MATERNAL HEALTH EXPENDITURE OF EMPOWERED ACTION GROUP (EAG) STATES OF INDIA

Dissertation submitted to Jawaharlal Nehru University in partial

fulfillment of the requirements for the award of

MASTER OF PHILOSOPHY

PRIYANKA YADAV

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCE
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067, INDIA
2016

DECLARATION

I do hereby declare that the dissertation titled "**MATERNAL HEALTH EXPENDITURE OF EMPOWERED ACTION GROUP STATES (EAG) OF INDIA**" submitted by me in partial fulfillment of the requirement for the award of the degree of **Master of Philosophy of JAWAHARLAL NEHRU UNIVERSITY** is my bonafide work and has not been previously submitted for any other degree of this or any other university

Priyanka Yadav
PRIYANKA YADAV

DATE 25/07/16

CERTIFICATE

We recommend that this dissertation may be placed before the examiners for evaluation.

Prof. B.Butola
25/7/16

Chairperson
Centre for the Study of Reg. Dev.
School of Social Sciences
Jawaharlal Nehru University
New Delhi - 110067

Dr. Bikramaditya kumar Choudhary

Supervisor
Centre for the Study of Reg. Dev.
School of Social Sciences
Jawaharlal Nehru University
New Delhi-110067

Acknowledgement

"It is the attitude of gratitude that can be the most important and life changing", as it has been said. This dissertation appears in its current form due to the assistance and guidance of several people, who contributed to some way to the work described here. I wish to express my sincere gratitude to all people who offered their kind help and guidance through ought my dissertation work.

I convey my heartfelt thanks and gratitude to my supervisor Dr. Bikramaditya Kumar Choudhary for his overwhelming encouragement, guidance and support that made me to achieve this task. I highly appreciate his careful thoughts, invaluable comments, constructive suggestions, criticisms and patience while reviewing my work. Respected Sir, it has indeed been a great pleasure and a privilege for me to be your student.

I am grateful to Dr. Sirinivas Goli for his great concern about me and for guidance and help enlightening me with statistical works. A special thanks to Mr. Varghese for helping me in statistical software works. My sincere thanks to Prof. B.S. Butola, the CSRD chairperson. I would also like to acknowledge support and encouragement rendered by all faculty and staff of CSRD.

Very special thanks to Ajit and Shanu for their help and support, for motivating me and guiding me, standing beside me in my need. Giving me their precious time especially during my dissertation work and understanding me in my hard times.

I am also thankful to my friends Arvind chauhan, Mridula, shahid for their support during my research work. I am also thankful to all my friends and classmate for giving me support from all sides and their help during the research.

Finally and most importantly I am indebted to my family especially my grandmother and my mother for their support and sacrifices. I also deeply acknowledge the love and support of my Father and my brother Pramod. The dissertation would not have been possible without their unconditional love, support and trust.

Ultimately and above I thank to the almighty.

….For My Nana…

Priyanka Yadav.

CSRD,JNU

2016.

CONTENTS

LIST OF TABLES:

Table of Appendix: Table a. Demographic and health indicators in EAG states of India

LIST OF FIGURES AND MAPS:

LIST OF ABBREVIATIONS

ANC   -   Antenatal care

ASHA   -   Accredited Social Health activists

CAT   -   Catastrophic

CHHAT   -   Chhattisgarh

EAG   -   Empowered Action Group

GDP   -   Gross Domestic product

IMR   -   Infant Mortality Rate

JSY   -   Janani Suraksha Yojana

MDG   -   Millennium Development Goal

MHC   -   Maternal Health Care

MMR   -   Maternal Mortality Rate

MoHFW   -   Ministry of Health and Family Welfare

MP   -   Madhya Pradesh

MPCE   -   Mean Per Capita Consumption Expenditure

NRHM   -   National Rural Health Mission

OBC   -   Other Backward Caste

OOP   -   Out of Pocket

OOPE   -   Out of Pocket Expenditure

PNC   -   Postnatal Care

RAJ   -   Rajasthan.

SC   -   Scheduled Caste

ST	-	Scheduled Tribe
UNICEF	-	United Nations International Children's Emergency Fund
UP	-	Uttar Pradesh
UT, UK	-	Uttarakhand
WHO	-	World Health Organization

Chapter 1:

Maternal Health Expenditure of Empowered Action Group (EAG) States of India

1.1: Introduction:

The World Health Organization (2013) estimates that out of 289000 maternal deaths globally around 50,000 deaths occur each year in India.[1] The Maternal mortality rate in India is 190 (World Bank, 2013) and it varies across states with larger concentration in the northern states. Geographical vastness and socio cultural diversity leads to such kind of disparity. The condition of women in India is generally low except in some southern and eastern states. Factors such as female literacy and dearth of women empowerment and women autonomy, as well as decisions to use maternal health services are the main reasons for higher mortality rate in India.

As Health is a subject matter of state, therefore much depends on state leadership and management skills. World Bank Report states that India's total health expenditure constitutes of only 4.7% of GDP (2015).

The Millennium Development Goal to reduce maternal death to 75% by 1990 – 2015 is not met. In spite of tremendous decrease in maternal mortality, it is a major issue of concern for the developing countries. India has also a large share in maternal death and it could be prevented by providing better health care facilities during the stages of gestation. Utilization of maternal health care in India is abysmal and therefore there is need of maximizing the maternal health care mainly for the underprivileged and illiterate in order to lower down maternal death.

In literature, "when the health care spending exceeds some fixed proportion of total household expenditure (threshold limit of 5-10 percent of total household budget), the health spending is termed as catastrophic" (Wagstaff and Doorslaer 2003, Garg and Karan 2005)[2]. On health the Out Of Pocket expenditure decreases with rise in the Government spending.[3]

---

[1] Vidler et., al. Utilization of maternal health care services and their determinants in Karnataka state India, Reproductive Health, 2016

[2] Adam Wagstaff and Eddy Van Doorslaer(2003), Catastrophe and Impoverishment in Paying for Health Care: With Application to Vietnam 1993- 1998; Health Economics; pp 921-34

[3] Garg et al (2009), Reducing out of pocket expenditure to reduce poverty: a disagreegated analysis at rural and urban and state level in India; Health Policy and Planning; 24;2 pp 116-128

Maternal mortality of the poor is the crisis of the 21st century and an ignored mishap of the developing countries which reflects the failure of the human progress. The inequality of maternal deaths between developed and developing countries has been considered the ''greatest health divide in the world'' (United Nations Children's Fund (2008).[4]

Health care expenditure is one of the most important social expenditure for any country.[5] Creating a good health infrastructure and providing good health to all is the most important goal for country across the world. Health expenditure is highly unequal across the globe.

The key factors of catastrophic expenditure are low economic status, contemporary medical facilities, incidents of illness and household member suffering from chronic illness.

There is variation in maternal health. The educational qualification and financial condition of women affects the use of maternal care. Uneducated mothers and mothers from poor wealth quintile use basic maternal health care much fewer than their literate or wealthier counterparts. Public health system is incapable to reach out to the poor and illiterate.

Maternal Health is a significant aspect for the development of any country for increasing equity & decreasing poverty[6]. In order to solve economic, social and developmental challenges the health of a mother is a vital factor.

The use of maternal health care in India is inadequate in spite of efforts made by Government through different programmes, for its improvement since the late 1980's. The use of maternal health care is based on socioeconomic and cultural outlines. Although there is no clear prospect about how socioeconomic differences over time have imparted towards the use of maternal health care in India.[7]

---

[4] Jolene Skordis – Worrall et. Al;(2011) Maternal and Neo natal health expenditure in Mumbai Slums(India): A cross Sectional Study; BMC Public Health
[5] S. Prinja et al; (2015) Coverage and Financial Risk Protection for Institutional Delivery :How universal Is Provision of Maternal Health Care in India; Journal of Public Health
[6] Annual Health Report 2013- 2014; Ministry of Health and Family Welfare
[7] Pathak et al(2010) Economic Inequalities in Maternal Health Care: Prenatal Care and Skilled Birth Attendance in India, 1992-2006 : Plos One: 5(10):e13593

There is important relation between improvement in maternal health and the development process, poor maternal health often affect child health in an adverse way, beside reducing women's productive capacity also it lowers participation in economic activities, and incapacitate poverty alleviation programme (Nanda G, Switlick K, Lule E (2005)[8]

Janani Suraksha Yojana launched in the year 2005, April, with a vision of promoting institutional delivery by reduction in maternal and neo natal mortality. A special focus was given to low performing states which includes EAG States, Jammu and Kashmir and Assam.

Within a time frame JSY has been successful in getting implemented and defining its objective appropriately. Although there are still some loopholes in the implementation of JSY, when it comes to institutional delivery scheme and the involvement of ASHA.

No doubt with the passage of time JSY has been doing very well in the country in both high performing states and low performing states including the EAG states, the work has been quite successful one.

The percentage of institutional delivery has also increased in the past years. On evaluation some of the literature does reveal the work being performed under JSY could have been a better one.

Literature talks about the apprehensive works of JSY in EAG states. Although women delivering in government facilities do receive monetary incentives as per the norms which shows that the scheme is well functioning the work being done by ASHAs and other community health workers who are supposed to motivate and facilitate institutional deliveries play a limited role in the process.

Most often ASHAs did not make arrangement for mode of transport for the pregnant women in taking them for institutional delivery. Sometimes the health worker did not stay up during delivery. Inadequacy has been found in post-delivery visit by health worker for tracking the health of mother post- delivery which is required to be done within seven days.

---

[8] G Nanda et al (2005) Accelerating progress towards achieving the MDG to improve the maternal health: A collection of promising approaches; Health Nutrition and Population Discussion Paper, The World Bank, Washington D.C., U.S.A.

Question arises why ASHAs has not been so efficient in their works. Some of the literature do talk most often ASHAs do not receive the appropriate monetary incentive with respect to their work thus effecting the efficiency of ASHA.

Even though the Janani suraksha yojana has done a remarkable job in empowered action group states (EAG) in achieving millennium development goals of lowering maternal mortality by promoting institutional delivery and lowering down maternal mortality rates.

1.2: STUDY AREA:
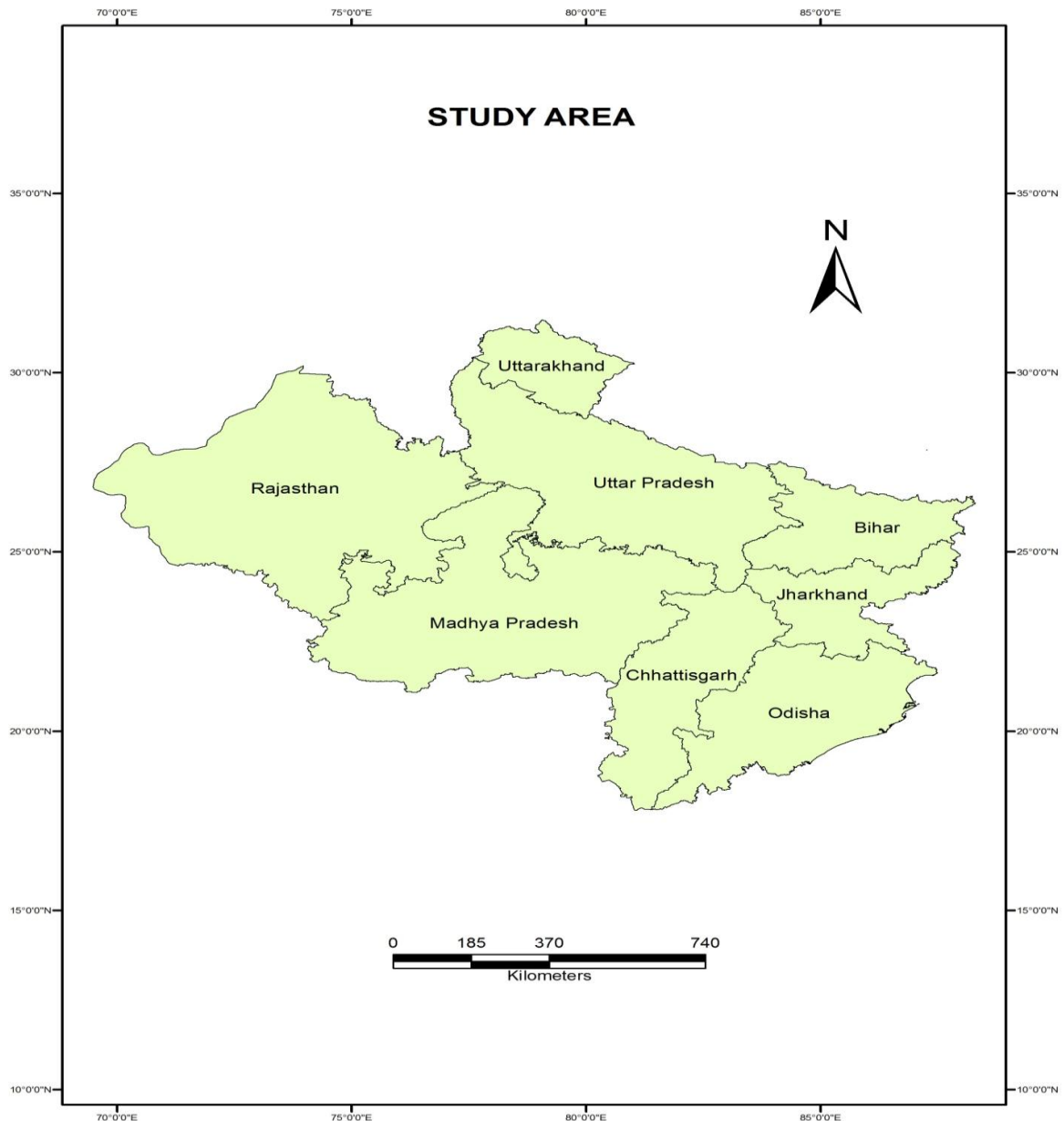
Fig 1.1

1.2: Study Area:

The EAG states comprise 45.9 per cent of the country's population; therefore, the future of India's population would largely be governed by the socio-demographic situation of these states. The population growth rate in rural areas of EAG states is almost thrice than the growth rate in rural areas of non-EAG states, which can be attributed to various factors such as strong patriarchal and gender-based societal norms and structural socioeconomic inequalities. Despite a fall in the population growth rate in EAG states

during the last decade, addressing FP issues for the 55.5 crore (555 million) people in the states remain as a challenge for the country (Census 2011). Most EAG states are part of the northern belt of India.

Following the 2001 census, the government had created an Empowered Action Group (EAG) under the Ministry of Health and Family Welfare to stabilize the population mainly in eight states (called EAG states) that were par behind in holding population. As per the latest census, EAG states comprises of Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Rajasthan, Madhya Pradesh, Chhattisgarh and Odisha have shown little improvement. They share 45 per cent of India's population.[9]

The population growth rate in India, mainly in the EAG States, is very high; it is a matter of grave concern for the policy makers. High fertility, high IMR, high MMR, high population growth rate, low literacy rate and high literacy gender differential are the demographic characteristics of EAG States. According to 2011 Census, EAG States comprise of total population of 555175135 persons with a decadal growth rate of nearly 25% in comparison of national decadal growth rate of 17.64 %. The growth rate varies from states to states. High growth rate leads to high fertility and in turn high fertility leads to the increase in population and which has great impact on the demographic composition of the region and which affects socio-economic conditions.

Table 1.1: Population in empowered action group (EAG) states in India vs. countries in the world (in millions)

EAG States	Population 2011	Country	Population
Uttar Pradesh	199.6	**Brazil**	195.4
Bihar	103.8	**Mexico**	110.5
Madhya Pradesh	72.6	**Turkey**	72.7
Rajasthan	68.6	**France**	62.8
Orissa	41.9	**Argentina**	40.7
Jharkhand	33.0	**Morocco**	32.4
Chhattisgarh	25.5	**Saudi Arabia**	26.2
Assam	31.2	**Iraq**	31.5

Source: State of world population 2010

---

[9] Down to Hearth; Census : A nation of 1.21 billion

1.3: Definition of maternal health:

"Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. While motherhood is often a positive and fulfilling experience, for too many women it is associated with suffering, ill-health and even death."[10]

To improve maternal health was included in one of the eight millennium goal adopted by the international community in 2000. Since 1990, the maternal mortality dropped by 43%. Noticing the decline of maternal mortality a new target have been proposed, Under the Sustainable Development goal 3 the aim is to reduce the global maternity mortality ratio to less than 70 per 100 000 births.[11]

Lack of accessibility in health services leads to maternal deaths in many parts of the world, especially in sub-Saharan Africa and almost one third in South Asia.

The maternal mortality ratio in developing countries in 2015 is 239 per 100 000 live births whereas it is 12 per 100 000 live births in developed countries. There are large differences among countries as well as within countries. The disparity has also been noticed between the women with high and low income and women residing in rural and urban areas.

