Inequity in Maternal and Child Health Care Services in Bihar

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Abstract: *In this paper an attempt is made to explore some of the determinants and the inequity in the maternal and Child Health care services health care services in the state of Bihar. The analysis of determinants of various maternal and child health aspects revealed that respondents' education and social structure exhibited significant effect on the use and accessibility of antenatal and natal health care services. Respondents belonging to higher caste groups are more likely to use antenatal and postnatal check-ups as compared to their scheduled caste/ST counterparts. Number of living children is significantly and negatively associated with the use of antenatal and postnatal check-ups. Monthly family income has also influence on postnatal check-ups. Use of MCH services work status showed a negative effect on the utilization of antenatal care services. The overall determinant of the MCH shows the disparity in the accessibility in the context MCH care Services.*

Key Words: *MCH care services, Inequity, Bihar, Social structure, accessibility*

1. INTRODUCTION:

Each year, more than half a million women die from causes related to maternal and child health related complications, and nearly 4 million newborns die within 28 days of birth (UNICEF, 2009). Improving the well-being of mothers, infants, and children is an important public health goal for any country. The inequality in accessibility of maternal and child health care services is a challenge of an unequal world. In 2015, each day about 830 women died due to complications of pregnancy and childbirth (Goli et al, 2017). The State of the World's Children 2009 stated on maternal and neonatal health and found that required health interventions and actions by the public health facilities must be scaled up to save lives. Most maternal and neonatal deaths can be averted through proven interventions – including adequate nutrition, improved hygiene practices, antenatal care, skilled health workers assisting at births and newborn care, and post-natal visits for both mothers and newborns.

The World Health Organization (WHO) estimates that, of 536,000 maternal deaths occurring globally each year, 136,000 take place in India. India's goal is to lower maternal mortality to less than 100 per 100,000 live births but that is still far away despite its programmatic efforts and rapid economic progress over the past two decades.

India, with a population of over a billion and decadal growth of 17.64% estimated its maternal mortality ratio (MMR measures number of women aged 15-49 years dying due to maternal causes per 1,00,000 live births. MMR) at 212 (maternal deaths per 100,000 livebirths) in (SRS, 2007-09).

India is a land of diversity in terms of all the sectors. In this paper the emphasis is on the Maternal and Child Health Care Services. Bihar is one of the poorest provinces in India, where more than half of population is under the BPL (Planning Commision, 2009). With the population of 103,804,637 the MMR 261 (SRS, 2007-09) is very high in Bihar as compare to other provinces and more than than the average of MMR (212) of India (2007-09). The MMRs vary across the states, with the large North Indian states contributing a disproportionately-large proportion of deaths. Uttar Pradesh, Bihar and Rajasthan, for example, have high rates of fertility and maternal mortality while Kerala and Tamil Nadu have rates comparable with middle-income countries (Vora et al., 2009). The status of women is generally low in India, except in the southern and eastern states. Female literacy is only 53 % against of male literacy 73% (census, 2011), and women lack the empowerment to take decisions, including decision to use reproductive health services. As health services are governed at the state level, much also depends on state leadership and management skills. India is a developing country where the MMR is very high due to lack of basic health facilities in relation with Maternal and Child Health. Indian Government launched many programmes but despite of that the situation of fifth goal of MDG in India is very pathetic and is worst in Bihar, as Bihar is the least developed provinces of India.

Almost all of these deaths occurred in low-resource settings, and most could have been prevented. Their well-being determines the health of the next generation and can help predict future public health challenges for families, communities, and the health care system. The objectives of the Maternal and Child Health care address a wide range of conditions, health behaviors, and health systems indicators that affect the health, wellness, and quality of life of women, children, and families. The unevenly distribution of the resources is also a major cause of growing gap to access the basic amenities and facility of the goods and health services in the world.

The socio economic inequities are one of the major causes for inequalities in maternal and child health care services. Especially a country like India, where the society is very patriarchal. Because of the patriarchal society the

status of women in the Indian society is subordinate and submissive to men in relation to decision making process. Inequities in accessibility and affordability of health care services are unfair and avoidable differences in maternal and child health status and access to healthcare for various groups in any society. Inequities in maternal and child health care are a breach of the fundamental principles of justice because this implies inequities in opportunity for people to live with their full potentialities. The WHO position paper for the 1995 World Summit for Social Development also stated that investment in health is an essential for economic growth for productive force work. This statement and resolution also implies in the context of maternal and child health.

A healthy society is a reflection of Maternal and Child Health care of any region or any country because the health condition of any individual depends on the Maternal and Child Health in its very early stages as well as during the gestational period of a woman. Maternal and Child health is one of the most important indicator of human development of any country. Maternal and Child health remains neglected even after countless plans, programmes and political proclamations. Every year, nearly 60,000 women die in pregnancy and child birth while approximately 17 million children(less than 5 years of age) also die. In absolute numbers India outranks all other countries in both case .Sadly most deaths can be prevented with provision of health services. The major factors that received attention of policy makers and planners are: (A) Maternal and Child Mortality rates are higher as compared to other segments of population, (B) Promotion of family planning is made easy through MCH services, (C) Mother and Child care affects the quality of life of the future generations, and (D) Gender differentials in matters of education and employment hamper economic development.

About 56,000 women in India die every year due to pregnancy related complications. Similarly, every year more than 13 lakh infants die and out of these approximately 9 lakh i.e. (Two-third of the infants deaths) take place within the first four weeks of the life. Out of these, seven lakh i.e. (75% of the deaths) take place within a week of the birth and the majority of these occur in the first two days after the birth,(MOHFW 2014).

The socio- economic condition of Bihar is not very satisfactory, so the maternal and child health care services are. The per capita income of Bihar (approx 20,000 rupee/year), clearly shows that such people cannot afford the private hospitals. Reduction of mortality of women is an area of concern for the Governments across the globe. The International Conference on Population and Development (ICPD) in 1994 had recommended reduction in maternal mortality by at least 50 percent of the 1990 levels by the year 2000 and further one half by the year 2015, (General 2010-12).Maternal and child health are most important for the progress and welfare of any nation. “Mother and Child care” has been the priority area for the planners all-over the world. About 27 million births take place in a year in India, within which 1.1 million die before 4 weeks of age, 1.7 million children die before completing 1 year and 2.2 million die before completing 5 years of age. The decentralisation of health services and inter-sectoral convergence in Bihar has led to improved health status in the state. Better infrastructure, drugs and equipment, augmentation of human resources for health services have all led to improvement in delivery of health services. Most of the people of Bihar, as elsewhere in India, depend on public health facilities. Despite rapid development in the recent years, the health sector confronts challenges in terms of wide social and regional disparities.

