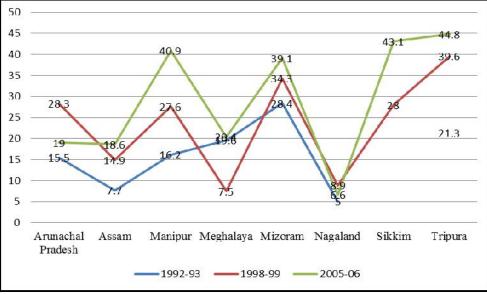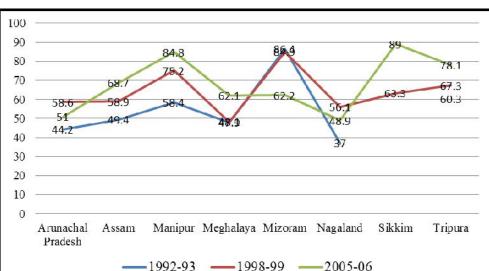
Figure 1: Percentage (%) of Births Delivered in a Health facility

Source: NFHS I, II and III

Figure 2: Percentage (%) of Women who Received Antenatal Care
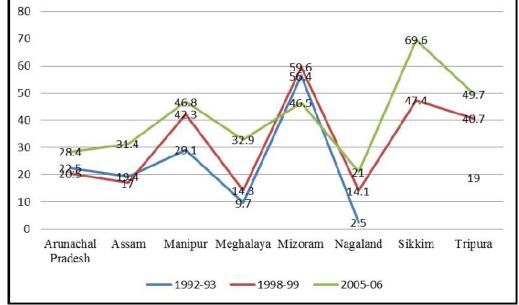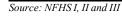

Source: NFHS I, II and III

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Figure 3: Percentage (%) of Children (12-23 Months) who received all   Vaccinations

Source: NFHS I, II and III

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