The adolescent girls under the age of 15 years are at higher risk of maternal mortality with pregnancy complications and sometimes childbirth at this tender age leads to death especially in the developing countries.

The major challenge for adequate health care is the economic barrier. Poor women in remote area don't have access to adequate health care. Only 51% women in low income countries have access to skilled care during childbirth.

The health status of female is of great concern as in many societies they are disadvantage due to discrimination deeply rooted in the socio cultural factors. There are some socio cultural factors which prevent women and girls from benefiting quality health services, mentioning few of them:

    i)   Division of labour.

---

[10] World Health Organization Definition
[11] Maternal Mortality: WHO Report

ii)   Social factors affecting education and employment opportunities of women.

iii) Special focus on reproductive roles of the women

Poverty can be said as the main hindrance for positive health outcomes for both male and female, poverty inclines to yield a higher burden on the health of women and girls.

Data says by the end of 2015, 303000 women would have died of complications during pregnancy or childbirth. Most of these deaths could have been avoided through medical interventions.

Health care delivery system should take care that the rich and the poor should be treated similarly; poverty should not become disability and wealth as an advantage towards accessibility of health care services.

1.4: Importance of antenatal care:

The main aim of ante natal is to prepare for birth and maternity and also to avoid, perceive, lessen and manage the health problems that occur during pregnancy for both the mother as well as for the baby and also for safe childbirth, and postnatal recovery. ANC improves the survival as well as health of babies, reduces stillbirths and neonatal deaths. ANC provides an opportunity for the women to get connected with the health services. [12]

ANC encourage healthy behaviors at home such as healthy lifestyles, diet, safety and injury prevention, and also make supportive and caring atmosphere at home. It suggests for iron supplementation, condom use, and use of insecticide treated bed nets (ITN)

ANC also helps to prepare emotionally and physically for birth and care of the baby, mainly preparing for early and exclusive breastfeeding and for essential new-born care and also for allowing for the role of a caring companion at birth.

ANC includes birth preparedness, and also provide with health information and counselling for pregnant women, their families, and communities. It provide relevant information, education, and advice regarding appropriate nutrition and rest, and feeding

---

[12] Ante natal care: WHO Report- O. Lincetto
www.who.int/pmnch/media/publications/aonsectionIII_2.pdf

8

options for HIV-positive women, smoking cessation, avoidance of alcohol and drugs, and parenting skills should be made available to the woman and family.

Guidance on family planning and pregnancy spacing, seeking necessary care, and caring for the new-born baby are also important components of ANC.

ANC is the main and important point for prevention of mother-to-child transmission of HIV (PMTCT) services. ANC provide guidance on family planning and pregnancy spacing.

Advice and counselling are important components of the antenatal care package and key to improving health behavior and care seeking during pregnancy, labour and delivery and in the postpartum period. The information provided during the antenatal sessions enables women and their family members to adopt health promoting behavior and to identify and act on medical emergencies that may arise during pregnancy, delivery and postpartum periods. The information provided during antenatal sessions also enables women to take proper care of their new-born. Advice on appropriate family planning methods ensures spacing between the children and preventing unwanted births. Although there is sufficient evidence to show the effectiveness of advice and counselling during antenatal sessions, there is little emphasis on advice and counselling during antenatal visits in the developing country settings. [13]

1.5: Importance of post natal care is important:

The postnatal period – defined here as the first six weeks after birth – is critical to the health and survival of a mother and her new-born. The most vulnerable time for both is during the hours and days after birth. Lack of care in this time period may result in death or disability as well as missed opportunities to promote healthy behaviors, affecting women, new-born, and children.[14]

Post-natal care provides the following services:
- Increase healthy behaviours for the baby such as exclusive breastfeeding, delayed bathing and skin-to-skin care, and hygienic practices.
- Provide extra care for the low birthweight (LBW) baby.

---

[13] Abhishek Singh et al (2012): Inequalities in Advice Provided by Public Health Workers to women during Antenatal Session in Rural India; Plos One; 79(9):e44931
[14] Post natal care- WHO Report : Charlotte Warren, Pat Daly, Lalla Toure, Pyande Monge

- Reduces new-born deaths through early identification and case management of pneumonia where referral is not possible.

- Provide information and services for the mother especially for birth spacing and family planning, giving vitamin A to mothers.

- Identify danger signs for both mothers and new-borns and support referral for management of maternal and new-born complications.

- Promote the use of other services such as birth registration and vaccination

1.6: Review of Literature:

"With decades of global and national effort maternity remains a high risk for the mothers as well for their new born child" (Starrs 2006). [15] Millennium development goal targeted to decrease the maternal mortality by 75% between the years 1990 and 2015 (United Nations 2000). Maternal mortality and morbidity are the major factors that results into poverty, which has been an important problem that India has been facing. In spite of continuous economic growth in the past decade, maternal mortality remains high in India, has accounted for 136 000 maternal deaths and 1 million neonatal deaths each year (World Health Organization 2005).[16] Utilization of maternal health care facilities such as antenatal care (ANC), place of delivery and Post-natal care (PNC) are very less and highly uneven throughout the country (Peters et al 2002). [17]In 12th five year plan government proposes to reduce the maternal mortality rate by 22 / 100000. On an average, the decline in MMR between 2007-2009 and 2011-2013 has been 11.3 points per year. India's MMR would have been reduced from 167 during the year 2011-13 to 140 by the year 2015.

There are number of factors that explain the uneven utilization of maternal health care and maternal health outcome in India, among all the most important is the uneven facilities provided in both sectors i.e., rural and urban area. In rural areas there is lack of doctors and health professionals, low skill levels (among the medical and paramedical those who provides maternal care), as well as shortage of medicines,

[15] Starrs AM. (2006). Safe Motherhood initiative :20 years and counting. The Lancet 368:1130-2

[16] World Health Organization.(2005). Improving maternal, newborn and child health in the South-East Asia region. New Delhi: WHO Regional office

[17] Peters et al (2002). Better health systems for India's Poor: Findings, analysis and options. Washington, DC: The World Bank

inadequate careless attitude of public health care providers (Government of India 2006a).

Other indirect factors other than the professional health facilities (e.g. poor maternal nutrition, short birth spacing, early age at marriage, low levels of education in women) also adversely affect maternal health outcomes (Filippi et al.[18] 2006; Ronsmans et al. 2006).[19] The health care expenditure can be a determinant of utilization of maternal health care services. Maternal health care expenditure leads to economic problem for the poor household.

The fundamental principle of equity states that there should be equal treatment for all socio-economic groups, and it should not be gender biased. According to literature, "there are two forms of inequity; one is social inequity which is due to poverty, ethnicity, and lack of education while another one spatial inequity arises due to the place of residence, such as rural, urban, hilly and forest areas, that effect on access to health care."[20]

In most of the high income countries there are arrangements for universal health care that are met by general taxation or social health insurance whereas in the low income countries due to limited government resource the household has to pay directly through their own out of pocket payment which forces households of lower economic strata into deep financial hardship and in turn leads them to poverty. (Borghi et al. 2006).[21] The cost of maternal care is also a demand side barrier for the utilization of maternal care during pregnancy mainly for the poor and people living in the remote areas. If the cost is financed by borrowing, than it reduces the future consumption having long term impact. The economic burden of maternal health is not only in productive or financial term but also has social implication; it creates social tension between partners. Women not receiving any maternal care i.e., ante natal, delivery, post-natal care due to financial crisis may recover less quickly and may suffer physical and mental health problems. There is a wide variation in maternal health care expenditure in India which many

---

[18] Filippi et al.(2006). Maternal health care in poor countries: the broader context and a call for action. The Lancet 368: 1535-41

[19] C Ronsmans et al. (2006): Maternal mortality :who, when, where, and why. The Lancet 368: 1189-200

[20] Meerambika Mahapatro(2015): Equity in Utilization of Health care Services: Perspective of pregnant women in Southern Odisha, India: Indian Journal Medical Resources; 142. Pp 183-189

[21] Borghi et al.(2006): Mobilising financial resources for maternal health. The Lancet 368: 1457-65

studies had revealed that (McCord et al. 2001;[22] Balaji et al. 2003[23]; Duggal 2004[24]; Sharma et al. 2005[25]).

80% of maternal death are due to direct obstetric causes (e.g. haemorrhage, eclampsia, infection, obstructed labour, complications of unsafe abortion), with the remainder due to underlying illness (World Health Organization 2003). Genetic, behavioural, socio-economic factors affect a pregnant woman during pregnancy, delivery and post-partum period and the only remedy is the timely access of health care services.

Rama Rao et al (2001)[26] in his paper found that India accounts for more than 25% of maternal deaths. Van Doorslaer et al (2003) in his study found that out of pocket payment is the principal method of financing health care throughout Asia. Griffiths (2001) [27] in his paper found that women perceived private services superior than government and there is a poor perception of government service and this led to more home deliveries if private service is not affordable.

A significant barrier in accessing services is the inability to meet the maternity cost which may be a determinant of maternal and neonatal mortality and morbidity. [Wag staff (2003)] [28] utilization of these services can affect the consumption of other items such as food and education and may have immediate and intergenerational effects on household poverty and the equity of health service delivery.

---

[22] Mc cord et al (2001): Efficient and effective emergency obstetric care in a rural Indian community where most deliveries are at home. International Journal of Gynaecology and Obstetrics 75: pp 297-307

[23] Balaji R et al.(2003). Utilization of and expenditure on delivery care services: some observations from Nashik District, Maharashtra. Regional Health Forum, WHO South-East Asia Region, Volume 7, Number 2.

[24] Sharma S et al (2005). Formal and Informal Reproductive Health care User Fees in Uttaranchal, India. Washington, DC: Policy Project.

[25] Duggal R. (2004). The political economy of abortion in India: Cost and expenditure patterns. Reproductive Health Matters 12: 130–7.

[26] Ramarao et al .(2001); Safer maternal health in rural Uttar Pradesh: do primary health services contribute? ;Health Policy and Planning 16: pp- 256–63.

[27] Griffiths et al (2001): Understanding users perspectives of barrier to maternal health care use in Maharashtra, India. Journal of Biosocial Science 33: 339–59

28 Wagstaff et al (2003): Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998.Health Economics 12: pp- 921–32.

The key determinants of catastrophic expenditure were low economic status, modern medical care use (usually use of private services), illness and a household member with chronic illness.

Van Doorslaer et al (2007)[29] in his paper suggest that the countries which are highly dependent on out-of-pocket (OOP) financing had the highest incidence of catastrophic payments. Equitable healthcare and the reduction of medical poverty are key goals of health systems and financing reform.

Poorer countries have worse health outcome than better off countries. Ill health is related with health care cost whereas poverty and low income also cause ill health, therefore we can say that poor people are thus caught in a vicious circle: poverty breeds ill - health, ill-health maintains poverty. [30]

Financial hardship is the main barrier for maternal health care in India despite of the fact that maternal health care is provided free in public health care centers it is because informal payments for antenatal, delivery and postnatal services are widespread in the Indian public health sector, mainly as a result of service bias, social exclusion and impoverishment. (Pathak 2010, Sharma 2005, Skordis 2011).

Peters et al. (2002) estimated that a quarter of the Indian population fall into poverty due to the medical expenses incurred through hospitalization. Krishna et al. (2006)[31] in his paper found out that health care debts are generally associated with poverty.

Households using private maternal health care services incurred substantial costs, overall almost four times higher than those using public facilities. The poorest spend the least in absolute terms but face the highest burden in relative terms, making them the most disadvantaged. This indicates that the poorest are at risk of falling into a debt trap if they use maternal health care services, as has also been the case with general health services. (Krishna et al. 2006)

---

[29] Van Doorslaer et al. (2007): Catastrophic payments for health care in Asia. Health Economics. 2007 Nov;16(11):1159-84

[30] Chapter 24: Global health Agenda for the twenty first century- Adrian Ong for the twenty – first century.

[31] Krishna et al (2006): Pathways out of and into poverty in 36 villages of Andhra Pradesh,India, World Development, 34(2):271-288.

Despite of accounting for only 11% births worldwide, adolescent women carry 23% of overall burden of disease (in terms of disability adjusted life years) due to pregnancy and childbirth among women of all ages (Gore et al., 2011[32]; Mangiaterra et al., *2008[33]*). Complications of pregnancy and childbirth are also among the leading causes of death among women aged 15–19 years (World Health Organization, 2014). India is no exception in this regard. Despite a substantial improvement in maternal mortality in last two decades, the proportion of adolescent maternal deaths to total maternal deaths is still around 10%.

Dhar et al (2009)[34] in his study found that female-headed households spend considerably more on maternal health care than male-headed. Female headed households in India are poorer than male-headed households, as the former are mainly headed by elderly widows without access to adequate economic resources.

In 1990, Maternal Mortality Ratio (MMR) in India was very high with 600 women dying during child birth per hundred thousand live births, which meant approximately one and a half lakh women dying every year. Globally MMR at that time was 400, which translated into about 5.4 lakh women dying every year, India at that time contributing to 27 percent of the global maternal deaths. In the year 2010 global MMR was 210. Against this, MMR in India has declined to 178 per hundred thousand live births in 2011 as per latest SRS estimates. India now contributes only 16 percent of the global maternal deaths. Globally, there has been a 47% decline between the years 1990 and 2010. Compared to this, India has registered a decline of 70% between 1990 and 2011. The pace of decline in India has shown an increasing trend from 4.1% annual rate of decline during 2001-03 to 5.5% in 2004-06, to 5.8% in 2007-09 and is maintained at almost the same level of 5.7% in 2010-12. (Maternal health programme, Annual health report 2013-2014).

The maternal death gap between the developed and developing countries is considered the ''greatest health divide in the world'' according to UNICEF (2008). Public expenditure in the health sector was forced at the state level in the 1990s because of the

---

[32] Gore et al (2011): Global burden of disease in young people aged 10-24 years: a systematic analysis. Lancet 2011. Lancet 2011; Jun 18;377(9783):2093-102.

[33] Mangiaterra et al. (2008) . Department of making pregnancy safer (MPS) 1. Vol. 1. WHO MPS note

[34] Dhar et al (2009): Direct cost of maternity-care services in south Delhi: A community survey , Journal of Health, Population and Nutrition, pp 368-378

government failure to meet the public's healthcare needs. As public health investment decreased and user fees in the public sector increased, the private sector moved in to exploit the market taking an opportunity (Peters et al 2002; Bhat 1996).

There is absence of adequate insurance coverage [35] – and more than 90% of India's population has no health insurance for the expenditures which is due to illness can lead to financial catastrophe, pushing individuals or households into poverty or deepening their existing poverty (van Doorslaer et al 2006; Wagstaff and van Doorslaer 2003; Xu et al 2003)[36]. It is therefore important to see how the increase in out of pocket (OOP) health payments affects household living standards in India.

According to the *World health report 2000*,[37] one of the fundamental functions of a health system is to put in place a health financing system that would protect the population against the financial risks associated with ill health such as catastrophism or impoverishment from medical expenses which may lead the household to suffer from the burden of disease. When healthcare expenditure caused it to drop below the poverty Line the household is said to have been impoverished by medical expenses. (Xu 2005)

The pattern of current health spending in India suggests that 71% of health expenditure is met by households, 20% by government (centre, state and local bodies), 6 % by firms and 2 % by external flows (MOHFW 2009). The vicious circle linking poverty and disease has been regarded as the biggest hindrance to government efforts to fight absolute poverty.

Due to decades of underfunding it has led to poor infrastructure and poor health quality service in the public health sector which makes the patients seek private health care for their needs, and its lead to out- of- pocket payments. Household expenditure on health care, mainly out-of-pocket (OOP) expenditure on health is directly related to the public spending on health i.e., OOP expenditure reduces with increase in public spending on health. It has been seen that OOP spending significantly changes the household budget,

---

[35] Soumitra Ghosh (2010): Catastrophic Payments and Impoverishment Due to Out of Pocket Health Spending: The Effects of Recent Health Sector Reforms in India: working paper on Asia health Policy Program

[36] Xu K, Evans DB, Kawabata K et al. 2003. Household catastrophic health expenditure: a multicountry analysis. The Lancet 362: 111–7.

[37] Ye Li et al (2012): Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implicationsof universal health insurance; Bulletin World Health Organization.

it reduces consumption of non-healthy goods and services, reduces accessibility to health care utilization and it force to push many families to medical poverty trap. [38]

Abegunde and Stanciole 2008[39]; Leive & Xu 2008[40] in their studies suggests that increase in labour supply, reduction in non-health expenditure, circulating cash/savings, selling of asset, loan and income diversification are some of the measures adopted by the household to cope with high OOP expenditure.