2. LITERATURE REVIEW:

The health status of men and women in any society is the result of a complex interplay of many socioeconomic and political factors affecting their lives and not merely the presence or absence of any health care system. According to Commission on Social Determinants of Health (WHO 2008), inequities in the conditions of daily living is shaped by deeper social structures and processes.A good health is an important not only as an end in itself, but also for allowing an individual to enjoy a high quality of life and contribute productively to a country economic and social progress (Ray, 2014).

Dreze and Sen report , as a share of GDP and as a share of total health expenditure , public health spending in India is not only well below the world average , but more disturbingly , nearly half , that in sub- Saharan Africa and in the middle east and North Africa.The topic of health is ever recieved the attention in public discourse and in the media in India that is consistent with its importance.The development of women and children is the core of any civil society as well as social development. The investment in human resource development is widely recognized for the socio-economic development of any nation.(MWCD ,2007) In the Millennium Declaration, it was endorsed by the leaders from 189 countries in 2000 and also acknowledged that there is a need to regular monitoring and investigation in the progress and other dimensions of maternal and child health care.

The goal is to reduce under-five mortality by two thirds between 1990 and 2015) reduce maternal mortality ratio by three quarters between 1990 and 2015.The progress in three health related millennium development goals (child mortality, maternal health and HIV/AIDS, malaria and other diseases) are slow and uneven, across and within the countries (Collin, et al 2007; Koblinsky ., et al 2006; Lawn, J.E. et al 2006; Nanda., et al 2005; Carr, D. 2004; Kunst, ., and Houweling, , 2001; De Brouwere, , Van Lerberghe, 1998). Among these goals, inequalities in maternal health, measured by two monitoring indicators, namely, the maternal mortality ratio and births attended by skilled health professionals is maximum (Graham, et al, 2004; Houwleing et al, 2007). The utilization of health services is a

complex behavioral phenomenon. It is related to the organization of the health-delivery system and is affected by the availability, quality, costs, continuity and comprehensiveness of services; social structure and health beliefs also affect use (Andersen 1968; Fiedler 1981; Kroeger 1983).In context of India, there is an overall understanding that health status and access to health services is not equal among different groups divided by various socio-economic and demographic characteristics.The poor-rich gap in natal care utilization is disadvantages to the poor and Widening in many developing countries including India (Mohanty and Pathak, 2009; Omann, N., et al, 2003)**.**

In India, an estimated 221 million population are living below official poverty line of which 47 million resides in the most populous state of Uttar Pradesh (Planning Commission, 2007). The estimated maternal mortality ratio (MMR) had declined from 407 to 301 per 100,000 live births during 1998 to 2006 but was highest (at 517 per 100000 live births in 2006) in the state of Uttar Pradesh (Office of the RGI, 2006). While the maternal deaths in India contributes to about one-fifth of all maternal deaths in the world, the maternal deaths in Uttar Pradesh constitutes more than one fourth of all maternal death in the country. India's progress in reducing maternal deaths is crucial to the global achievement of Millennium Development Goal 5 (MDG-5*)* (Mavlankar et al, 2008). Maternal mortality, a crisis essentially of the poor in 21st century, and a neglected tragedy of developing countries, reflects one of the shameful failures of human development. The gap in the risk of maternal deaths between developed and developing countries is considered the ''greatest health divide in the world'.

Recent global estimates of maternal mortality indicate that more than half a million women died due to pregnancy related causes in 2005. Approximately 80% of the maternal deaths globally occur due to haemorrhage, sepsis, unsafe induced abortion, hypertensive disorder of pregnancy, and obstructed labour; these deaths are unjust and can be avoided with key health interventions, like provision of antenatal care and medically assisted delivery. In addition, the risk of maternal death was not uniformly distributed, as the large proportions of these maternal deaths are concentrated in developing countries of the total maternal deaths in 2005, 99% occurred in the developing world, and Sub-Saharan Africa and South Asia alone accounted for 86% of the total global maternal deaths('Pathak , Singh , Subramanian, (2010).

India continues to have unacceptably high levels of maternal mortality despite its remarkable economic growth and impressive advancement in the fields of science, agriculture, medicine and information technology. The maternal mortality ratio in India was 16 times higher than that of Russia, 10 times that of China and 4 times higher than that of Brazil in 2005. Among developing countries, India contributes the largest number of births per year (27 million) in the world and accounts for 20% of global maternal deaths. This magnitude clearly suggests that India's progress towards reducing maternal mortality will be crucial in the global achievement of Millennium Development Goals (MDG-5). But inadequate maternal health care services with poor organization, huge rural-urban divide, large interstate disparities coupled with stringent social-economic and cultural constraints demands a significant shift in programme priorities to increase service coverage and accessibility to all sections of population (Pathak , Singh , Subramanian (2010).

The births attended by skilled health professionals, a key component of safe motherhood programme, had reached to about half of the deliveries in India (Mohanty and Pathak, 2009).The efforts by the Indian government to improve the health of mother and children. In the first two decades of India's independence, the maternal health care was limited to the promotion of family planning. The family planning programme was renamed to family welfare programme in 1977 with change in programme priority. The maternal and child health (MCH) become an integral part of the programme with the emphasis of reduction in infant and child mortality and promoting maternal care.Access to health, including sexual and reproductive health, sits at the interface of the individual's state of health and the social, economic, political, and public health circumstances in which they live, as well as the condition of the health and welfare services available to them (Berer, 1999). In the last two decades, efforts to promote better health across the globe coalesced under the banner of 'Health for All by the Year 2000' (Alma Ata, 1978).India, with a population of over 1.21 billion, accounts for the highest number of maternal (estimated to be 56,000 in 2010) and under-five deaths (estimated to be 1,655,000 in 2011) in the world (Singh, et al ,2013). Utilization of health services is affected not only by access but also by demand for services, which is determined largely by socioeconomic factors, personal health beliefs, and perceptions of illness. A number of studies have assessed the role of socioeconomic and demographic factors in influencing demand for and utilization of maternal and child health services (Kanitkar and Sinha 1989; Elo 1992; Swenson et al. 1993; Abdalla 1993; Govindasamy 2000; Khan et al. 1994; Barlow and Diop 1995; Ahmed and Mosley 1997; Regmi and Manandhar 1997; Govindasamy and Ramesh 1997; Das et al. 2001), Of course, availability and quality of services can also influence demand for services. To reduce the maternal mortality and child mortality it is necessary to promote the medical assistance at the delivery time.

The aims should be to promoting institutional deliveries among poor by cash incentive to the households living below poverty line (Mohanty and Pathak, 2009). Delivering births in a medical institution or at home with professional medical assistance has been shown to promote safe motherhood and child survival. Yet three-quarters of births in rural India continue to take place at home, most of them without the assistance of any trained health worker (Mishra, and Rutherford, 2008).

The MCH and RCH programme were implemented with financial assistance from international donors, the NRHM is built upon the own resources (an estimated $9.5 billion). Among other things, these documents emphasised on reduction of poverty and improving the Accessibility and availability of quality health services, particularly to the poor, marginalised, Women and children. In consideration of these potential inequities in access, the converse – equity in health care – can be seen as being multifaceted and incorporating ideas about fair arrangements that allow equal geographic, economic and cultural access to available services for all in equal need of care (Withhead , Dahlgren, Levelling, 2006).Globally there is growing evidence of the serious health outcomes among the socially and spatially excluded groups.

Basic education-especially female education is one of the important factors other than private income that have a strong influence on fertility and mortality, and now widely considered as one of the most powerful tool to be required to address (Murthi, Guio and Drèze, 1995).A study conducted by Marmot, (2004) found that there is positive relation between social position and good health; it is referred as social gradient in terms of health position. In France, likewise, a study in 1997 found that 600 000 people did not have access to social security to cover medical care costs and that 16% of the population did not have supplementary coverage. Many of them delayed seeking treatment because of the cost (Withhead , Dalhgren , Levelling, 2006).In the developing countries, like India, utilisation of basic health services has remained poor even though there has been increasing public and private expenditure on the provision of advanced health care (Singh & Shariff, 2002).

The existence of these social inequities in almost all countries poses the most serious challenge to improving the health of the region's population, in general *(*Withhead M, Dahlgren G Levelling, 2006).

It is found that women empowerment and the providing the basic facility like access of contraception , supplementation and the equal distribution of resources between the rural ,urban population are fundamentals to reduce the maternal health and child mortality and morbidity as it is observed in Sri Lanka and other parts of south east Asian region (Zulfiqar et al ,2004).

There is also impact of distance from health care centre especially in rural areas. A study conducted by Klinoubol (1997) found that close location of health centre and cheaply available health facility improve the accessibility and affordability of the rural masses. Poverty and social exclusion are important socio-economic variables which are most important in the context of health (Nayar, 2007).

In the Indian context, caste is a determining factor for the socio-economic status, poverty and health. In the identification of the poor, scheduled caste and scheduled tribes and in some cases the other backward castes are considered as socially disadvantaged groups and such groups have a higher probability of living under adverse conditions and poverty. The health status and utilization patterns of such groups give an indication of their social exclusion as well as an idea of the linkages between poverty and health (Nayar, 2007).

It was compared the child health of statistics China ,India and Vietnam , presented the head count rates of "stunted " and "wasted" if the children aged 0-36 months in three countries with a child defined as "stunted" and "wasted" if the z- scores for" height for age " and "weight for height " are less than 2 respectively Ray and Sinha (2011).

The evidence was found the intergenerational transmission of undernourishment from mother to child by reporting the correlation magnitudes at household level between mother's BMI and the proportion of children aged 0-3 years, in the household who are stunted or wasted (Mishra and Ray, 2011*)*. Poor nutritional status of children is a major public health problem throughout the developing world and is the underlying cause for 35% of child deaths and 11% of the total global disease burden. The global burden of childhood mortality, morbidity, and under nutrition is now increasingly concentrated in the most deprived and underserved populations within countries (Ahmed. et al., 2013). A study conducted by the Bellagio child survival Group shows that the world's 34% child deaths occur in the south Asia region and that this region comprises almost two-thirds of global burden of malnutrition and half a million maternal deaths worldwide , almost half occur in south and south-east Asia. Maternal mortality ratios range considerably from 23/100 000 live births in Sri Lanka to 539/100 000 in Nepal (Zulfiqar et al 2004). Substantial recent global progress in reducing childhood mortality and under nutrition has been accompanied by increasing within-country inequities. The global burden of childhood mortality, morbidity, and under nutrition is now increasingly concentrated in the most deprived and underserved populations within countries. Partly as a result of inequitable coverage of key maternal and child health and nutrition interventions (Ahmed. et al., 2013).

In developing countries, gaps in health-related outcomes between the rich and the poor are large. These gaps limit poor peoples' potential to contribute to the economy by reducing their capacity to function and live life to the fullest - and even to survive. Malnutrition is highly associated with poverty.Child malnutrition remains a highly prevalent condition in low and middle income countries and a major portion of the global burden of childhood malnutrition is found in South Asia with an estimated 74 million children living with chronic malnutrition (stunted growth). This burden of malnutrition accounts for approximately 50% of under-five child deaths in developing countries (Ahmed. et al., 2013). Many studies show that women from low income class or low standard of living are at a disadvantage in utilising in maternal health care (Kanitkar and Sinha, 1989, Bhatia and Cleland, 1995).

2.1: Rationale of the Study

In the state like Bihar where the socio-economic situation is very low .Because as we know that the good health determines the productivity of any society. And the health of the Mother and Children is the determining factor for any society that makes a stronger nation in all the aspects of a nation. The state like Bihar where the maternal and child health care services is still very far from the common people in the states The major health and demographic indicators of the State like infant mortality rate, maternal mortality ratio, total fertility rate, etc. are much higher than the all India level and reflect a poor health status in the State. Amongst the major States, the Human Development Index in Bihar has been the lowest (0.41) (Bihar Road map report 2007).The linkages between caste and some health indicators such as maternal health and child health show that poverty social exclusion is a complex issue which needs to be addressed with a multi-dimensional paradigm.