In 2004–05, OOP payments in India were estimated to account for approximately two thirds of total health expenditure (MOHFW 2009) and less than 10% of households had health insurance for at least one member. (Kumar 2009).

Catastrophic health expenditure rates are inversely associated with the household's economic level. The average out of pocket payment and capacity to pay rise steadily with rising expenditure quintile; The wealthier the quintile the higher the out-of-pocket payment and capacity to pay. Likewise, the out of pocket payment is in smaller fraction of capacity to pay with lower expenditure quintile. Thus, the economic burden borne by the wealthier population group is proportionately smaller because their capacity to pay is higher.

Xu et al. (2003) in his paper suggests that proportion of households that incur catastrophic health expenditure in a country is widely used as an indicator to see the extent to which the health system protects households needing health care against financial hardship. Providing such assistance is the major goal of health systems and is the purpose behind universal health coverage. Equitable healthcare and the reduction of medical poverty are key goals of health systems and financing reform.

Peters et al. (2002) using the NSSO data 1995-96 showed that the deduction of OOP payments from household expenditures lowered the national poverty line by 2.2%, i.e. 2.2% of the population fell into poverty because of OOP payments. Further, also pointed out that a quarter of hospital patients were impoverished by the cost of OOP payments due to hospitalizations, and there were high levels of borrowing and selling of

---

[38] Mohanty et al (2013); Out-of-pocket Expenditure on Health Care Among Elderly and Non-elderly Households in India; Social Indicator Research; vol 115 issue 3; pp 1137-1157

[39] DO Abegunde et al. (2008); The economic impact of chronic diseases: how do households respond to shocks? Evidence from Russia: Social Science Medical: Jun;66(11):2296-307

[40] Adam Leive et al (2008): Coping with out of pocket health payments: empirical evidence from 15 African countries; Bulletin of World Health Organization: 86:849-856

assets to make these payments. Van Doorslaer et al. (2006) in his study highlighted that OOP payments alone forced more than 37 million people in India below the $13 poverty line in 1999–2000.

It has been two decades after the launch of the Safe Motherhood campaign in India in 1987, still half a million women, most of whom live in developing countries, continue to die from maternal related causes each year[41]. The major health-care interventions can largely prevent women from dying of pregnancy related causes such as attendance of antenatal care, delivery in a medical setting and having a skilled health worker at delivery improve maternal health. However, use of these interventions is limited in developing countries. (WHO 2007)

Maternal health-care use also vary within developing countries, with most findings show differences between affluent and poor women, and between women living in urban and rural areas.(Ronsmans et. al 2003)

There are other factors that are related with health care differences such as place of residence, socioeconomic status, women's age, ethnicity, education, religion, culture, clinical need for care and most importantly decision-making power. The costs, location, and quality of health services are also important. These factors interact in different ways to determine the use of health care.

Public health expenditure in India is static and inadequate. Recent study showed the predominance of private health expenditure in the Indian health system. Rao et al. (2012), in their paper, analysed the nature of public spending on health and its impact on health infrastructure and health status of the population. In his research he found that not only the public spending in India is low but it is also highly uneven in the country. Jones et al. (2003) and Black et al. (2003) in their paper found that the main causes of childhood death are poor maternal health and infectious diseases, and most of these deaths are avoidable.

---

[41] Lale Say et al (2007): A systematic review of inequalities in the use of maternal health care in developing countries: examining the scale of the problem and the importance of context; Bulletin of World Health Organization 85(10):812-819

Macinko et al 2003 in his paper found that the burden of ill health is borne disproportionately by different population subgroups and that people of lower socio-economic status consistently experience poor health outcomes.

The World Bank estimates[42] that 74 percent of maternal deaths could be prevented if all women had access to interventions that address complications of pregnancy and childbirth, especially emergency obstetric care (A. Wagstaff and M. Claeson)[43]

1.7: Need for study:

Maternal mortality rate in India is higher than the world average and it varies across state as well as within states. Maternal death is mainly concentrated in the Empowered Action Group States of India i.e. Uttarakhand, Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh. In spite of Millennium Development Goal 5, the target to reduce MMR has not been met. The main reason for high MMR is lack of female literacy, empowerment, and autonomy. EAG States have high population growth and it became a serious concern for the policy makers. Therefore MoHFW[44] constituted all the eight states and collectively named it Empowered Action Group States to stabilize the population. Public Health Spending in India is very less compared to other countries, its only 4.7% of GDP. Health care expenditure is necessary social expenditure, but it is highly unequal across the globe. Expenditure on maternal health care is very low in EAG States and this leads to uneven utilization of maternal health care services. Even utilization of these services depends on various background variables such as place of residence, religion, social groups, wealth quintile, and educational attainment of women. These socio-economic as well as demographic factors to a large extent determine the level of maternal expenditure. Despite of government effort and various programs still people have to spend a large amount of their money in maternal care, which forces some section of the society in financial hardship. So there is needed to examine the factors that are leading to out of pocket expenditure and higher catastrophic rate.

---

[42] Toshika Kaneda: China;s concern over population Aging and Health: Population Reference Bureau.
[43] A. Wagstaff and M. Claeson, The Millennium Development Goals for Health: Rising to the Challenges, World Bank, Washington, DC, USA, 2004.
[44] Ministry of Health and Family Welfare

1.8: Objective:

i)   To examine the socio - spatial variation in the utilization of public and private services in maternal health care.

ii)   To analyse the variation in the out of pocket expenditure on maternal health care in EAG States of India.

iii)   To analyse what proportion of household spend on maternal health expenditure in comparison to total household consumption expenditure.

iv)   To measure the incidence of catastrophic effect due to maternal health care expenditure.

1.9: Research Questions:

1. To what extent social and demographic factors affect expenditure on maternal health?

2. How far financial hardship affects utilization of maternal health care services

3. Is Out of pocket expenditure leads to increase in the risk of catastrophic and medical poverty?

4. What are factors that brings family in health care related debt and that leads to health impoverishment

1.10: Source of data:

The study uses the 71st round of schedule 25.0 (labelled as 71(25.0)) of the National Sample Survey Organization of India titled as Key Indicators of the Social Consumption in Indian Health" data on Social consumption: health, between January to June 2014. The duration of survey is divided into two sub-rounds of three months' interval each which are as follows: Sub-round 1 :January - March 2014 and sub-round 2 :April - June 2014.

Total 65932 households were surveyed in India, out of which 23,385 households is from EAG States- Uttarakhand 672, Rajasthan 2912, Uttar Pradesh 7921, Bihar 3167, Jharkhand 1453, Odisha 2442, Chhattisgarh 1205, Madhya Pradesh 3613. Maternal health care expenditure data is given in a separate block; total maternal health care facilities such as Ante natal, Delivery, Post-natal information are given in brief. The data on maternal health care was collected from all the ever - married women belonging to 15-49 age group who were pregnant during the last 365 days.

In India total 19482 women were reported of pregnancy out of which EAG state comprise of 7408 pregnant women. Uttarakhand 202, Rajasthan 937, Uttar Pradesh 2550, Bihar 1023, Jharkhand 517, Odisha 715, Chhattisgarh 370, Madhya Pradesh 1094.

The NSSO uses two stage stratified sampling design for the census village. The survey had a total sample of 65,932 households which comprise of 333,104 persons across various states and Union Territories in India. Out of total, 36,480 households were from 4,577 rural areas whereas 29,542 households were from 3,720 urban areas.

In the 71st round data on maternal health care expenditure was collected from two levels. The data on delivery care was collected from level eight with various sub components such as package components, doctors or surgeon fee (hospital staff/ other specialists), medicines, diagnostic tests, bed charges, other medical expenses (attendant charges, physiotherapy, personal medical appliances, blood oxygen, etc.), transport cost for patient, other non-medical expenses incurred by the household such as food, transport, cost for others, expenditure on escort, etc.). Whereas information on Antenatal care and prenatal care collected from separate level i.e. level 10. Maternal health expenditure in all of the three components i.e. ANC, Delivery, PNC was collected by the type of facility i.e. public or private. [45]

"Information on household consumption expenditure was collected through a set of five questions, 30 days prior to the survey. The five items used for calculating the household consumption expenditure were: - (i) purchases; (ii) home-produced stock; (iii) receipts from the exchange of goods and services; (iv) gifts and loans; (v) free collection. The survey collected detailed information on the socio- economic and demographic characteristics of the households, the nature and the level of utilization of health care of household members suffering from any ailments. " (cited Bonu et al.)

---

[45] Goli et al (2016) : High spending on Maternity Care in India: What are the Factors Explaining it? : Plosone ; 11(6) :e0156437

1.11: CONCEPTUAL FRAMEWORK

Utilization of services

Public

Private

Socio- economic and Demographic factors

- Region
- sector
- Religion
- Social groups
- Age of women
- Educational attainment of women
- Income(mpce)

Out of pocket payment on maternal health care

Economic burden due to maternal health care

Catastrophic incidence and intensity
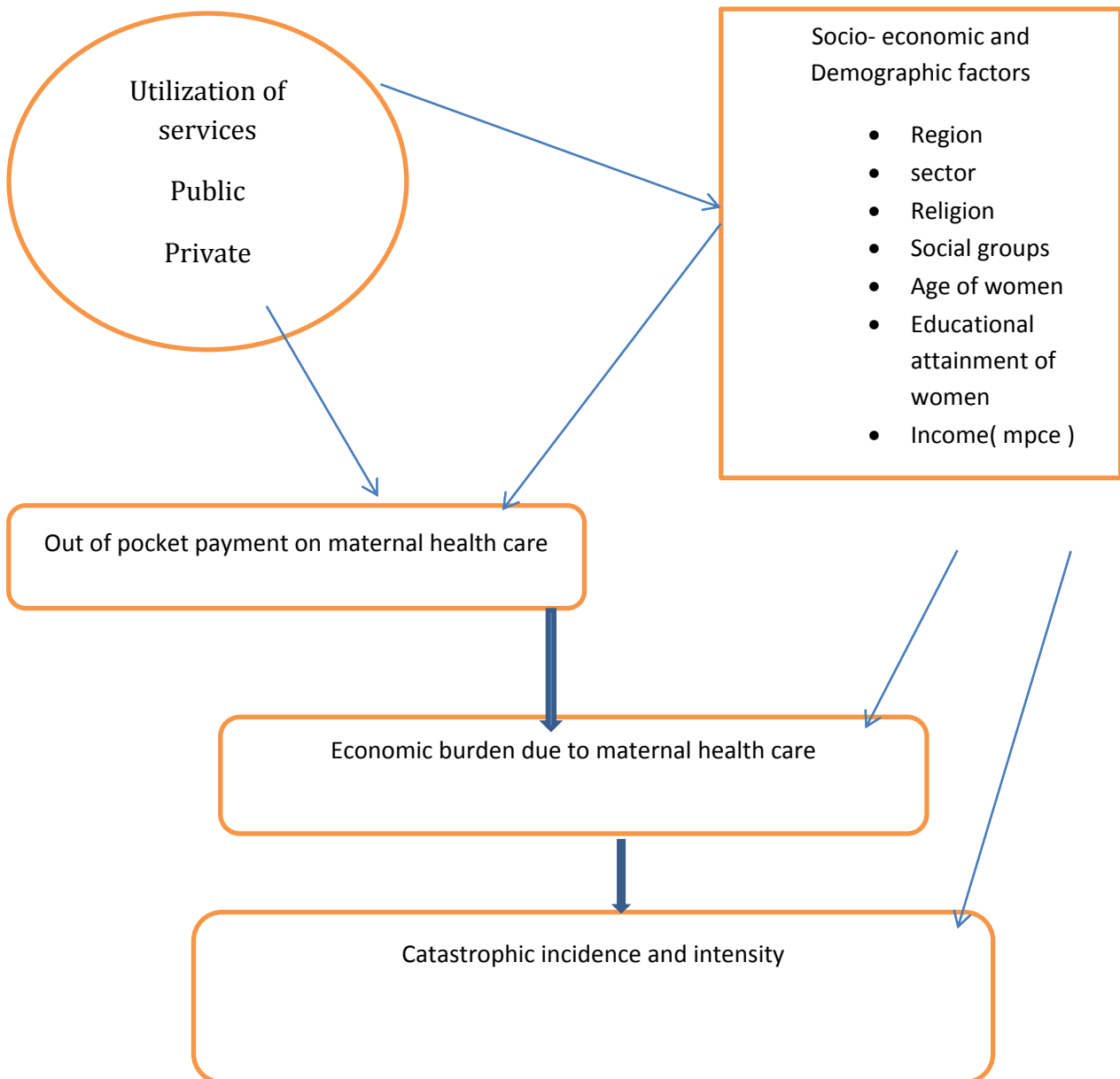
The above conceptual framework 1.11 shows that how socio- economic and demographic factors affect the utilization of maternal health care from public, private, home. Social factors such as religion, social group, and educational attainment of pregnant women are to a great extent control the utilization of maternal health care. Women belonging to Christian community or others have more access to maternal health care services than their counterparts. Educational attainment of pregnant women also determines the utilization, such as higher educated women have more access to health care services than the illiterate women. Educated women have more knowledge and are aware of the various facilities of health care. Economic factor such as monthly per capita expenditure to a large extent determine the utilization of maternal health care services. Women from richest quintile use maximum services than women from the lower quintile. Though in many cases public services are free but then also it creates a hindrance to avail the medical health care facility for some section of the society. Demographic factors such as age of pregnant women also to a large extent facilitate the utilization maternal health care services. Women belonging to middle age group such as 25-34 use maximum health care services. Public services are mostly free and very economical than the private services. Utilization of these maternal health care services sometimes leads to out of pocket expenditure which is a serious threat to the lower income group people and push them to the level of catastrophic, posing financial hardship. The incidence and intensity of catastrophic determine the level of economic burden.

1.12: Variables:

The key variables used in this study are the socio - economic and demographic variables of the women who were pregnant during the last 365 days. The variables or the important indicators are as follows-

Sector (Place of Residence)

Age group of women

Social group

Religion

Educational attainment

Monthly per capita consumption expenditure (Wealth Quintile)

1.13: Methodology:

1.13.1: Method used in the first objective:

Simple cross tabulation was done in order to analyse the proportion of utilization of public, private health care facilities for Antenatal care, Delivery, Post-natal care in EAG States of India across various socio economic stratum of rural and urban India. To evaluate the determinant of utilization of maternal health care in public and private binary logistic regression is done taking ANC, Delivery, and PNC as dependent variables.

Multivariate analysis in terms of logistic regression is done to estimate the adjusted effects of selected covariates on the public and private in Prenatal, Postnatal and Delivery care in EAG States of India. Logistic regression was used due to the nature of the outcome variables. The result variables are in binary form, specifying No and Yes (Coded 0 and 1). The model is usually put into a more compact form as follows:

$$ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_{1x_1} + \cdots + \beta_{Mx_{m,i}} + \varepsilon$$

Where β_0 is constant and $\beta_1 \ldots \beta_M$ are regression coefficients representing the relative effect of a particular explanatory variable on the outcome. The coefficients changes with the change in the context of the analysis as per the study.

Maps have been done to see the variation in the utilization of public and private maternal health care services for ANC, Delivery, and PNC in EAG States of India, using Geographical Information System package.

1.13.2: Method used in the second objective:

The differentials in OOP expenditure in antenatal care and prenatal care direct variable is given whereas in case of delivery direct variable is not there so we have taken nature of ailment i.e., 88 (Delivery variable) if yes on this information we have calculated direct and indirect OOP for delivery. All analysis is done with respect to socio-

economic and demographic characteristics of women. Demographic factors included age of women and place of residence. Socio-economic characteristic include educational level of women, religion, social group and wealth quintile. The mean cost of delivery is computed by states and individual characteristics of women to know the variation in the cost of maternal care. The wealth index is divided into five quintiles and used as proxy for economic status of household.

Descriptive analysis (cross tabulation) is done to understand the differentials and various determinants of maternal health care services (antenatal, delivery, post-natal).

To know the significant predictor of maternal health care (ANC, Delivery, PNC) the probability modelling is done to know the household incurring expenditure on maternal health care (ANC, Delivery, PNC) using the logit model. Three separate probability model have been done for ANC, Delivery, and PNC. The dependent variable is binary i.e., 0 and 1, where '0' represent those who reported no cost on maternal health care (ANC, Delivery, PNC) and '1' represent those who have incurred any expenditure on maternal health care (ANC, Delivery, and PNC). The independent variables are place of residence, age of women, religion, social group, wealth quintile and female educational level.

1.13.3: Method used in the third and fourth objective:

An OOP payment for health care is considered catastrophic when the payment exceeds some threshold (Z_{cat}), defined as a fraction of total household consumption. If X represents OOP payments for health care, Y represents total household expenditure, then a household is said to have incurred catastrophic payments when X/Y exceeds a specified threshold, N_{cat}.