3. OBJECTIVE OF THE STUDY:

- To examine the inequities in Maternal and Child health care services in availability and accessibility among social and economic groups in Bihar

3.1: Data Source:

Present study used secondary source for data, DLHS-3 data was used as source of data for fulfilling the study objective.

3.2: Research Design:

Current study adopted quantitative research design to examine the socio-economic and barriers in achieving maternal health care services in Bihar. To examine the inequity in health care this research paper created a composite coverage index for the maternal and child health, following formulae has been used. And this formula of composite coverage index of MCH is based on a sum of health care services on maternal and child health.

3.3: Formulae of CCI

CCI = 0.25 * (FPS +0.5 * [SBA+ANCS] + 0.25 *[2DPT3 + MSL+BCG] + 0.5 * [ORT+CPNM]).

Source: WHO, (2012).

3.4: Sample

As the district level data of Bihar state has elected for the study.

3.5: Analysis process

To fulfill the purpose of the study bi-variate analysis has been used like cross tabs. Logistic regression has been used to analyses the factors affecting on the dependent variable, ANC visit, Institutional Delivery, Immunizations, PNC for child and PNC for mother in the various regions of Bihar. The region, age of women, place of residence, Respondent's years of schooling, and husband's years of schooling, caste, and religion and wealth quintile has taken as independent variables to show the effect on the MNCH services. To construct the composite coverage index following formulae has been used that is based on a sum of health care services on maternal and child health.

Inequity in health is a multidimensional concept which is defined as inequalities in health that are unnecessary, avoidable, unfair, and unjust. Here, the inequity in MNCH coverage is presented in terms of absolute and relative inequalities. The absolute inequality is defined as the percentage coverage difference between economic groups, whereas the percentage coverage ratio between groups is a measure of relative inequality. The 'Coverage' is defined as the percentage of people receiving a specific intervention out of those who need it. This is an important output of health care services and is regarded as an essential part of any strategy to monitor progress in program implementation.

4.0: RESULTS AND DISCUSSION:

4.1: Inequities in MNCH care coverage in Bihar across wealth quintile

The table 3 shows regional/divisional difference in the mean coverage in MNCH care services in Bihar and its regions by wealth quintiles using CCI. There is not much observed differentials in CCI in the nine regions within the Bihar. This shows that the maternal and child health care services performance in Bihar is almost similar .No region of Bihar has CCI more than 50% .The overall MNCH coverage for Bihar is nearly 32% and this coverage varies between the regions from 25% for Kosi region to a maximum of 39% for Bhagalpur region. The situation of capital of Bihar and Patna region is not far better. Here the MNCH services coverage is less than 40%.There is remarkable difference in mean overall MNCH coverage between poorest and wealthiest quintiles of Bihar. Regions in the wealthiest quintile has coverage of more than 55% ,and reaches a maximum of 77% for Kosi region, while in the poorest of the wealth quantile the MNCH services is nearly 20% for all the regions of Bihar which reaches a maximum of approximately 31% for Saran region. This shows that there is huge inequity in MNCH services between the two groups. This is further noticed in the ratio and differences in CCI for the wealthiest and poorest group. The result also reveals that the ratio of differences between the bottom two quintiles and top two quintiles varies to a minimum of - 20% for Patna region to a maximum of 65% for Magadh region.

4.2: Regional Disparity in Bihar

The per capita income of the Bihar is 30,930 Rupees/annum. The per capita income of the Bihar is 30,930 Rupees/annum. The problem of low per capita income in Bihar is accentuated by the fact that there exists considerable disparity across the districts in terms of their per capita income. The latest estimates of per capita GDDP (Gross District Domestic Product) relate to 2010-11 and these estimates have been presented in Table along with estimates for 2006-07 to 2010-11. It can be seen from the table that, in 2010-11, Patna (Rs. 57,843), Munger (Rs 21,019) and Begusarai (Rs. 18,447) are the most prosperous districts of Bihar. On the other end of the ranking ladder, the most economically backward districts are Sheohar (Rs. 6209), Banka (Rs. 7764) and Madhepura (Rs. 8102). Even if we exclude Patna which has the benefit of being the state capital, the per capita income of Munger, the second most prosperous district, is more than 3 times that of Sheohar.Region wise Patna region has the highest per capita income i.e. 18567 Rs, followed by Darbhanga (12,647 Rs.), and the lowest one is Magadh region i.e. 9,149 Rs. /capita income. Income is a determining factor that affects the utilization of maternal and child health care services. There is a huge gap in per capita income in the districts and regions of Bihar. That is the main reason to utilize the Maternal and Child Health care services. With the help of this graph representation it can be seen clearly what is the economic situation of the districts and the

4.3: Percentage distribution of ANC visit and utilization of institutional delivery:

Table 1 shows the present scenario of Bihar in the context of maternal and child health care services. The table regarding the context shows the utilization of the maternal and child health care services according to regions of Bihar and by background characteristics. Regarding the ANC visit overall percentage of women who ever visited health centres to get antenatal care check up is 59%.There are 43% women who reported that they receive the antenatal care (1-2 visits) services and 31% women who received the antenatal care services more than three times .Regarding the institutional delivery in Bihar, only 27% women had utilized this service. Have a look according to regions of Bihar regarding the women who ever visited the health centre for the ANC check-up the highest percentage lies in the Darbhanga region of Bihar followed by Saran (72%), Munger (67%).There are 31% women in the Bihar who received the antenatal care services more than three times. The Munger region has the highest percentage regarding this followed by Purnia (33%), and Darbhanga (32%). Utilization of institutional delivery the data shows that there are 27% women in Bihar who received the institutional delivery.

4.4: Exposure and outcome variables used in the logistic regression model

Dependent variables used for various logistic regressions: ANC visit, institutional delivery. Immunization, PNC for child and PNC for mother. The entire regressed variable were coded as 0 and 1 depending upon the services utilized.1 stands for utilizing the facilities and 0 stands for not getting the facilities.