We have taken different cut-off point for this study. For delivery 2%, 5%,8% and more than 8% but in case of ANC and PNC cut-off point taken less than 1%, less than 2% and 2% or more than. (Ghosh 2011)[46]. We have taken different cut offs for antenatal care, delivery and pre-natal care because for antenatal and post-natal the catastrophic rate was lower it was only up to 3% whereas in case of Delivery the catastrophic rate was higher it was up to 11, so taken it independently.

---

[46] Soumitra Ghosh(2011): Catastrophic Payments and Impoverishment due to Out of Pocket Health Spending; Economic and Political Weekly, November, vol XLVI NO 47

1.14: Limitations of study:

Though this study examines the maternal health expenditure of Empowered Action Group States (EAG) states of India, the result presented in the paper should be interpreted keeping the following limitation in mind:

(i) The result may be partial to the estimates of average of maternal health care expenditure and annual household expenditure. In the 71st round the information on delivery care on maternal health care expenditure was not collected from an aggregate level whereas data for ANC and PNC expenditure was collected from an aggregate level. This is the main reason for underestimating the level of expenditure, in contrast with the collection of information by each cost item (Bonu et al). Though, this method is still likely to give a rational proxy in relation of ranking of households according to the level of standard of living (Bonu et al).

(ii) In NSSO the observed birth rates are lesser than the reported birth rates in comparison of other surveys and census, which means that there is under-reporting of childbirths. Under-reporting of childbirths across different population groups may lead to overestimation or underestimation of average maternal health care expenditure. (Bonu et al)

(iii) In the 71ST round data there are no information on the beneficiary of Janani Suraksha Yojna, which is an important program which help in curtailing the catastrophic incurred by the household.

(iv) Mean is an aggregate measure not individual measure to compare.

(v) In some of the cases because of small sample size there is problem in the result.

(vi) There is no data on decision making process. Decision making process is an important variable for women in Indian society.

1.15: Organization of thesis:

This study is organized in the following six chapters:

Chapter 1: Introduction, Literature Review, Sources of data and Methodology: This chapter comprise of introduction of the study on the topic, the need for the study, conceptual framework, objective of the study and research question, information about the data used in the study and its nature, the methodology that have been adopted to fulfil the objectives and a brief description of literature review.

Chapter 2: Socio-spatial variation in the utilization of Maternal Health Care Services in the EAG States: This chapter deals with the utilization of maternal health care services, i.e. ANC, Delivery, PNC in public and private sources with different background variables such as socio-economic and demographic characteristics of women belonging to 15-49 age group and also to see the interstate variation in the utilization of maternal health care (ANC, Delivery, PNC).

Chapter 3: Variation in Out of Pocket Expenditure in EAG States: This chapter explains the interstate variation in the out of pocket expenditure in the utilization of various maternal health facilities such as Antenatal, Delivery, Post-natal care in the Empowered action group states of India while taking into account how socio-economic – demographic variables have affected the accessibility and consumption of these maternal health care services.

Chapter 4: Incidence of Catastrophic due to Maternal Health Care in EAG States of India: This chapter explains the catastrophic incidence of maternal health care expenditure in EAG States of India. It also explains the interstate variation in catastrophic expenditure across socio economic and demographic characteristics of women.

Chapter 5: Summary and Conclusion: This chapter summarized the purpose of study, key findings and conclusion of the study.

Chapter 2:

Socio - Spatial variation in the utilization of maternal health care services in EAG states of India

2.1: Introduction: Ante-natal care, competent birth attendance and postnatal care strategies are crucial for improving maternal and child health in developing countries. The WHO guidelines suggest that every woman should get care during gestation, childbirth and postnatal period. Various policy and programme has been framed by government of India for improving the maternal and child health in the country. The National Population Policy 2000, the National Health Policy 2002, the Reproductive and Child Health Program (Phase I − 1997–2004, Phase II − 2005–2010), and the National Rural Health Mission (2005–2012), provide antenatal (ANC), natal and postnatal care (PNC), care. These policies and interventions have been framed in such a way as to improve the health of the citizens, mainly maternal and child health among the poor and the socially and economically backward classes of the Indian society. Various such schemes has been launched by the Government of India such as, MAMATA Scheme, and Janani *Suraksha Yojana* (JSY) under the National Rural Health Mission, National Urban Health Mission, to promote births in the public health care center in the country and to reduce the financial barrier in maternal health care services.

Even though beside such efforts, the utilization of care during pregnancy, at childbirth and during the postpartum period is finite in India. Pathak, Subramanian (2010)[47] in their study found that there is great socio- economic inequality in utilization of maternal health care services. Castro leal (2000)[48] and Wag staff (2002)[49] in their paper found that there is great inequality in the health system; utilization of public spending is mainly by the richer section than the poor.

---

[47] Pathak PK, Singh A, Subramanian SV (2010) Economic inequalities in maternal health care: prenatal care and skilled birth attendance in India, 1992– 2006. PLoS One 5: e13593. doi: 10.1371/journal.pone.0013593

[48] . CastroLeal F, Dayton J, Demery L, Mehra K (2000). Public spending on health care in Africa: do the poor benefit? Bulletin of the World Health Organization 78: 66–74. doi: 10.1093/wbro/14.1.49

[49] Wagstaff A (2002) Poverty and health sector inequalities. Bulletin of the World Health Organization 80: 97–105.

There is unequal utilization of maternal health care services in the country. Inequality is of two types: social inequality and spatial inequality. Social inequity is due to poverty, ethnicity, and lack of education whereas spatial inequity is due to the place of residence, such as rural, urban, and hilly and forest areas that affect access to health care.

Utilization of maternal health care services is a proximate determinant of maternal mortality and morbidity (Bhatia et al (1993)[50] and Mc. Carthy et al (1992).[51] It has great impact as it affects the well- being of mother including that of child. The utilization of maternal healthcare is governed by several factors. Studies from the developing countries have identified that socioeconomic factors and service delivery environment are prominent determinants of utilization of healthcare. Some of them are Quality of care, distance to health facility, lack of transport, women's low social status, age, caste, religion, educational level, and economic status of the household, lack of autonomy and decision-making power and cultural norms.

Mothers belonging to richer households are mostly better educated and do have more autonomy as compared to the mothers from the comparatively poorest households. Moreover, wealthier mothers also have enough resources to meet the expenses on healthcare whereas mothers from poor households are often less educated and unemployed and have difficulty in affording their healthcare expenses. 2(Cited from: Utilization of maternal healthcare among adolescent mothers in urban India: evidence fromDLHS-3; Adita Singh et al)[52]

Ante natal careprovides pregnant women information regardingsocial and medical conditions. Pregnant women should have skilled obstetric attendance during delivery. However,utilization of these services in most of the developing countriesis limited and uneven due to various cultural, socioeconomic, anddemographic factors. (Addai 2000)[53]

2.2: Utilization of maternal health care services in EAG states of India:

[50] Bhatia, J.C. and Cleland, J. (1993) Levels and causes of maternal mortality in south India. Studies in Family Planning, 24, 301-318. http://dx.doi.org/10.2307/2939224

[51] Mc. Carthy, J. and Maine, D. (1992) A framework for analyzing determinants of maternal mortality. Studied in Family Planning, 23, 23-33. http://dx.doi.org/10.2307/1966825

[52] : Utilization of maternal healthcare among adolescent mothers in urban India: evidence fromDLHS-3; Adita Singh et al)

[53] Addai, I. (2000). Determinants of use of maternal–child health services in rural Ghana. Journal of biosocial science, 32(01), 1-15.

Table 2.1: Interstate variation in the utilization of Ante natal care services in EAG states of India, 2014

Sl.No.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarkhand**	202	75.2	20.3
2	**Rajasthan**	937	60.1	27.1
3	**Uttar Pradesh**	2550	49.5	30.8
4	**Bihar**	1023	56.2	31.2
5	**Jharkhand**	517	58.4	33.7
6	**Odisha**	715	77.5	18.7
7	**Chhattisgarh**	370	73.5	22.2
8	**Madhya Pradesh**	1094	61.4	29.4

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.1: Utilization of Ante Natal Care Services in EAG States of India:

From the table 2.1 we can see the utilization of antenatal care services in India. The use of ante natal care in public sector is more as compare to the private sector. In most of the state the utilization of private services is less than half of the use of public services. The reason for using public services more can be as it is free and is easily accessible.

Table 2.2: Interstate Variation in the Utilization of Ante Natal Care services in EAG States of India, 2014: Rural

Sl.No.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	112	80.4	11.6
2	**Rajasthan**	563	63.1	20.4
3	**Uttar Pradesh**	1668	55.4	23.3
4	**Bihar**	684	61.8	24.7
5	**Jharkhand**	334	69.5	20.7
6	**Odisha**	515	84.1	12
7	**Chhattisgarh**	215	85.1	12.1
8	**Madhya Pradesh**	622	69	22.2

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.2: Utilization of Ante Natal Care in EAG States of India: Rural

The table 2.2 shows the utilization of ante natal care in rural areas. If we see the table as a whole we can say that the utilization of public services is more as compare to the private services. Utilization of ANC in public sector in rural area is highest in the state of Chhattisgarh whereas it is lowest in the state of Uttar Pradesh, the reason can be government facilities would be better compared to the other states. Utilization of private sector facilities is more in the state of Bihar followed by Uttar Pradesh i.e. 24.7 and 23.3 respectively. The reason can be public health system has inability to reach out to the poor and illiterate or people have less belief on the government facilities. [54]

---

[54] Griffiths et al (2001): Understanding users perspectives of barrier to maternal health care use in Maharashtra, India. Journal of Biosocial Science 33: 339–59

Table 2.3: Interstate Variation in the Utilization of Ante Natal Care services in EAG states in India, 2014: urban

SL.NO.	STATES	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	90	68.9	31.1
2	**Rajasthan**	374	55.6	37.2
3	**Uttar Pradesh**	882	38.3	45
4	**Bihar**	339	44.8	44.2
5	**Jharkhand**	183	38.3	57.4
6	**Odisha**	260	60.5	36
7	**Chhatisgarh**	155	57.4	36.1
8	**Madhya Pradesh**	472	51.5	39

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.3: Utilization of ante natal care services in EAG states in India: urban

The above table 2.3 shows the utilization of ante natal care in urban India. The utilization of ante natal care is more in the public sector as compare to the private sector; there is a gap in utilization of public and private services. In case of Bihar it is equal for both public and private services, whereas in case of Jharkhand and Uttar Pradesh private care utilization is more. Uttar Pradesh has the highest share of ante natal care for services in urban area among all the EAG states of India , it is also been noticed that it has the highest share of population also as well as highest share in terms of no. of pregnant women. In case of Uttarakhand the share in private sector is almost half to that of public sector, reason may be good accessibility of public health care services. In Uttarakhand followed by Odisha public health care services is better compared to the other EAG States.

Table 2.4: Interstate variation in the utilization of delivery care services in EAG states in India, 2014

SL.NO.	STATES	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	197	54.8	24.9
2	**Rajasthan**	835	63.8	26.9
3	**Uttar Pradesh**	2381	44.1	30.4
4	**Bihar**	960	53.4	23.1
5	**Jharkhand**	500	52.2	26.6
6	**Odisha**	655	76.2	16
7	**Chhatisgarh**	355	46.2	21.7
8	**Madhya Pradesh**	1010	69.2	20

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.4: Utilization of delivery care services in EAG states of India

The above table 2.4 shows the utilization of delivery care for the EAG states in India. Place of delivery in public centers is more than the private centers. The reason can be that public centers are favorable for all the people of different wealth quintile. The government centers provide free and better facilities and are easily accessible and affordable. Due to the various initiatives taken by the government for better maternal health care the utilization of public facilities is more as compare to the private sector. Utilization of delivery care in public sector is highest in the state of Odisha, whereas in private sector it is highest in Uttar Pradesh. Utilization of private services also depend on the economic status of the family as it incur more money, therefore utilization of private services is mainly for the richer section of the society. As spending more in the private sector may lead to financial burden for the household, which may lead the

family to financial distress.[55] Income gap reveals the negative impact of health spending on consumption standards of individual's and households. [56]

Table 2.5: Interstate variation in the utilization of delivery care services in EAG states of India, 2014: rural

SL.NO.	States	No. of Pregnant Women	Public (%)	Private (%)
1	Uttarakhand	111	53.2	15.3
2	Rajasthan	497	68.4	19.5
3	Uttar Pradesh	1551	49.7	24.1
4	Bihar	641	55.1	19.2
5	Jharkhand	325	57.8	12.9
6	Odisha	474	80.6	9.5
7	Chhattisgarh	204	46.1	10.8
8	Madhya Pradesh	577	73.7	10.6

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.5: Utilization of delivery care services in EAG states of India: rural

The above table 2.5 shows the utilization of delivery care in rural areas. If we see the table as a whole we can say that the utilization of public services is more as compare to the private sector. Utilization of Delivery care in public sector in rural area is highest in the state of Madhya Pradesh whereas it is seven times lowest in the private sector, the reason can be government facilities would be better compared to the other states. Utilisation of private sector facilities is more in the state of Uttar Pradesh i.e. 24.1. As a whole we can say that that maternal health services has improved in the recent time after the introduction of various schemes, and the government is also taking positive step in improving the maternal health condition.

---

[55] Borghi, et al. (2000). Overview of the costs of obstetric care and the economic and social consequences for households.Reducing financial barriers to obstetric care in low-income countries, 24.

[56] Moneer Alam and R.P. Tyagi: A Study of out of pocket Household Expenditure on Drugs and Medical Services – U.P., Rajasthan, Delhi; Population Research Centre, Institute of Economic Growth

Table 2.6: Interstate variation in the utilization of delivery care services in EAG states of India, 2014: urban

SL.NO.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	86	57	37.2
2	**Rajasthan**	338	57.1	37.9
3	**Uttar Pradesh**	830	33.7	42.3
4	**Bihar**	319	50.2	31
5	**Jharkhand**	175	41.7	52
6	**Odisha**	181	64.6	33.1
7	**Chhattisgarh**	151	46.4	36.4
8	**Madhya Pradesh**	433	63.3	32.6

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.6: Utilization of delivery care services in EAG states of India

The above table 2.6 shows the utilization of delivery care services in urban areas. If we see the table as a whole we can say that the utilization of public services is more as compare to the private sector. But the utilization of private services in urban area in Uttar Pradesh and Jharkhand is more than that of public services. The reason may be that the public services may not be better and it doesn't provide good service to the people therefore they utilize private services. The other reason may be people don't believe in the public health facilities and therefore they depend more in the private services. It can also be called as government failure as it doesn't provide better maternal health facility. Whereas for all the other EAG states there is gap in between availing public and private services means people living in urban areas use public services more than that of private services, the reason may be the accessibility of public services may be well of in the urban sector of the state and the utilization of private health care services also depend on many factors such as economical factor, social factor, as most of the society do not favour private health care utilization and consider utilizing private health care services as financial burden for the family. [57]

---

[57] Government of India Report 2006a

Table 2.7: Interstate variation in the utilization of post natal care services in EAG states of India, 2014

SL.NO.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	197	58.4	13.7
2	**Rajasthan**	835	49.3	22.4
3	**Uttar Pradesh**	2381	38.1	34
4	**Bihar**	960	44.8	32.1
5	**Jharkhand**	500	47.6	31.4
6	**Odisha**	655	73.3	16.2
7	**Chhattisgarh**	355	50.7	24.8
8	**Madhya Pradesh**	1010	58.1	20.7

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.7: Utilization of postnatal care services in EAG states of India:

The above table 2.7 show the utilization of post-natal care in India for the EAG states. Utilization of post-natal care in public centers is more than the private centers. The reason can be that public centers are favorable for all the people of different wealth quintile. The government centers provide free and better facilities and are easily accessible and affordable. Due to the various initiatives taken by the government for better maternal health care the utilization of public facilities is more as compare to the private sector. The highest PNC utilization in public sector is by Odisha i.e. 73.3% whereas lowest is by Uttar Pradesh i.e., 38.1%. Uttar Pradesh uses the highest private sector service compared to the other EAG States. Utilization of private services also depend on the economic status of the family as it incur more money, therefore utilization of private services is mainly for the richer section of the society. As spending more in the private sector may lead to financial burden for the household, which may lead the family to financial distress.

Table 2.8: Interstate variation in the utilization of postnatal care services in EAG states in India, 2014: rural

SL.NO.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	111	64.9	4.5
2	**Rajasthan**	497	51.5	15.3
3	**Uttar Pradesh**	1551	41.4	27.5
4	**Bihar**	641	47	28.2
5	**Jharkhand**	315	54.8	19.1
6	**Odisha**	474	78.3	10.5
7	**Chhattisgarh**	204	54.9	16.2
8	**Madhya Pradesh**	577	65.7	12.8

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.8: Utilization of post-natal care services in EAG states of India: rural

The above table 2.8 shows the utilization of post-natal care services in rural areas. If we see the table as a whole we can say that the utilization of public services is more as compare to the private sector. Utilization of Delivery care in public sector in rural area is highest in the state of Odisha whereas it is seven times lowest in the private sector, the reason can be government facilities would be better compared to the other states. Utilisation of private sector facilities is more in the state of Bihar followed by Uttar Pradesh i.e. 28.2% and 27.5% respectively. As a whole we can say that that maternal health services has improved in the recent time after the introduction of various schemes, and the government is also taking positive step in improving the maternal health condition.

Table 2.9: Interstate variation in the utilization of postnatal care services in EAG states of India, 2014: urban

SL.NO.	States	No. of Pregnant Women	Public (%)	Private (%)
1	**Uttarakhand**	86	50	25.6
2	**Rajasthan**	338	46.2	32.8
3	**Uttar Pradesh**	830	31.8	46
4	**Bihar**	319	40.4	39.8
5	**Jharkhand**	175	34.3	54.3
6	**Odisha**	181	60.2	30.9
7	**Chhattisgarh**	151	45	36.4
8	**Madhya Pradesh**	433	48	31.2

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.2.9: Utilization of post-natal care services in EAG states of India: urban

The above table 2.9 shows the utilization of post-natal care in urban areas. If we see the table as a whole we can say that the utilization of public services is more as compare to the private sector. But the utilization of private services in urban area in Uttar Pradesh and Jharkhand is more than that of public services whereas in case of Bihar it is almost equal. The reason may be that the public services may not be better and it doesn't provide good service to the people therefore they utilize private services. The other reason may be people don't believe in the public health facilities and therefore they depend more in the private services. It can also be called as government failure as it doesn't provide better maternal health facility. Whereas for all the other EAG states there is gap in between availing public and private services means people living in urban areas use public services more than that of private services, the reason may be the accessibility of public services may be well of in the urban sector of the state and the utilization of private health care services also depend on many factors such as economical factor, social factor, as most of the society don't favor private health care utilization and consider utilizing private health care services as financial burden for the family. [58]

---

[58]Vidler, M., et al. (2016). Utilization of maternal health care services and their determinants in Karnataka State, India. *Reproductive Health*,*13*(1), 55.

37

TABLE: 2.10: Utilization of antenatal care services with background characteristics in EAG states of India, 2014

Background characteristics	Public (%)	Private (%)	Total (%)
Religion			
Hindu	85.8	80.1	83.6
Muslim	12.9	19.1	15.3
Christian	0.6	0.5	0.5
Others	0.7	0.3	0.6
Wealth Quintile			
Poorest	34	18.4	30.3
Poorer	29.1	26.5	28.5
Middle	22.3	25.7	23.2
Richer	10.4	15.1	11.5
Richest	4.2	14.3	6.5
Social Groups			
Schedule tribe	15.1	5.4	12.7
Schedule caste	23	15.4	21.6
OBC	49.8	55.3	50.1
Others	12.1	23.9	15.5
Age Group			
15-19	4.7	4.7	4.9
20-24	42	38.7	39.8
25-29	32.1	36.1	33
30-34	13.9	14.1	14.5
35-39	5.4	5.3	5.9
40-44	1.4	0.9	1.5
45-49	0.4	0.2	0.3
Educational level			
Illiterate	40.6	27.6	39.4
Till primary	24.8	22.7	23.7
Till higher secondary	30.8	36.6	31.2
Graduate and above	3.7	13	5.7

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.3.1: Utilization of ante natal care services in EAG states of India:

In the table 2.10, the utilization of ante natal care services is shown. From the table it is clear that in the religion sector, Hindu utilizes the maximum ante natal care both in public as well as private sector. Though the difference is not much in public and private, but in comparison the public care utilization is more than the private. Muslim is in the second position in the utilization of the maternal health care services. It has also been found that the m Muslim women due to less education, poor autonomy and rigid social custom often use less ante-natal care there are various social reasons that obstruct the utilization of these maternal health care facilities.

In the social group, the other backward caste utilizes the maximum ante natal care facility as compare to the other social group both in the public as well as private sector. But the other backward caste utilizes more in the private sector as compare to the public; the reason can be accessibility and knowledge. Age of women is an important demographic factor that affects the utilization of maternal health care services. Women belonging to 20-24 age groups use maximum ANC compared to women of other age group because this is mainly the child bearing age. The least utilization is by the elder age group i.e. 45-49, as fewer women get pregnant in the higher age group. Public care utilization is more as compared to the private care.

Education empowers women and provides greater confidence and capacity to make the decision to use modern health care services for them. Women who are illiterate or not educated use maximum public facilities whereas women who are educated use private facilities more. Reason can be their knowledge and their autonomy. [59]

Wealth index is a proxy indicator for standard of living which indicates that with the increase in wealth index the likelihood of seeking health care services also increases. There is a positive link between economic status and a better sense of suffering or ill health. The table also shows that with the increase in wealth quintile the utilization of maternal health care shifts from public sector to private sector.

The educational and economic status of women influences the use of maternal care. Less educated mothers and mothers from lowest wealth quintile used basic maternal

---

[59] Mistry et al. (2009): Women's autonomy and pregnancy care in rural India: A contextual analysis. *Social science & medicine*, *69*(6), 926-933.

health care comparatively less than their literate or wealthier counterparts.[60] Public health system has inability to reach out to the poor and illiterate. Financial barrier reduces access to and use of services and therefore increases inequality in health.

TABLE: 2.11: Utilization of delivery care services by background characteristic in EAG states of India, 2014

Background characteristics	PUBLIC (%)	PRIVATE (%)	TOTAL (%)
Religion			
Hindu	86.10	83.10	83.10
Muslim	12.60	16	15.70
Christian	0.60	0.30	0.60
Others	0.70	0.60	0.60
Wealth Quintile			
Poorest	33.50	18	31.10
Poorer	30.10	23.70	29.50
Middle	21.70	25.30	21.70
Richer	9.80	17.70	11.30
Richest	4.80	15.20	6.30
Social Groups			
Schedule tribe	12.90	2.40	11.60
Schedule caste	23.70	17.30	22.60
OBC	48.70	53.40	49.10
Others	14.70	26.90	16.70
Age Group			
15-19	3.60	5.00	4.10
20-24	40.90	40.10	39.00
25-29	32.90	33.40	33.00
30-34	15.20	13.10	15.50
35-39	5.60	6.50	6.20
40-44	1.60	1.50	1.80
45-49	0.20	0.30	0.40
Educational level			
Illiterate	40.50	26.00	40.80
Till primary	23.60	15.90	22.10
Till higher secondary	32.30	42.10	31.40
Graduate and above	3.60	16.10	5.60

Source: NSSO 71ST Round; 2014: Schedule 25.0

---

[60] Pathak et al. (2010): Economic inequalities in maternal health care: prenatal care and skilled birth attendance in India, 1992–2006. *PloS one*, *5*(10), e13593.

2.3.2: Utilization of delivery care by background characteristic in EAG states of India:

In the table 2.11, the utilization of delivery care services is shown. From the table it is clear that in the religion sector, Hindu utilizes the maximum delivery care both in public as well as private sector. Though the difference is not much in public and private, but in comparison the public care utilization is more than the private. Muslim is in the second position in utilization of these maternal health care services. Muslim women use less delivery care due to less education, low autonomy and rigid social custom. There are various social reasons that obstruct the utilization of these maternal health care facilities.

In the social group, the other backward caste utilizes the maximum delivery care facility as compare to the other social group both in the public as well as private sector. But the other backward caste utilizes more in the private sector as compare to the public; the reason can be accessibility and knowledge.

Age of women is an important demographic factor that affects the utilization of maternal health care services. Women belonging to 20-24 age groups use maximum Delivery care compared to women of other age group because this is mainly the child bearing age. The least utilization is by the elder age group i.e. 45-49, as fewer women get pregnant in the higher age group.

Education empowers women and provides greater confidence and capacity to make the decision to use modern health care services for them. Women who are illiterate or not educated use maximum public facilities whereas women who are educated use private facilities more. Reason can be their knowledge and their autonomy.

Wealth index is a proxy indicator for standard of living which indicates that with the increase in wealth index the likelihood of seeking health care services also increases. There is a positive link between economic status and a better sense of suffering or ill health. The table also shows that with the increase in wealth quintile the utilization of maternal health care shifts from public sector to private sector.

The educational and economic status of women influences the use of maternal care. Illiterate mothers and mothers from lowest wealth quintile used basic maternal health care much less than their literate or wealthier counterparts. Public health system has

inability to reach out to the poor and illiterate. Financial barrier reduces access to and use of services and therefore increases inequality in health.

TABLE 2.12: Utilization of post natal care by background characteristic in EAG states of India, 2014

Background characteristics	PUBLIC (%)	PRIVATE (%)	TOTAL (%)
Religion			
Hindu	85.20	79	83.10
Muslim	13.10	20.20	15.70
Christian	0.80	0.30	0.60
Others	0.90	0.40	0.60
Wealth Quintile			
Poorest	34	23.20	31.10
Poorer	29.10	28.90	29.50
Middle	21.80	20.90	21.70
Richer	10.90	15.30	11.30
Richest	4.30	11.70	6.30
Social Groups			
Schedule tribe	13.80	3.50	11.60
Schedule caste	23.30	20	22.60
OBC	48	52.70	49.10
Others	14.90	23.80	16.70
Age Group			
15-19	4.10	4.40	4.10
20-24	39.60	38.30	39
25-29	33.50	32.70	33
30-34	15.5	16.60	15.50
35-39	5.70	6.50	6.20
40-44	1.30	1.20	1.80
45-49	0.40	0.40	0.40
Educational level			
Illiterate	41.10	35.80	40.80
Till primary	23.90	15.90	22.10
Till higher secondary	31.30	36.00	31.40
Graduate and above	3.70	12.30	5.60

Source: NSSO 71ST Round; 2014: Schedule 25.0

2.3.3: Utilization of post-natal care by background characteristic in EAG states of India:

In the table 2.12, the utilization of Pre-natal care services is shown. From the table it is clear that in the religion sector, Hindu utilizes the maximum pre-natal care both in public as well as private sector. Though the difference is not much in public and private, but in comparison the public care utilization is more than the private. Muslim is in the second position in utilization of these maternal health care services, but they use more private services compare to the public services. Muslim women use less pre-natal care due to less education, low autonomy and rigid social custom. There are various social reasons that obstruct the utilization of these maternal health care facilities. In the social group, the other backward caste utilizes the maximum pre-natal care facility as compare to the other social group both in the public as well as private sector. But the other backward caste utilizes more in the private sector as compare to the public; the reason can be accessibility and knowledge.

Age of women is an important demographic factor that affects the utilization of maternal health care services. Women belonging to 20-24 age groups use maximum PNC compared to women of other age group because this is mainly the child bearing age. The least utilization is by the elder age group i.e. 45-49, as fewer women get pregnant in the higher age group. Public care utilization is more as compared to the private care.

Education imparts empowerment women and provides greater confidence and capacity to make the decision to use modern health care services for them. Women who are illiterate or not educated use maximum public facilities whereas women who are educated use private facilities more. Reason can be their knowledge and their autonomy.

Wealth index is a proxy indicator for standard of living which indicates that with the increase in wealth index the likelihood of seeking health care services also increases. There is a positive link between economic status and a better sense of suffering or ill health. The table also shows that with the increase in wealth quintile the utilization of maternal health care shifts from public sector to private sector.

The educational and economic status of women influences the use of maternal care. Illiterate mothers and mothers from lowest wealth quintile used basic maternal health care much less than their literate or wealthier counterparts. Public health system has inability to reach out to the poor and illiterate. Financial barrier reduces access to and use of services and therefore increases inequality in health.

Table.2.13: Odds ratio for EAG states Prenatal, Postnatal and Delivery care in public sector

Independent variables	Dependent variable		
	Prenatal	Postnatal	Delivery
Age (years)			
15-19@			
20-24	0.7799769*	0.6812084	0.843708
25-29	0.8718575	0.7915235	1.00635
30-34	1.037346	0.6960289	0.943919
35-39	1.196411	0.9092741	1.030029
40-44	0.2020191**	0.228587***	2.408105
45-49	2.411718	1.836625	1
Place of residence			
Rural@			
Urban	0.7298072**	0.6824744***	4.231235***
Religion			
Muslim@			
Hindus	.9849581	.6699114*	.587237**
Christian)	0.5197169*	0.3266894*	0.3905186*
Others	0.6645264*	0.3510437**	1**
MPCE quintile group			
Poorest @			
Poorer	1.340393	1.341302**	1.222974
Middle	1.242706	1.143843*	1.534646**
Richer	1.110698	1.069812	2.282198***
Richest	1.007746	1.112554	1.826828
Educational level			
No schooling/illiterate@			
Primary or below	0.8338287	0.8263726	0.80513
Middle and higher	0.8283458*	0.9465385	0.815993
Social group			
SC			
ST	1.062779	1.204383*	1.087758
Other backward Class	1.001462	.8210157*	0.8766409*
Others	1.144566	.8273047*	1.848759**

***p=0.00;**p<0.01 and *p<0.5 significant level. Prenatal, Postnatal and Delivery (yes = 1, no = 0) @: Reference categories.

2.4.1: Determinants of all different types of services Prenatal, Postnatal and Delivery care in Public sector:

In order to understand the determinants of the Prenatal, Postnatal and Delivery care in Public sector we used multivariate analysis. Since our response variable was binary in nature (1= taken services Prenatal, Postnatal and Delivery care in Public sector and 0=otherwise and so on), we applied binary logistic regression analysis. The analysis was separately done for all the three care (PNC, ANC and Delivery care) for the 71st round of the survey. The analysis is performed at the EAG state level and was used as a covariate. The result obtained from the analysis is presented in form of odds ratio (table no.2.13). The odds ratios [exp(β)] represent odds that an outcome will occur given a particular utilization, compared to the odds of the outcome occurring in the absence of that utilization. The odds of ANC in public were significantly lower utilization among female whose in age group 40-44 (OR 0.2020; P<0.05) compare to reference category in the state of EAG, during 2014 (Table 2.13). For instance, the odds of ANC in public was significantly lower utilization among urban (OR 28%; P<0.00) compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of ANC services in public sector. The odds of utilization of ANC are little bit higher among the richest quintile (OR 1.007) compare to reference category. Individual education is less utilization of ANC in public sector. The odds of ANC in public sector was 17% lower utilization among those who are illiterate, 17% (p<0.05) lower utilization in middle education compare to illiterate population. After controlling the other factors the percentage of ANC in public sector is higher utilization in other social group. The findings show ANC care in public sector was 49 per cent lower utilization among Hindu compared to Muslim religion. In ANC in public sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

The odds of PNC in public were lower utilization among all age group compare to reference age group in the state of EAG, during 2014 (Table 2.13) but value is also signification. For instance, the odds of PNC in public was significantly lower utilization among urban (OR .6824; P<0.00) compare to rural female population. Household wealth (MPCE) and individual educational attainment is another significant determinant of PNC services in public sector. The odds of PNC is higher utilization among the poorest quintile (OR 1.34; P<0.000). Individual education is positively associated with

45

PNC in public sector. The odds of PNC in public sector was 83 % utilization among those who educated up to primary level, 94% utilization among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of PNC in public sector is significantly higher utilization in other social group 20% (p<0.05) compare to reference group. The findings show PNC care in public sector was significantly 68 per cent lower utilization among Hindu compared to Muslim religion. The odds of delivery care in public sector was significantly higher utilization among urban (OR 4.23; P<0.00) compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of delivery care in public sector. The odds of delivery care is higher utilization among the richer quintile (OR 2.28; P<0.000). Individual education is negatively associated in utilization with delivery care in public sector. The odds of delivery care in public sector was 87% utilization among those who educated up to primary level, 1.40 (p<0.000) utilization among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of delivery care in public sector is significantly higher utilization in other social group (OR 1.848; P<0.01). The findings show delivery care in public sector was significantly 51 per cent lower utilization among Hindu compared to reference categories religion. In delivery care in public sector was reportedly higher utilization among the other caste groups than the reference category.