All the covariates used in various logistic regression are age of the respondent , the region in which the respondents resides, the place of residence , mother's education , husband's education , religion , caste and the economic status of households.

5. RESULTS OF THE LOGISTIC REGRESSION:

5.1: For ANC coverage

Except place of residence and religion to which a respondent belongs, all covariates significantly effecting the odds of going for ANC visit. Table 4 shows The odds of going for ANC is maximum for Darbhanha region with reference to Patna region.Darbhanga region is around six times more likely to receive the ANC services than Patna region and it is statistically significant ($p < 0.01$). The respondent of Magadh region is 22% more utilizing the ANC services than Patna region and it is statistically significant ($p<0.1$). Rest all regions are statistically significant in utilizing the ANC services in comparison to Patna region.The respondent who belongs to 25 to 34 age group and 35 to 49 year are less likely to go for ANC visit in comparison to respondent who belongs to 15-24 year age group and it is statistically significant ($p<.01$). As the education of the respondent increases there is more likely that they will go for ANC visit. The economic status plays a very important role in determining the mobility of women for ANC check up. The respondent who belongs to richest section of the society will five times more likely to go for ANC checkup in comparison to the respondent of poorest wealth quintile.

5.2: For Institutional Delivery

Table 5 shows that all respondents of the regions are less likely to go for institutional delivery in comparison to respondents of Patna region and all the regions are statistically significant ($p< 0.01$) except Bhagalpur which is not significant. The higher age group women (25-34, 35-49) are less likely to go for institutional delivery than women of 15-24 years age group. Place of residence plays a significant role for a respondent to go for institutional delivery. The women of urban areas are going nearly two times more for institutional delivery in comparison to women of rural areas. This may be due to more health care facilities in urban areas. Respondent's and husband's education are an important factor institutional delivery. With the increase in education, is more likely for the respondent to go for the institutional delivery. Muslims and the respondents of other religions are less likely to go for than women of Hindu religion. Caste affects the institutional delivery a lot in Bihar. The respondents of OBC castes is 36% more likely to go

for institutional than SC women and it is statistically significant (p<0.01).. As the economic status of a respondent increases there is more likely that she will go for institutional delivery than women of poorest section of the society.

5.3: Logistic Regression For Immunization

The table 6 shows the children of Saran region is two times more likely to get immunised than the children of Patna region and it is statistically significant (p<0.01). The children of Munger region is 45% and the children of Darbhanga region is 33% more likely to get immunized than children of Patna region and it is significant at 5% and 10% level. Other regions are not statistically significant. The children of thre respondents of 25-34 years age group and 35-39 years age group is 3% and 6% more likely to receive immunization than children of 15-24 years age group. The respondents who attend secondary education have 49% more likely that their children will be immunized in comparison to illiterate women. Similarly the husbands of the respondents who are highly educated will have their children to get 38% more immunization than a respondent whose husband is illiterate.. The children of richest wealth quintile is approximately three times more likely to get immunized than the children of the poorest wealth quintile and it is significant at 1% level of significance .Similarly the children of middle and richer wealth quintile are more likely to get immunized than the children of poorest wealth quintile.

5.4: Logistic regression of PNC for the child

Table 7 shows that the Patna region and the Tirhut region are on the same level regarding the PNC for the child. Purnia region is 29 % more likely to get the post natal care for the child followed by Saran i.e. 28% is more likely to get the postnatal care and Bhagalpur is 22% more likely to achieve this services. Kosi region is 33% less likely to received the postnatal care services.The women who are having higher education they get two times more likely to utilize the postnatal care followed by the women who are having secondary education 61% more likely and primary education 26% more likely to access the postnatal care services.Regarding the place of residence it is quite obvious the urban people wll have more benefit (62%) than the rural people. Among tne religious group the the other community were 15% less likely to achieve such services and Muslim community i.e. 25%. In the caste group the other caste group has the more advantageous,78% more likely to having the postnatal care for the child followed by Other backward caste (25%) and Scheduled tribe is 58% less likely to get PNC for child. Among the wealth quintile the richest group is 3.7 times more likely to achieve the postnatal care services followed by richer group i.e. 2.2 times, rich (46%) and poor (20%) more likely to get this services.

5.5 Logistic regression of Post Natal Care for women

Table 8 presents the pictures of the post natal care for mother in Bihar. Tirhut region is 44% more likely to get the post natal care services i.e. maximum followed by Munger (23%), Purnia (22%). And Kosi region is 19% less likely to have the postnatal care services. The urban region is 54 % more likely to receive this facility. The women who possess the secondary or higher education 20% and 15% , respectively more likely to use such services. Among the religious group the the other religious group are 23% less likely to utilize the postnatal care services followed by Muslim (18% less likely) for the mother/women within the 48 hours. The other caste group is 67% more likely to get the postnatal care services among the social caste group followed by other backward caste (18% more likely) and for the scheduled tribe it is 50% less likely to have such services. Among wealth quintile group the richest wealth quintile group are 3.5 times more likely to utilize the post natal care services for the mother/women followed by richer group i.e. 2.3 times more likely and the rich wealth quintile group 52% more likely to received the post natal care for the mother/women.

6. CONCLUSION:

Inequities in access to healthcare are an integral part of the overall structural inequities, which result in poverty. Therefore as long as structural inequities exist healthcare access inequities will persist. Ensuring equitable access for maternal and child health for all Indian citizens**,** residents in any part of the country, regardless of income level, social status, gender, caste or religion is a major challenges for any government. However, a society characterized by its unique hierarchical caste system, cannot be understood entirely on the basis of economic conditions.

The caste system in India not only decides the social status but also defines which communities will enjoy most of the rights and privileges and which will be marginalized in almost all spheres of life. Thus, such communities like Scheduled Castes and Scheduled Tribes are known to be marginalized or socially excluded groups. Though constitution of India assures equal rights and equality to all citizens, in reality equality is still a dream. The data from DLHS 3 provides very clear evidence that the SC/ST group and the bottom two quintiles suffer from avoidable inequities that are caused because of poor state intervention in the Maternal and Child Health sector and the poorly functioning public health sector.