Table.2.14: Odds ratio for EAG states Prenatal, Postnatal and Delivery care in Private sector

Independent variables	Dependent variable		
	Prenatal	Postnatal	Delivery
Age (years)			
15-19®			
20-24	0.99287	0.8079068	0.6528292*
25-29	1.0125	0.7477276	0.661295
30-34	1.066	0.9413253	0.610417
35-39	0.86339	0.9298746	0.764517
40-44	0.8100236	0.6782225	0.78546
45-49	0.5988801*	0.9831832	0.545783
Place of residence			
Rural®			
Urban	1.729599***	1.709217***	1.939657***
Religion			
Islam ®			
Hindu	0.93684	.88287*	1.32718**
Christian)	1.43622*	0.51447*	0.88814
Others	0.43036**	0.68128*	1.16375*
MPCE quintile group			
Poorest ®			
Poorer	1.352021**	1.2667**	1.151834
Middle	1.305421*	1.111161*	1.532335**
Richer	1.585434***	1.454111**	1.873168***
Richest	2.43476***	1.70612***	2.16082***
Educational level			
No schooling/illiterate®			
Primary or below	1.204064	0.871297*	1.004595
Middle and higher	1.412946**	1.40752***	1.831509***
Social group			
Sc®			
st	.65994**	.40712***	.32718***
Other backward Class	1.4875**	1.21805*	1.51901**
Others	2.15405***	1.63367**	1.90626***

***p=0.00;**p<0.01 and *p<0.5 significant level. Prenatal, Postnatal and Delivery (yes = 1, no = 0)   ®: Reference categories.

2.4.2: Determinants of all different types' of services Prenatal, Postnatal and Delivery care in Private sector:

In order to understand the determinants of the Prenatal, Postnatal and Delivery care in Private sector we used multivariate analysis. Since our response variable was binary in nature (1= taken services Prenatal, Postnatal and Delivery care in Private sector and 0=otherwise and so on), we applied binary logistic regression analysis. The analysis was separately done for all the three care (PNC, ANC and Delivery care) for the 71st round of the survey. The analysis is performed at the EAG state level was used as a covariate. The result obtained from the analysis is presented in form of odds ratio (table no. 2.14).The odds ratios [exp(β)] represent odds that an outcome will occur given a particular utilization, compared to the odds of the outcome occurring in the absence of that utilization. The odds of ANC in private were significantly lower, and utilization among female who are in age group 45-49 (OR 0.598; P<0.05) in the state of EAG, during 2014 was also lower (Table 2.14). For instance, the odds of ANC in private was significantly higher along with utilization higher among urban (OR 1.72; P<0.00) compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of ANC services in private sector. The odds of ANC is higher utilization among the wealthiest quintile (OR 2.43; P<0.000) higher utilization compare to counterpart. Individual education is positively associated with ANC utilization in privet sector. The odds of ANC in private sector was 20% higher utilization among those who educated up to primary level, 1.41 (p<0.05) 41% utilization higher among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of ANC in private sector is significantly higher utilization in other social group. The findings show ANC care in private sector was significantly 6 per cent lower in utilization among Hindu compared to Muslim religion. . In ANC in private sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

The odds of PNC in private were lower utilization among all age group compare to reference age group in the state of EAG, during 2014 (Table 2.14) and value is also signification. For instance, the odds of PNC in private was significantly higher utilization among urban (OR 1.71; P<0.00) compare to rural female population. Household wealth (MPCE) and individual educational attainment is another significant determinant of PNC services utilization in private sector. The odds of ANC is higher

utilization among the richest quintile (OR 1.706; P<0.000). Individual education is positively associated with PNC utilization in private sector. The odds of PNC in private sector was 21% higher utilization among those who educated up to primary level, 1.41 (p<0.05) among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of PNC in private sector is significantly higher utilization in other social group 1.63 (p<0.01) compare to reference group. The findings show PNC care in private sector was significantly 12 per cent lower utilization among Hindu compared to Muslim religion. .

The odds of delivery care in private was significantly higher utilization among urban (OR 1.93; P<0.00) compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of delivery care in utilization of private sector. The odds of delivery care is higher utilization among the richest quintile (OR 2.16; P<0.000). Individual education is positively associated with utilization of delivery care in private sector. Utilization of delivery care in private sector was 13% lower among those who educated up to primary level, 1.40 (p<0.000) among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of delivery care in private sector is significantly higher utilization in other social group. The findings show delivery care in private sector was significantly 32 per cent higher utilization among Hindu compared to reference categories religion. In delivery care in private sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

2.5: CONCLUSION:

Health care utilization especially in case of maternal health has become better in India. A lot of progress has been done after the introduction of NRHM which has increased the number of community health workers and community level facilities and resulted in more institutional deliveries. The Reproductive and Child Health Programme aim to bring sustainable improvement in the health status of women and children in India. Despite of all these efforts still there are lot of barriers which exist to timely and appropriate utilization of services during pregnancy, childbirth and post-partum. The explanatory factors for underutilization of Health care services include young maternal age, religion, poor education, poverty, low caste, parity, lack of autonomy, poor familial support, lack of access to transport, and high cost of care and after accessing it has certain drawbacks such as poor quality such as shortage of supplies and staff, mistreatment by staff or poor training or limited experience. Women autonomy is quite low in India which influences the utilization of ANC, Delivery, and PNC. Suboptimal levels of utilization are considered to contribute to poor maternal health.[61] Low utilisation in rural area is due to strong traditional beliefs, low awareness of use of modern health services and poverty. There have been major shift in seeking services from public sector to private sector. Women perceived private sector to be superior and have poor perception on government care and which motivated them for seeking private care facilities. "Government health services in India lacks from unavailability and absenteeism of health professionals, poor health care facility and infrastructure, shortage of drugs and equipment, physical inaccessibility and some anecdotal evidence of callous behaviour of health care professionals". (Griffiths et al., Hussain et al. , Garg et al). Women's socio-economic as well as demographic factor affects the utilization of maternal health care services. The educational and economic status of women influences the use of maternal care. Illiterate mothers and mothers from lowest wealth quintile used basic maternal health care much less than their literate or wealthier counterparts. Public health system has inability to reach out to the poor and illiterate. Financial barrier reduces access to and use of services and therefore increases inequality in health. As a whole we can say that that maternal health services has improved in the

---

[61] Vidler, Met al. (2016). Utilization of maternal health care services and their determinants in Karnataka State, India. *Reproductive Health*,*13*(1), 55.

recent time after the introduction of various schemes, and the government is also taking positive step in improving the maternal health condition.
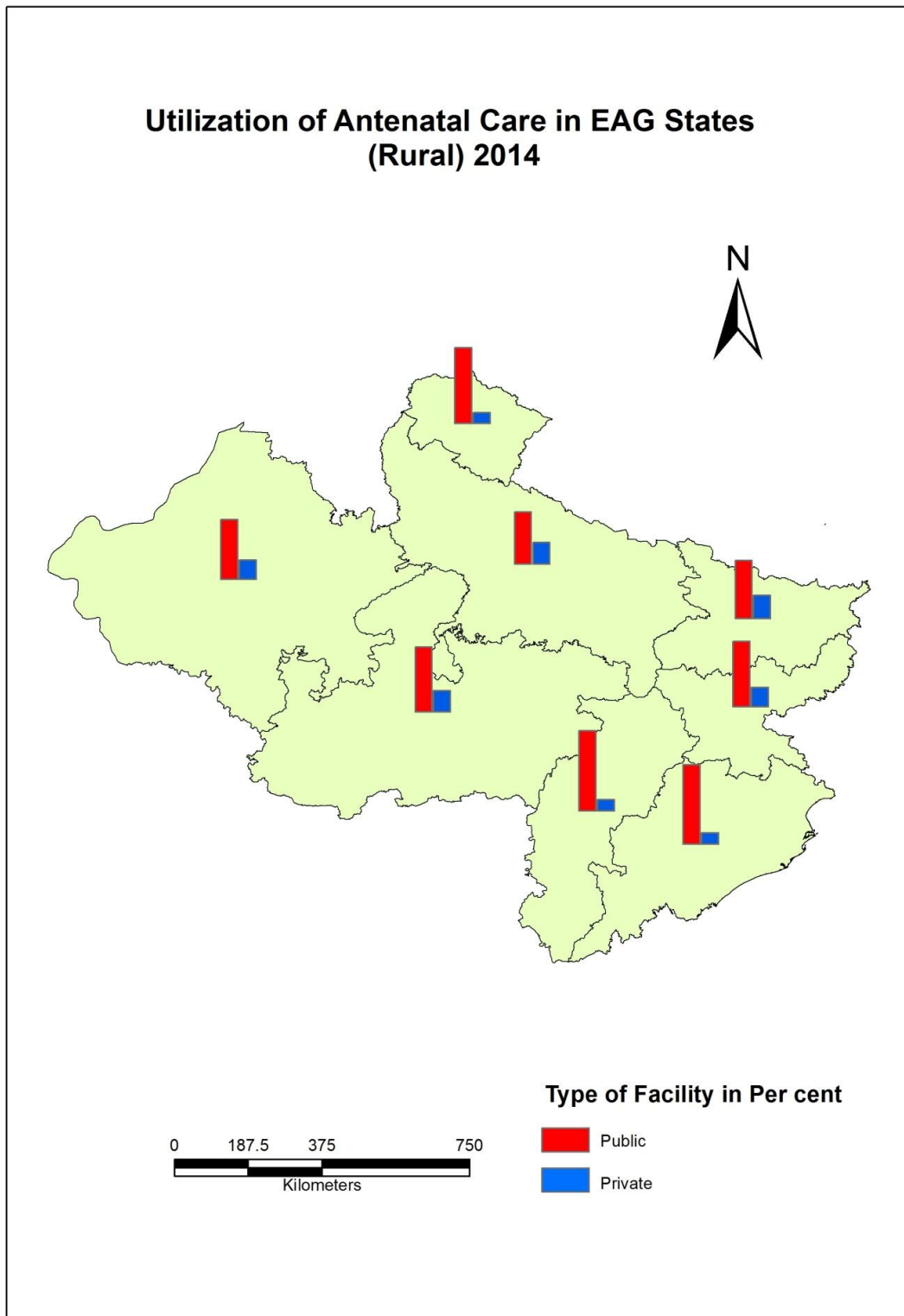
Fig 2.1: Utilization of ante natal care in EAG States (Rural),2014