Another kind of marginalization has been experienced by Muslim community due to various reasons. Reviews by Sachchar Committee threw light on the fact that Muslims have very poor socio-economic conditions as well. The differences are more in poor performing states like UP, Bihar, Chhattisgarh or Jharkhand. Unfortunately these are also the states with substantial population of SCs, STs and Muslims. The other critical concern, which stands out very

sharply, is the rural- urban distribution of healthcare facilities, especially public health facilities. This is closely linked to the financing issue as we have seen that public investment in health is largely concentrated in urban areas.This is an inequity imposed directly by the state and can easily be resolved through a policy mandates per capita distribution of resources for public services across all regions. Institutional delivery is nearly twice high in urban areas in comparison to rural areas. 29 per cent of Hindus and 19 per cent of Muslims had institutional delivery. Those who had 3 or more ANC visits were only 19 per cent among SCs, 16 per cent STs and 45 per cent among others, indicating huge differences. As far as child immunization is concerned the differences are negligible across community, castes and rural-urban areas. Infant Mortality rate is highest in Madhepura district (68/1000) and lowest in Patna (37/1000) in 2011-12 according to Annual Health Survey Data.

It has been established that without addressing the problem of marginalized sections of the society, particularly the poor in Bihar and its regions or administrative divisions, the fourth and fifth targets of the MDGs cannot be achieved by 2015 in India .The fourth and fifth targets of the MDGs could be achieved only by some regions and sub-groups of population, but not by all.

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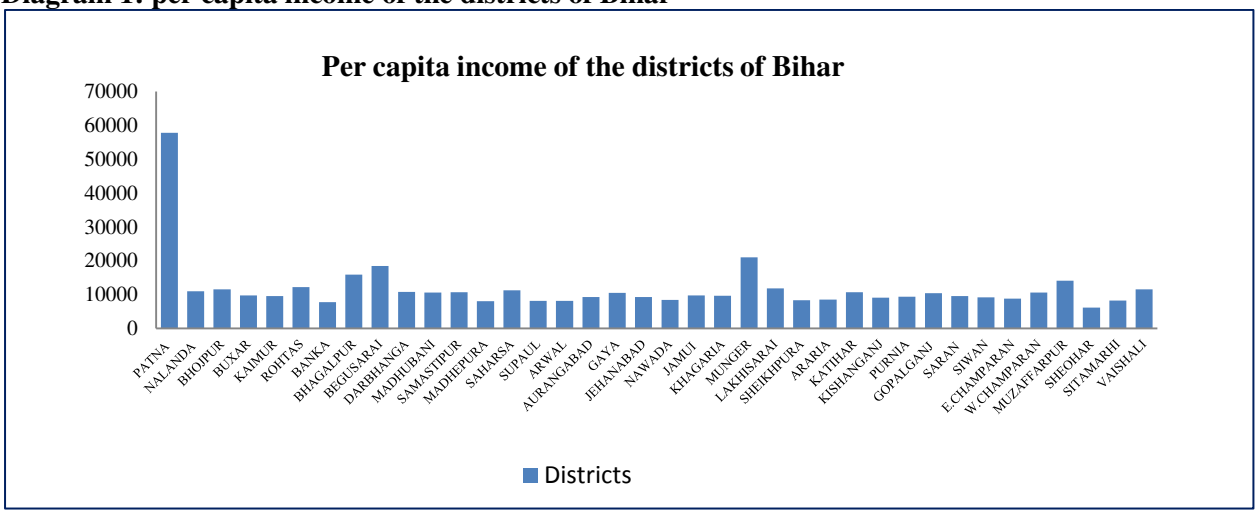
Diagram 1: per capita income of the districts of Bihar



Source: DLHS(2007-08)

Table 1: Percentage distribution of Utilization of ANC and Institutional Delivery in Bihar

Background characteristics	**ANC visit-ancvst_3**			
Region	**1-2 visit**	**3+visit**	**Ever visited**	**Institutional Delivery**
Patna	23.13	22.36	45.49	41.64
Tirhut	36.89	27.01	63.9	19.14
Saran	43.79	28.33	72.13	26.2
Darbhanga	46.51	31.94	78.45	17.57
Kosi	26.19	19.86	46.05	14.15
Purnia	26.85	33.3	60.15	11.86
Bhagalpur	24.98	27.5	52.48	21.55
Munger	32.85	34.62	67.15	24.05
Magadh	54.49	20.7	45.51	25.21
Age of women				
15-24	34.23	28.88	66.04	34.91
25-34	30.64	24.4	57.33	23.49
35-49	27.25	15.7	45.33	17.42
Residence				
Rural	31.94	24.33	58.77	25.44
Urban	29.17	37.18	69.95	54.71
years of schooling of women				
Illiterate	31.06	19.64	52.67	19.62
Primary	37.15	25.44	66.11	30.35
Secondary	33.99	35.01	72.84	43.84
Higher	27.49	53.83	86.18	62.5
Husband's years of schooling				
Illiterate	36.65	22.30	50.58	16.94
Primary	34.24	20.16	56.74	22.04
Secondary	32.7	25.58	61.26	29.24
Higher	30.86	39.02	73.84	46.1
Religion				
Hindu	31.62	24.92	59.19	29.16
Muslim	32.4	26.93	61.49	19.6
Other	26.95	23.39	51.69	25
Caste				
SC	32.01	19.29	51.3	18.62
ST	22.74	16.11	38.86	15.89
OBC	32.74	26.7	59.44	26.71

OTHER	29.12	44.94	74.07	18.62
Wealth quintile				
Poorest	28.54	16.62	46.82	16.17
Second	34.74	22.18	59.36	23.66
Middle	33.72	31.76	68.66	35.24
Fourth	31.85	42.34	79.0	52.95
Richest	20.52	64.12	90.87	76.1
Total	**43.0**	**31.74**	**59.57**	**27.53**

Source: DLHS-3 (2007-08)

Table 2: Major Barriers in the utilization of Institutional Delivery in Bihar

Background characteristics	Cost	dist/transp	knowledge	Quality
Region				
Patna	35.8	7.9	4.4	4.3
Tirhut	38.1	7.7	16.7	4.7
Saran	25.6	6.2	12.6	4.8
Darbhanga	27.1	7.1	27.2	5.6
Kosi	40.1	10.1	17.2	4.9
Purnia	40.4	7.7	15.1	5.0
Bhagalpur	37.9	15.7	9.7	10.0
Munger	33.9	13.3	19.5	6.1
Magadh	33.4	5.9	6.8	4.1
Age of women				
15-24	33.0	9.0	14.9	5.3
25-34	35.6	8.6	14.5	5.1
35-49	39.2	7.8	21.3	5.4
Residence				
Rural	35.7	8.8	15.7	5.3
Urban	23.2	6.8	8.7	4.1
years of schooling of women				
Illiterate	38.0	8.7	17.7	5.6
Primary	31.8	11.7	8.9	4.9
Secondary	24.1	6.1	8.9	2.4
Higher	16.9	6.0	6.9	4.3
Husband's years of schooling				
Illiterate	40.8	9.6	18.7	6.3
Primary	36.6	10.0	16.5	3.7
Secondary	31.3	6.9	13.5	4.8
Higher	25.4	6.6	8.3	4.7
Religion				
Hindu	34.2	15.1	15.1	5.4
Muslim	38.9	16.6	16.6	4.4
Other	31.5	13.4	13.4	0.0
Caste				
SC	35.9	7.5	17.5	6.5
ST	39.0	8.4	12.1	7.5
OBC	35.1	9.5	15.7	4.6
OTHER	32.7	7.4	10.5	5.1
Wealth quintile				
Poorest	41.3	9.5	16.6	6.1
Second	35.7	9.2	17.2	4.8
Middle	26.5	6.6	11.8	5.1
Fourth	**17.4**	**6.1**	**6.2**	**2.7**
Richest	8.0	3.4	3.9	1.0

Total	**35.1**	**8.7**	**13.4**	**5.2**

Source: DLHS-3 (2007-08)

Table 3: Inequity in MNCH care coverage in Bihar across wealth quintile

Region	Overall (CCI)	Poorest(q1)	Q2	Middle(q3)	Q4	Wealthiest(q5)	Raito(q5/q1)	(q5-q1)	(q2-q1)/(q5-q4)
	0.317								
Patna	0.389	0.296	0.267	0.383	0.492	0.569	1.9	0.2	-0.2
Tirhut	0.294	0.214	0.21	0.319	0.478	0.666	3.1	0.45	0.004
Saran	0.355	0.312	0.263	0.402	0.475	0.575	1.8	0.26	0.49
Darbhanga	0.273	0.218	0.246	0.347	0.416	0.343	1.5	0.12	0.38
Kosi	0.25	0.182	0.25	0.255	0.375	0.77	4.2	0.58	0.17
Purnia	0.268	0.202	0.213	0.321	0.458	0.593	2.9	0.39	0.08
Bhagalpur	0.393	0.274	0.312	0.345	0.637	0.703	2.5	0.42	0.57
Munger	0.346	0.203	0.267	0.404	0.474	0.687	3.3	0.48	0.3
Magadh	0.288	0.201	0.235	0.328	0.43	0.482	2.3	0.28	0.65

Source : DLHS 3(2007-08)

Table 4: Logistic regression for ANC Services

Background characteristics	Odds ratio	P value	Lower limit	Upper limit
Region				
Patna@				
Tirhut	3.19***	0	2.63	3.87
Saran	3.74***	0	2.87	4.86
Darbhanga	6.39***	0	5.11	8.00
Kosi	1.48***	0.001	1.18	1.85
Purnia	2.62***	0	2.11	3.26
Bhagalpur	1.76***	0	1.32	2.34
Munger	3.40***	0	2.78	4.16
Magadh	1.22*	0.058	0.99	1.51
Age				
15-24@				
25-34	0.73***	0	0.65	0.82
35-49	0.45***	0.000	0.37	0.55
Residence				
Rural@				
Urban	1.02	0.86	0.79	1.32
years of schooling of women				
Illiterate@				
Primary	1.35***	0.001	1.13	1.62
Secondary	1.37***	0.002	1.13	1.68
Higher	2.18***	0.000	1.65	2.88
Husband's years of schooling				
Illiterate@				
Primary	1.03	0.758	0.87	1.20
Secondary	1.16*	0.055	1.00	1.36
Higher	1.39***	0.001	1.15	1.63
Religion				
Hindu@				
Muslim	0.91	0.238	0.44	0.93
Other	0.36	0.202	1.03	1.34

Caste				
SC@				
ST	0.12**	0.018	0.44	0.93
OBC	0.078**	0.017	1.03	1.34
Other	0.17***	0	1.31	1.98
Wealth quintile				
Poorest@				
Second	1.34***	0	1.18	1.52
Middle	1.74***	0	1.46	2.08
Fourth	2.82***	0	2.16	3.70
Richest	5.11***	0	3.04	8.60

Source: DLHS(2007-08) ®=Shows the reference category ***P<=0.01, **P<=0.05,*P<=0.1

Table 5: Logistic Regression for Institutional Delivery

Background characteristics	Odds ratio	P value	Lower limit	Upper limit
Region				
Patna@				
Tirhut	0.41***	0.0	0.33	0.50
Saran	0.55***	0.0	0.42	0.71
Darbhanga	0.36***	0.0	0.28	0.45
Kosi	0.38***	0.0	0.29	0.49
Purnia	0.28***	0.0	0.21	0.36
Bhagalpur	0.78	0.1	0.58	1.06
Munger	0.47***	0.0	0.38	0.58
Magadh	0.61***	0.0	0.49	0.76
Age				
15-24@				
25-34	0.63***	0.0	0.51	0.83
35-49	0.65***	0.0	1.51	2.48
Residence				
Rural@				
Urban	1.93	0	1,50	2.48
Respondent years of schooling				
Illiterate@				
Primary	1.16	0.1	0.96	1.41
Secondary	1.77***	0.0	1.45	2.15
Higher	2.97***	0.0	2.33	3.78
Respondent yrs. of schooling				
Illiterate@				
Primary	1.18*	0.1	0.97	1.44
Secondary	1.22**	0.0	1.02	1.46
Higher	1.38***	0.0	1.13	1.68
Religion				
Hindu@				
Muslim	0.74***	0.0	0.60	1.54
Other	0.49	0.5	0.06	1.60
Caste				
SC@				
ST	0.97	0.9	0.61	1.54
OBC	1.36***	0.0	1.16	1.60
Other	2.69***	0.0	2.16	3.35
Wealth quintile				
Poorest@				
Second	1.27***	0.0	1.08	1.50
Middle	1.58***	0.0	1.30	1.93
Fourth	2.33***	0.0	1.81	3.00
Richest	4.98***	0.0	3.20	7.77