Fig 2.2: Utilization of ante natal care in EAG States (Urban), 2014
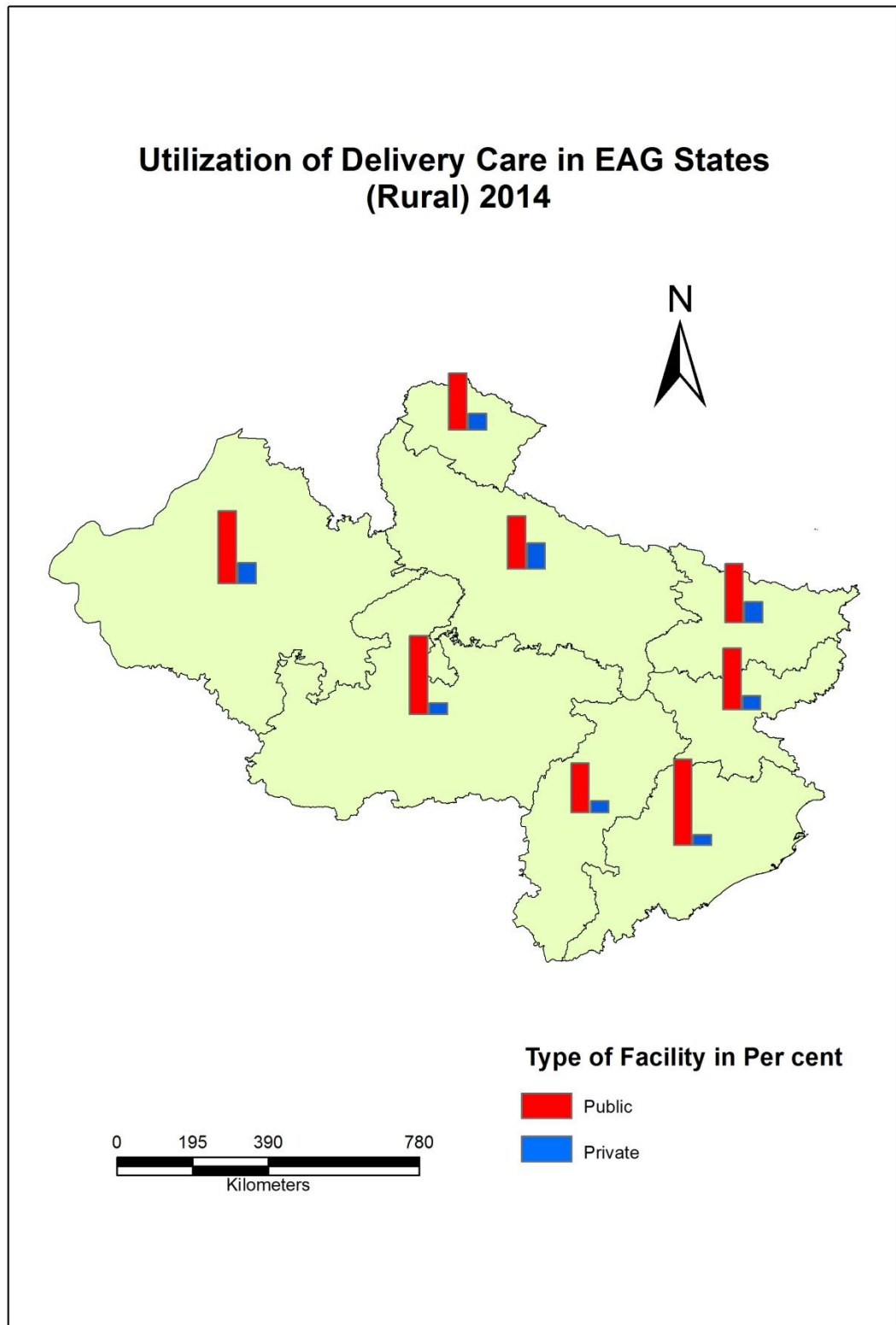
Fig 2.3: Utilization of Delivery care in EAG States (Rural),2014
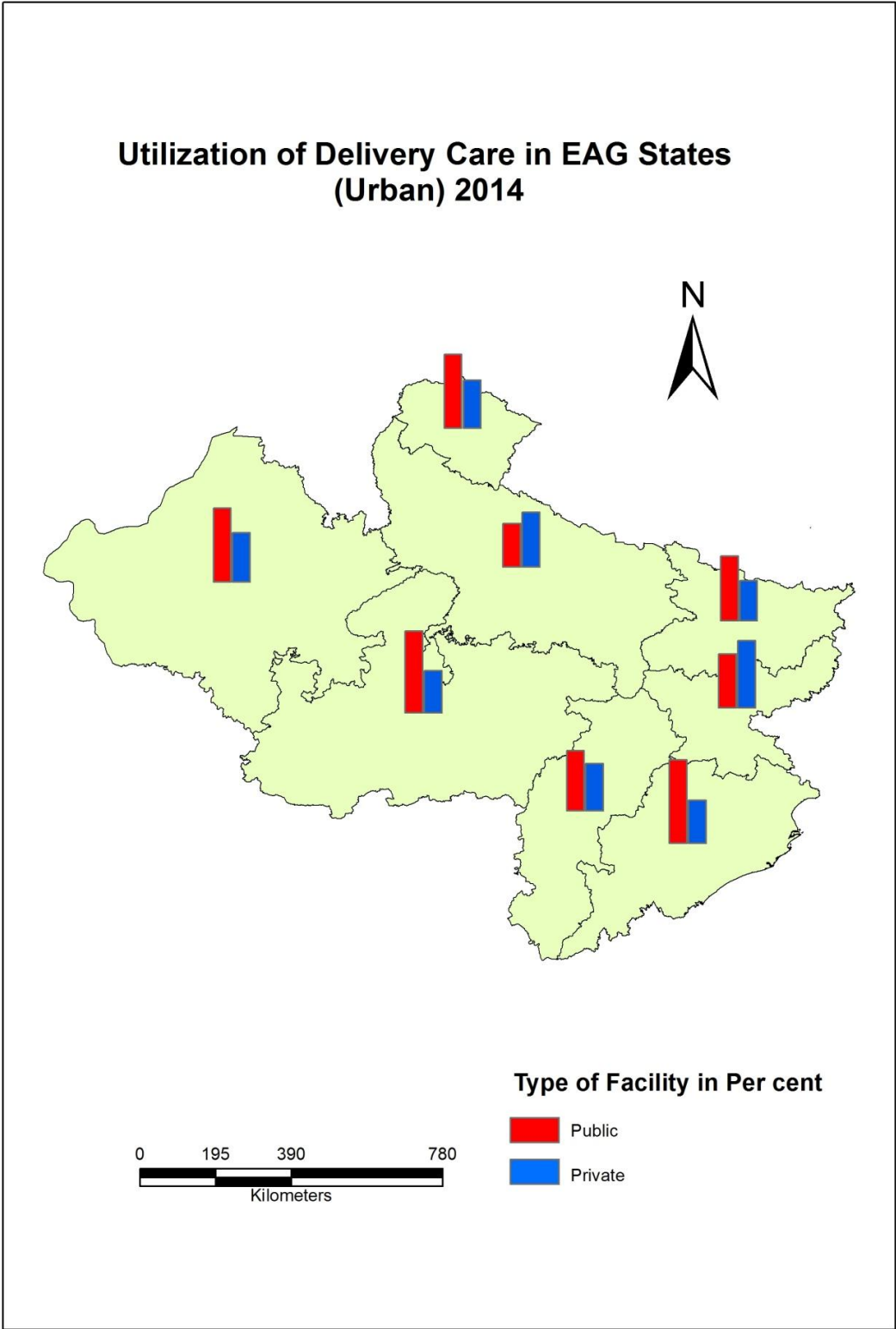
Fig 2.4: Utilization of Delivery care in EAG States (Rural),2014
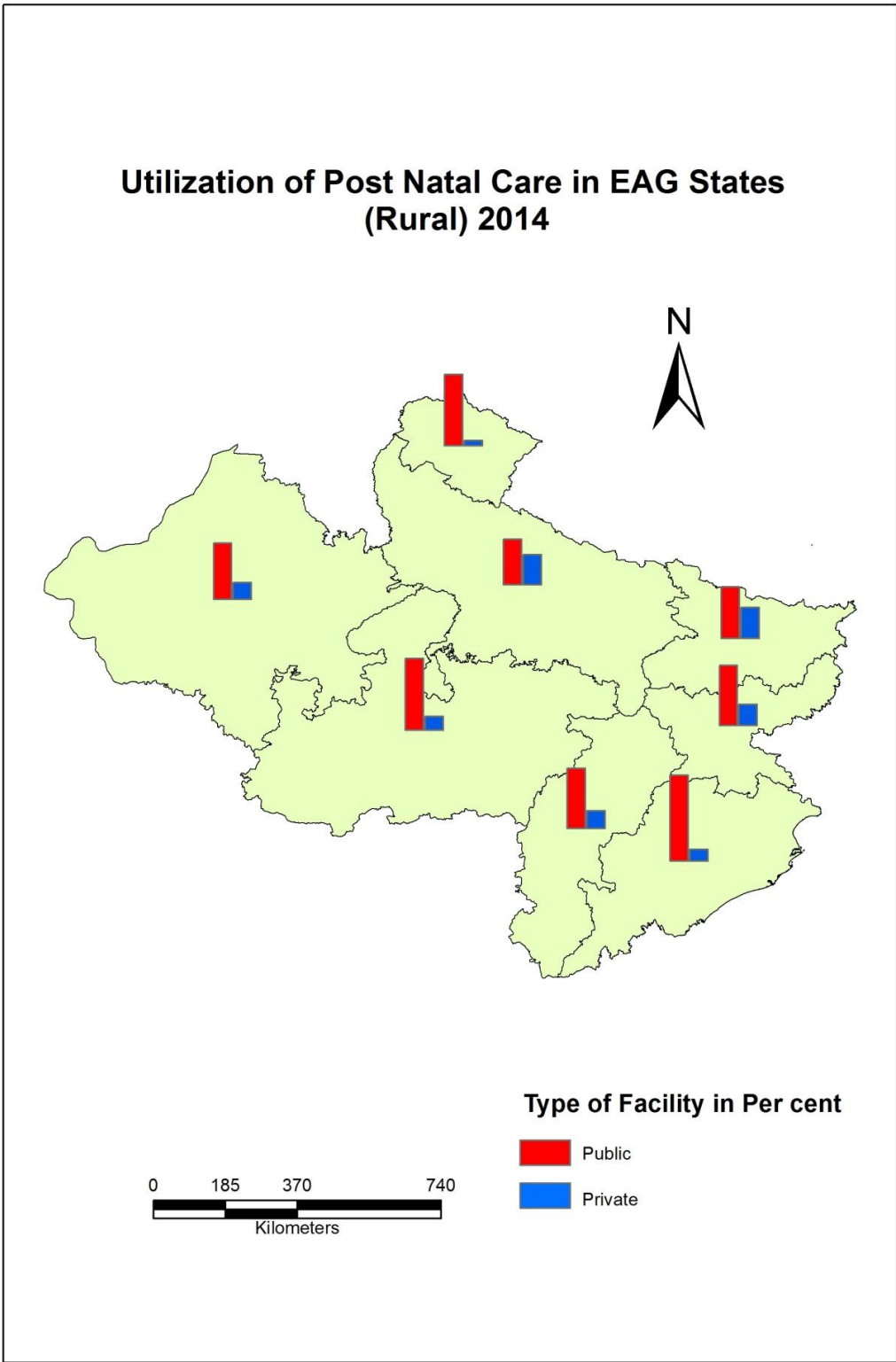
Fig 2.5: Utilization of post natal care in EAG States (Rural),2014
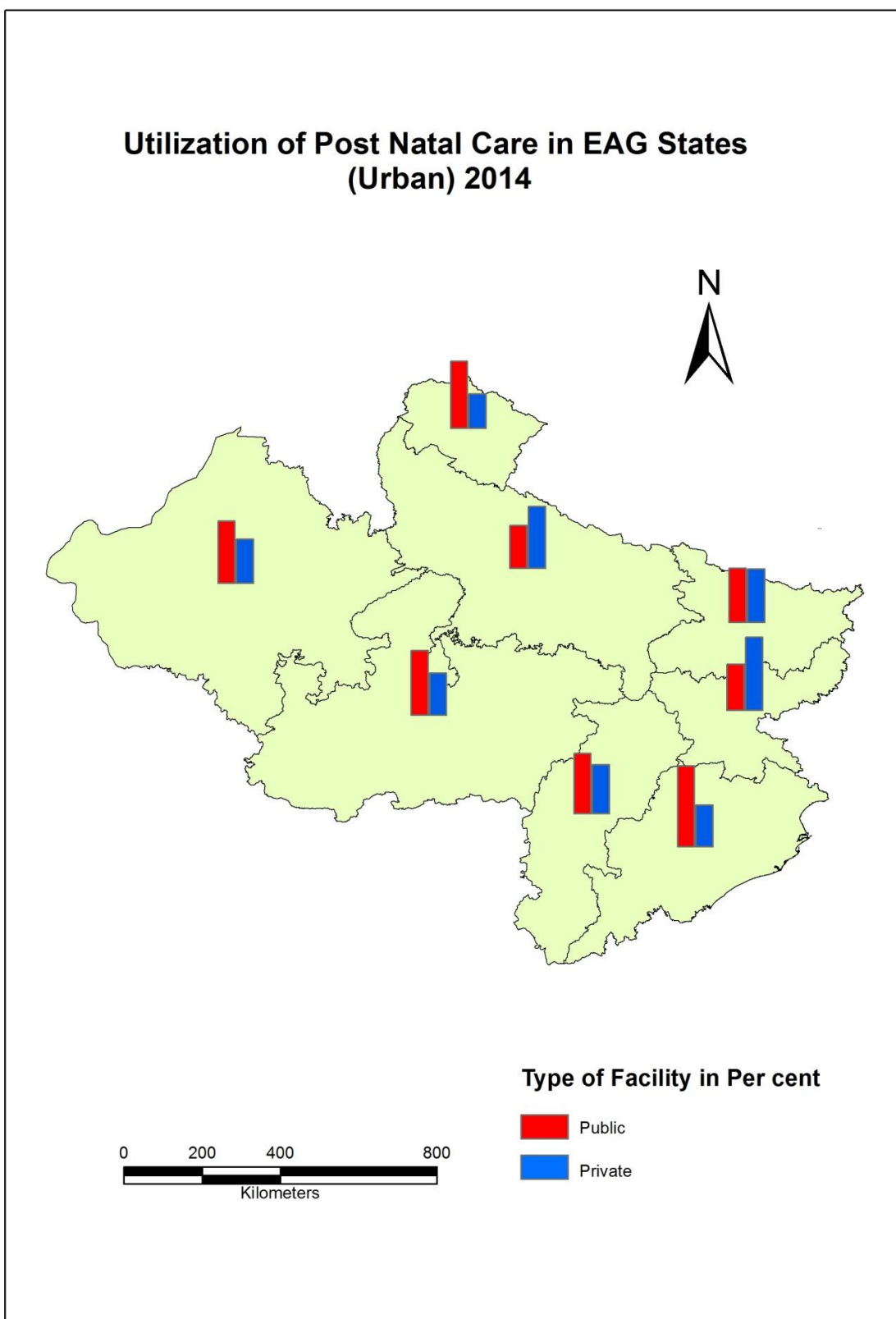
Fig 2.6: Utilization of post natal care in EAG States (Rural),2014

Chapter 3:

Variation in Out of Pocket Expenditure (OOP) in empowered action group (EAG) states in India

3.1: Introduction:

According to World Bank**, "**Out of pocket expenditure is any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. It is a part of private health expenditure". [62]

Despite of there is a relation between the amount of money spent on health and the health outcome, higher income leads to higher per capita health spending and in return leads to better health. (Roy and Howard 2007) [63]According to the World Bank Report 2006, the developed countries spend 30 times more on per capita spending in comparison to the developing countries. Out of pocket spending has changed the household budget, beside reducing the consumption of other goods and services it has also leads to decline in utilization of the health care facilities and in return leads the family in financial distress. Financing of healthcare by out of pocket expenditure can lead the family into the stage of impoverishment and may affect its social economic status.

Many studies revealed that expenditure on maternal care is dire for poor and rural household, low level of education is also an important factor. In India the OOP expenditure increases with the increase in the better economic status of women, in spite of place of delivery. It has been so because economically better-off make a demand in better quality services and having the ability to pay for the services. On an average, mothers in the richest quintile pay twice than the mothers in the poorest quintile do pay.

This chapter explains the interstate variation in the out of pocket expenditure in the utilization of various maternal health facilities such as Antenatal, Delivery, Post-natal

---

[62] World Bank Report
[63] Roy, K., & Howard, D. H. (2007): Equity in out-of-pocket payments for hospital care: evidence from India. *Health policy*, *80*(2), 297-307.

care in the EAG states of India while taking into account how socio-economic –
demographic variables has affected into the accessibility, affordability and utilization
of these maternal health care services.

3.2: Methodology:

The differentials in OOP expenditure in antenatal care and prenatal care direct variable
is given whereas in case of delivery direct variable is not there so we have taken nature
of ailment i.e., 88 (Delivery variable) if yes on this information we have calculated
direct and indirect OOP for delivery. All analysis is done in regard of socio-economic
and demographic characteristics of women. Demographic factors included age of
women and residing place. Socio-economic characteristic include educational level of
women, religion, social group and wealth quintile. States and the individual
characteristics compute the mean cost of delivery for variation in the cost of maternal
care. Then the wealth index comprises of five quintiles and used as proxy indicators for
economic level of household.

To have a clear concept of differentials and determinants of maternal health care
(antenatal, delivery, post natal) Descriptive analysis is done.

To know the significant predictor of maternal health care (ANC, Delivery, PNC) the
probability modelling is done to know the household incurring expenditure on maternal
health care (ANC, Delivery, PNC) using the logit model. Three separate probability
model have been done for ANC, Delivery, and PNC. The dependent variable is binary
i.e., 0 and 1, where '0' represent those who reported no cost on maternal health care
(ANC, Delivery, PNC) and '1' represent those who have incurred any expenditure on
maternal health care (ANC, Delivery, and PNC). The independent variables are place of
residence, age of women, religion, social group, wealth quintile and female educational
level.

Table 3.1: Out Of Pocket (OOP) Expenditure in EAG states due to Ante natal factor in 2014

Background	UTTARAKHAND		RAJASTHAN		UTTAR PRADESH		BIHAR		JHARKHAND		ODISSA		CHHATISGRAH		MADHYA PRADESH	
	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean
Rural	172	1431	662	2177	1935	1913	793	2802	522	1036	678	2442	288	1175	734	1839
Urban	132	2849	627	3104	1258	3465	542	2617	309	3046	283	3789	239	2177	706	3490
15-19	1	100	59	1497	77	2689	70	1395	54	1464	40	3105	15	1253	46	2620
20-24	108	1800	513	2666	1139	2614	492	2870	318	1608	379	2712	203	1476	671	2449
25-29	126	2278	485	2883	1127	2653	479	2851	272	2326	319	2856	190	1866	484	3194
30-34	45	2184	160	1965	540	2402	202	2936	143	1339	152	3362	77	1929	175	2258
35-40	18	1919	59	2680	227	2074	62	1685	32	1450	53	2685	39	915	54	1625
40-45	6	1300	8	125	66	1143	21	2320	12	1714	14	839	3	483	5	2620
45-49	0	0	5	12000	0	0	9	2037	0	0	4	0	0	0	5	1680
Muslim	37	2001	182	2398	735	2481	173	2215	119	1455	12	4488	12	1700	103	2643
Hindu	250	2107	1078	2586	2445	2524	1162	2803	623	1891	939	2822	490	1606	1319	2574
Christian	0	0	0	0	5	1770	0	0	56	1390	8	2606	17	1576	1	2000
other	17	1253	29	5645	8	7150	0	0	33	1590	2	2000	8	3063	17	8518
SC	47	1334	250	1989	699	1797	280	2375	89	1067	186	2364	39	2322	262	1903
St	9	6444	120	799	43	2756	26	1835	259	878	252	1406	190	970	284	1761
OBC	66	1660	650	2582	1766	2301	837	2728	387	2225	323	3410	226	1559	613	2360
Other	182	2153	269	4149	685	3828	192	3354	96	3109	200	4164	72	3216	281	4868
Poorest	74	1253	165	1459	915	1737	421	2228	324	1182	435	1868	191	1212	434	1955
Poorer	74	1495	203	2088	743	1893	385	2964	222	1641	232	2920	114	1736	317	2086
Middle	49	3158	341	2511	767	2430	325	2715	134	1732	133	3696	109	1520	339	2650
Richer	52	1957	338	2761	407	2883	114	3091	86	3128	77	3925	55	1461	184	3145
Riches	55	2950	242	3858	355	5698	87	3452	65	3587	82	5354	58	3160	164	4993
Illiterate	80	2534	500	1842	1300	1922	641	2012	325	1404	245	1519	136	1445	482	1906
Primary	63	1304	308	2393	614	2527	278	3129	194	1190	263	2447	159	1304	336	2494
Higher	161	2095	481	3595	1275	3142	413	3522	312	2547	451	3785	232	1961	620	3305

Source: NSSO 71ST Round; 2014: Schedule 25.0

3.3: Factors affecting OOP expenditure in maternal health care in EAG states of India:

3.3.1: Variation in out of pocket expenditure due to socio-economic and demographic factors on ante -natal care:

The average OOPE for EAG Sates of India varies with different socio-economic and demographic characteristic of women. In all the states of EAG in comparison to rural area, urban areas have higher mean OOPE in post-natal care. The highest OOPE in PNC in rural area is in Bihar i.e., RS. 2802. In case of urban area the highest OOPE in PNC is also in Uttar Pradesh in compare to all the other EAG States of India. The OOPE in PNC for Uttar Pradesh is RS. 2495. On an average the mean OOPE increases with increase in age group. The highest OOPE for ANC is in the age group 45-49 i.e., RS 12000 in the state of Rajasthan whereas the lowest is in the state of Uttarakhand i.e., RS 100.

OOPE in ante-natal care among Muslim and Hindu both is highest in Odisha i.e., RS 4488 and RS 2822 respectively, whereas it is lowest in Jharkhand i.e., RS 1455 in Muslim and RS 1606 in Chhattisgarh in case of Hindu. Over here we can see that OOPE in post-natal care is highest in Muslim as compare to Hindu. In case of Christian and others the sample size is very less and in some states it is 0. By Caste, the results show that OOPE on post-natal care is highest in the ST Category. It is highest in Uttarakhand RS 6444 whereas lowest in Rajasthan RS 799.

OOPE depend on the ability to pay. Positive relation between the share of OOPE and level of economic development of states has been found. Economic status of women determines the expenditure incurred in MHC. There is a positive relation between economic status of women and high expenditure; Women from richest income group spend significantly higher than the other groups. In the Richest group OOPE for ante-natal care is highest in Uttar Pradesh i.e., RS 5698, whereas it is lowest in the poorest group i.e., RS 1461 in Chhattisgarh. Education one of the social factor which determine the expenditure incurred on MHC, women who are more educated spend more than the one who are less educated or illiterate. The highest OOPE incurred by the women who have educational level up to higher secondary and above i.e., RS 3785 in Odisha.