Source: DLHS(2007-08) ®=Shows the reference category ***P<=0.01, **P<=0.05,*P<=0.1

Table 6: Logistic regression for Immunization

Background characteristics	**Immunization**			
Region	**Odds ratio**	**P value**	**Lower limit.**	**Upper limit.**
Patna@				
Tirhut	0.91	0.57	0.66	1.26
Saran	2.04***	0.00	1.34	3.11
Darbhanga	1.33	0.09	0.96	1.86
Kosi	1.43	0.06	0.98	2.09
Purnia	0.88	0.51	0.60	1.29
Bhagalpur	1.41	0.14	0.89	2.22
Munger	1.45	0.03	1.05	2.01
Magadh	1.16	0.41	0.81	1.65
Age				
15-24@				
25-34	1.03	0.74	0.86	1.24
35-49	1.06	0.75	0.76	1.48
Residence				
Rural@				
Urban	0.75	0.16	0.50	1.12
Respondent years of schooling				
Illiterate@				
Primary	1.00	0.97	0.75	1.35
Secondary	1.49**	0.01	1.10	2.05
Respondent yrs. of schooling				
Illiterate				
Primary	1.17	0.26	0.89	1.52
Secondary	1.04	0.78	0.80	1.35
Higher	1.38**	0.02	1.04	1.81
Religion				
Hindu@				
Muslim	0.85	0.27	0.65	1.13
Other	0.77	0.87	0.04	15.74
Caste				
SC@				
ST	1.01	0.97	0.57	1.80
OBC	1.21*	0.09	0.97	1.51
Other	1.63***	0.00	1.18	2.24
Wealth quintile				
Poorest@				
Second	1.19	0.11	0.96	1.48
Middle	1.43**	0.02	1.07	1.91
Fourth	1.80***	0.00	1.21	2.68
Richest	2.91***	0.00	1.52	5.59

DLHS (2007-2008) ®=Shows the reference category ***P<=0.01, **P<=0.05,*P<=0.1

Table 7: Logistic Regression for PNC for child

Background characteristics	**Logistic regression -PNC for child**			
Region	Odds ratio	P value	95% confidence	interval
Patna@			Lower lmt.	Upper lmt.

Tirhut	1.00	0.98	0.81	1.25
Saran	1.28	0.07	0.98	1.68
Darbhanga	1.27	0.04	1.01	1.60
Kosi	0.67	0.01	0.50	0.90
Purnia	1.29	0.05	1.01	1.65
Bhagalpur	1.22	0.23	0.88	1.68
Munger	1.05	0.65	0.84	1.31
Magadh	1.05	0.70	0.82	1.34
Age				
15-24 @				
25-34	2 .69***	0.00	0.61	0.79
35-49	3 .68***	0.00	0.53	0.87
Residence				
Rural@				
Urban	1.62***	0.00	1.28	2.06
Respondent years of schooling				
Illiterate@				
Primary	1.26**	0.02	1.04	1.54
Secondary	1.61***	0.00	1.32	1.96
Higher	2.10***	0.00	1.65	2.67
Respondent years of schooling				
Illiterate@				
Primary	1.15	0.16	0.95	1.40
Secondary	1.24**	0.02	1.03	1.49
Higher	1.24**	0.04	1.01	1.51
Religion				
Hindu@				
Muslim	0.75**	0.01	0.62	0.92
Other	0.85	0.90	0.08	9.56
Caste				
SC@				
ST	0.42**	0.01	0.23	0.78
OBC	1.25**	0.01	1.06	1.47
Other	1.78***	0.00	1.43	2.21
Wealth quintile				
Poorest@				
Second	1.20**	0.03	1.02	1.41
Middle	1.46***	0.00	1.20	1.79
Fourth	2.28***	0.00	1.78	2.94
Richest	3.70***	0.00	2.51	5.45

Source DLHS (2007-08) ®=Shows the reference category ***P<=0.01, **P<=0.05,*P<=0.1

Table 8: Logistic regression for PNC services for the women

Background characteristics	**Odds ratio**	**P value**	**95% confidence interval**	
Region			**Lower lmt.**	**Upper lmt.**
Patna@				
Tirhut	1.08	0.51	0.87	1.34
Saran	1.44**	0.01	1.1	1.88
Darbhanga	1.21	0.11	0.96	1.52
Kosi	0.81	0.15	0.61	1.08
Purnia	1.22	0.12	0.95	1.56

Bhagalpur	1.1	0.56	0.8	1.53
Munger	1.23	0.06	0.99	1.53
Magadh	1.04	0.76	0.81	1.33
Age				
15-24@				
25-34	0.72***	0	0.63	0.82
35-49	0.76**	0.02	0.6	0.97
Residence				
Rural@				
Urban	1.54***	0	1.21	1.96
Respondent years of schooling				
Illiterate@				
Primary	1.302***	0.01	1.07	1.58
Secondary	1.560***	0	1.3	1.95
Higher	2.22***	0	1.75	2.83
Respondent husband years schooling				
Illiterate@				
Primary	1.15	0.15	0.95	1.4
Secondary	1.2	0.06	1	1.44
Higher	1.15	0.16	0.94	1.41
Religion				
Hindu@				
Muslim	0.82**	0.05	0.68	1
Other	0.77	0.83	0.07	8.01
Caste				
SC@				
ST	0.50**	0.02	0.28	0.88
OBC	1.18**	0.04	1	1.39
Other	1.67***	0	1.34	2.07
Wealth quintile				
Poorest@				
Second	1.21**	0.02	1.03	1.43
Middle	1.52***	0	1.24	1.85
Fourth	2.32***	0	1.8	2.99
Richest	3.56***	0	2.45	5.28

Source DLHS (2007-08) ®=Shows the reference category ***P<=0.01, **P<=0.05,*P<=0.1