Table 3.2: Out Of Pocket (OOP) Expenditure in EAG states due to Delivery factor in 2014

Background	UTTARAKHAND		RAJASTHAN		UTTAR PRADESH		BIHAR		JHARKHAND		ODISSA		CHHATISGRAH		MADHYA PRADESH	
	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean
Rural	67	2689	417	3895	928	5730	374	7356	220	4194	408	5704	99	4002	449	3337
Urban	70	6396	302	6196	533	11965	195	7971	159	9290	169	9439	108	9738	361	7509
15-19	1	395	29	4932	34	8497	21	7333	28	5653	16	8669	6	22242	19	2563
20-29	100	3540	561	4158	1051	7190	419	7101	272	5180	425	6281	146	4804	658	4583
30-39	33	4299	125	5358	352	5697	119	8628	76	4653	130	6063	54	4778	124	3279
40-49	3	4327	4	5425	24	4796	10	7122	3	4623	6	2410	1	0	9	3239
Muslim	16	2232	93	2949	267	7374	76	6430	54	4138	9	6437	5	17267	58	4686
Hindu	115	3810	607	4462	1186	6701	493	7584	289	5506	559	6245	197	5136	743	4266
Christian	0	0	0	0	3	10460	0	0	20	4072	8	6395	1	8500	1	14550
other	6	5033	19	16678	5	16240	0	0	16	2390	1	1650	4	19436	8	16054
SC	26	2950	138	4046	348	3911	126	8407	46	3024	108	5656	16	9697	142	3578
St	6	8838	81	1610	12	3681	7	1177	90	3480	122	3910	53	4416	148	1985
OBC	19	3824	338	4211	757	6899	345	6631	183	5734	210	6846	99	4534	353	4548
Other	86	3612	162	7810	344	9772	91	9762	60	8526	137	8235	39	11433	167	7385
Poorest	17	2885	94	2646	383	3852	168	7606	122	4456	242	4498	72	2644	239	2949
Poorer	27	3432	113	3177	363	4922	171	6033	104	4228	144	7008	45	4985	186	3780
Middle	30	3340	199	3593	358	7707	145	8051	73	6375	88	8268	36	8768	198	4725
Richer	31	3237	182	5215	187	11531	45	8641	42	9347	54	10010	20	10287	93	6024
Riches	32	5569	131	8085	170	16763	40	13938	38	6855	49	11114	34	15739	94	10147
Illiterate	15	1926	238	3243	452	4764	237	4326	88	3887	88	2773	28	1989	180	2312
Primary	30	2384	162	3624	230	4940	119	11088	98	3582	139	4936	58	4180	199	3700
Higher	92	4597	319	6272	778	8606	212	9599	193	6761	345	8086	121	7800	430	6089

Source: NSSO 71ST Round; 2014: Schedule 25.0

3.3.2: Variations in Out of pocket expenditure due to socio-economic and demographic factors due to delivery care:

The average OOPE for EAG Sates of India varies with different socio-economic and demographic characteristic of women. In all the states of EAG in comparison to rural area, urban areas have higher mean OOPE in delivery care. The highest OOPE in Delivery in rural area is in Bihar i.e., RS. 7356. In case of urban area the highest OOPE in Delivery is in Uttar Pradesh in compare to all the other EAG States of India. The OOPE in Delivery care for Uttar Pradesh is RS.11965.On an average the mean OOPE increases with increase in age group. The highest OOPE for Delivery is in the age group 15-19 i.e., RS 22242 in the state of Chhattisgarh whereas the lowest is in the state of Uttarakhand i.e., RS 395.OOPE in Delivery among Muslim is highest in Chhattisgarh i.e., RS 17267 and Hindu is RS 7584 respectively, whereas it is lowest in Uttarakhandi.e., RS 2232 in Muslim and RS 3810 in Uttarakhand in case of Hindu. Over here we can see that OOPE in Delivery care is highest in Muslim as compare to Hindu. In case of Christian and others the sample size is very less and in some states it is 0. By Caste, the results show that OOPE on Delivery care is highest in the General caste than SC, ST, and OBC. It is highest in Chhattisgarh i.e., RS 11433 whereas lowest in Bihar RS 1177.

OOPE depend on the ability to pay. There is a positive relation between the share of OOPE and level of economic development of states. Economic status of women determines the expenditure incurred in MHC. There is a positive relation between economic status of women and high expenditure; Women from richest income group spend significantly higher than the other groups. In the Richest group OOPE for Delivery care is highest in Uttar Pradesh i.e., RS 16763, whereas it is lowest in the poorest group i.e., RS 2644 in Chhattisgarh. Education one of the social factors which determine the expenditure incurred on MHC, women who are more educated spend more than the one who are less educated or illiterate. The highest OOPE incurred by the women who have educational level up to primary level i.e., RS 11088 in Bihar.

Table 3.3: Out of Pocket (OOP) Expenditure in EAG states due to postnatal factor in 2014

Background	UTTARAKHAND		RAJASTHAN		UTTAR PRADESH		BIHAR		JHARKHAND		ODISSA		CHHATISGRAH		MADHYA PRADESH	
	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean	Sample	Mean
Rural	120	967	413	1642	1434	1866	588	1833	412	915	544	1426	188	1079	555	1482
Urban	100	1534	444	2197	1072	2495	450	1801	265	1822	220	2297	196	1702	551	2385
15-19	2	0	37	1049	57	1706	51	2744	47	1089	22	2036	8	1913	19	1663
20-24	84	1280	330	1997	835	2005	377	1780	251	1104	303	1390	150	1320	485	1672
25-29	86	1301	324	1875	897	2056	377	1741	229	1510	258	1967	138	1611	407	2367
30-34	29	1047	107	1978	457	2274	150	1751	120	1205	119	2046	65	1315	140	1770
35-40	15	1213	47	2253	195	2588	52	1265	25	1249	45	1156	22	670	47	959
40-45	4	375	8	1375	48	2673	22	2127	5	1995	13	685	1	500	4	7663
45-49	0	0	4	5000	17	3612	9	5022	0	0	4	700	0	0	4	2000
Muslim	28	1854	109	1627	572	2547	136	2116	100	1018	9	1517	12	1211	92	2021
Hindu	185	1108	726	1987	1920	1999	902	1774	499	1378	745	1690	363	1393	998	1834
Christian	0	0	0	0	5	2220	0	0	41	914	8	900	4	2200	1	500
Other	7	1786	22	1532	9	4933	0	0	37	884	2	500	5	1500	15	8000
SC	41	1078	163	925	566	1685	205	1128	62	1060	153	2026	29	1416	206	1508
ST	6	2167	92	1015	28	2795	12	1258	210	756	174	1231	102	957	226	1511
OBC	45	1778	406	2040	1334	1967	667	2006	314	1494	272	1659	187	1195	456	1812
Other	128	1033	196	2965	578	2931	154	1969	91	1828	165	1852	66	2641	218	3020
Poorest	52	916	91	1892	651	1476	331	1546	264	1016	343	1186	139	1069	349	1642
Poorer	55	1014	129	1404	609	1655	317	1899	166	1170	179	1599	86	1494	246	1747
Middle	32	1460	238	1475	614	2339	238	1545	119	1331	108	1936	67	1666	252	2154
Richer	40	1490	223	2187	345	3218	81	2989	68	1573	67	1813	49	978	127	1762
Riches	41	1457	176	2623	285	2923	70	2351	60	2200	66	3815	43	2320	131	2789
Illiterate	56	1082	320	1395	1013	2004	492	1593	254	1060	189	1189	91	989	379	1421
Primary	44	841	183	1616	467	2088	215	1781	163	966	208	1470	115	1366	263	1586
Higher	120	1432	354	2575	1026	2285	330	2185	260	1666	366	2035	178	1626	463	2547

Source: NSSO 71ST Round; 2014: Schedule 25.0

3.3.3: Variation in Out of pocket expenditure due to socio-economic and demographic factors on post-natal care:

The average OOPE for EAG Sates of India vary with different socio-economic and demographic characteristic of women. In all the states of EAG in comparison to rural area, urban areas have higher mean OOPE in post-natal care. The highest OOPE in PNC in rural area is in Uttar Pradesh i.e., RS. 1866. In case of urban area the highest OOPE in PNC is also in Uttar Pradesh in compare to all the other EAG States of India. The OOPE in PNC for Uttar Pradesh is RS. 2495. On an average the mean OOPE increases with increase in age group. The OOPE for PNC in the age group 15-19 and 45-49 is highest in Bihar i.e., RS. 2744 and RS.5022 respectively, whereas for the same age group it is 0 in Uttarakhand the reason may be low sample size of post-natal care. In the age group 20-24, 30-34, 35-40,41-45 the highest OOPE is in Uttar Pradesh i.e. RS. 2005, RS.2274, RS.2588, RS.2673 respectively, whereas lowest is in Jharkhand i.e. RS. 1104 for age group 20-24. For age group 30-34, 35-40, 40-45 lowest is in Uttarakhand i.e., RS 1047, Chhattisgarh RS 670, Uttarakhand RS 375 respectively. In age group 25-29 the highest OOPE is in Madhya Pradesh whereas lowest is in Uttarakhand RS 1301.

OOPE in post-natal care among Muslim and Hindu both is highest in Uttar Pradesh i.e., RS 2547 and RS 1999 respectively, whereas it is lowest in Jharkhand i.e., RS 1018 in Muslim and RS 1108 in Uttarakhand in case of Hindu. Over here we can see that OOPE in post-natal care is highest in Muslim as compare to Hindu. In case of Christian and others the sample size is very less and in some states it is 0. By Caste, the results show that OOPE on post-natal care is highest in the General caste than SC, ST, and OBC. It is highest in Madhya Pradesh RS 3020 whereas lowest in Jharkhand RS 756.

OOPE depend on the ability to pay. There is a positive relation between the share of OOPE and level of economic development of states. Economic status of women determines the expenditure incurred in MHC. There is a positive relation between economic status of women and high expenditure; Women from richest income group spend significantly higher than the other groups. In the Richest group OOPE for post-natal care is highest in Odisha i.e., RS 3815, whereas it is lowest in the poorest group i.e., RS 916 in Uttarakhand.

Education one of the social factor which determine the expenditure incurred on MHC, women who are more educated spend more than the one who are less educated or illiterate. The highest OOPE incurred by the women who have educational level up to higher secondary and above i.e., RS 2575 in Rajasthan.

Table 3.4: Regression results and predicted out-of-pocket expenditure on ANC care in EAG States, 2014

ANC	β (Logit)	[95% Conf. Interval]
SECTOR		
Rural		
Urban	0.231***	[0.176, .286]
AGE		
15-19		
20-29	0.036	[-0.101, .174]
30-39	-0.032	[-0.178, .114]
40-49	-0.270*	[-0.503, -.036]
RELIGION		
Muslim		
Hindu	0.193***	[0.117, .268]
Christian	0.312**	[0.009, .615]
other	0.529***	[0.295, .763]
SOCIAL GROUP		
SC		
ST	-0.218***	[-0.318, -.117]
OBC	0.162***	[0.092, .232]
Other	0.498***	[0.414, .581]
MPCE QUINTILE		
Poorest		
Poorer	0.154***	[0.084, .225]
Middle	0.197***	[0.125, .270]
Richer	0.250***	[0.164, .336]
Richest	0.503***	[0.409, .597]
EDUCATIONAL LEVEL		
Illiterate		
Primary	0.130***	[0.062, .197]
Higher Secondary	0.256***	[0.195, .317]

***p=0.00;**p<0.01 and *p<0.50significant level. ᵃwas people out-of-pocket expenditure last 365 days (yes = 1, no = 0)

3.4: Linear Regression showing predicted OOP Expenditure on Maternal Health Care in EAG States:

3.4.1: Predicted OOP Expenditure on ANC: The results of the logit regression show that the probability of incurring expenditure on ANC care is negatively associated with the age of women. Women aged 30-39 and 40-49 were less likely to spend on ANC care compared with women aged 15-19 women in EAG states of India but value is not significant. In urban sector ANC expenditure is significant and higher compare to rural sector. In religion, compare to Muslim all the other religion has higher expenditure incurred on Antenatal care. Christian is 31% more likely to spend compare to Muslim.   In social group also comparison to SC, ST are less likely to spend on ante natal care. But in case of OBC and Others they are more likely to spend on ante natal care. Similarly, expenditure on ANC is significant and very much higher in higher wealth quintile. The probability of expenditure incurred on ANC is about 50% significantly higher among those women with higher wealth quintile compared with poorest quintile women. ANC expenditure on women is significantly higher in all socioeconomic variables like Education, Wealth Quintile and Caste and Urban sector with highly significant.

Table 3.5: Regression results and predicted out-of-pocket expenditure on Delivery care in EAG States, 2014

Delivery	β (Logit)	[95% Conf. Interval]
SECTOR		
Rural		
Urban	0.081*	[-0.005, .167]
AGE		
15-19		
20-29	-0.136	[-0.357,083]
30-39	-0.112	[-0.344, .119]
40-49	0.021	[-0.387, .430]
RELIGION		
Muslim		
Hindu	0.014	[-0.111, .140]
Christian	0.311	[-0.183, .807]
other	0.303	[-0.075, .682]
SOCIAL GROUP		
SC		
ST	-0.169*	[-0.319, -.020]
OBC	0.162**	[0.056, .269]
Other	0.430***	[0.302, .558458]
MPCE QUINTILE		
Poorest		
Poorer	-0.012	[-0.121, .096]
Middle	0.190**	[0.078, .301]
Richer	0.549***	[0.416, .683]
Richest	0.932***	[0.784, 1.081]
EDUCATIONAL LEVEL		
Illiterate		
Primary	0.055	[-0.056, .167]
Higher Secondary	0.517***	[0.416, .619]

***p=0.00;**p<0.01 and *p<0.50significant level. ªwas people out-of-pocket expenditure last 365 days (yes = 1, no = 0)

3.4.2: Predicted OOP Expenditure on Delivery:

The results of the logit regression show that the probability of incurring expenditure on delivery care is negatively associated with the age of women. Women aged 20–29 and 30-39 were less likely to spend on delivery care compared with women aged 15-19 but compare to women of age group 40-49 it was more like to reference category in EAG states of India but value is not significant. In urban sector delivery expenditure is more likely to rural sector. In religion, compare to Muslim all the other religion has higher expenditure incurred. Christian is 31% more likely to spend compare to Muslim. In social group also comparison to SC, ST are less likely to spend on delivery care. But in case of OBC and Others they are more likely to spend on delivery care. Similarly, expenditure on delivery care is significant and is very much higher in higher wealth quintile. The probability of expenditure incurred on delivery care is about 93% significantly higher among those women with higher wealth quintile compared with poorest quintile women. Delivery care expenditure on women significantly higher in all socioeconomic variables like Education, Wealth Quintile and Caste and Urban sector with highly significant.

Table 3.6: Regression results and predicted out-of-pocket expenditure on PNC care in EAG States, 2014

PNC	β (Logit)	[95% Conf. Interval]
SECTOR		
Rural		
Urban	0.106***	[0.052, .161]
AGE		
15-19		
20-29	-0.156**	[-0.300, -.012]
30-39	-0.148**	[-0.299, .002]
40-49	0.129	[-0.101, .361]
RELIGION		
Muslim		
Hindu	0.011	[-0.064, .087]
Christian	-0.355**	[-0.671, -.039]
Other	0.142083	[-0.0941416, .378307]
SOCIAL GROUP		
SC		
ST	-0.077*	[-0.178, .024]
OBC	0.142***	[0.072, .213]
Other	0.336***	[0.252, .419]
MPCE QUINTILE		
Poorest		
Poorer	0.032*	[-0.038, .102]
Middle	0.149***	[0.076, .223]
Richer	0.255***	[0.169, .342]
Richest	0.303***	[0.208, .398]
EDUCATIONAL LEVEL		
Illiterate		
Primary	0.019*	[-0.049, .087]
Higher secondary	0.181**	[0.120, .242]

***p=0.00;**p<0.01 and *p<0.50significant level. ªwas people out-of-pocket expenditure last 365 days (yes = 1, no = 0)

3.4.3: Predicted OOP Expenditure on PNC:

The results of the logit regression showing the probability of incurring expenditure on PNC care is negatively associated with the age of women. Women aged 20-29 and 30-39 were less likely to spend on PNC care compared with women aged 15-19 women in EAG states of India whereas in case of women belonging to age group 40-49 are more likely to spend on PNC, but value is not significant. In urban sector PNC expenditure is significantly higher compare to rural sector. In religion, compare to Muslim Hindu and Others have higher expenditure incurred on Post-natal care, whereas in case of Christian they are less likely to spend compare to Muslim. In social group also comparison to SC, ST are less likely to spend on post-natal care. But in case of OBC and Others they are more likely to spend on post-natal care. Similarly, expenditure on PNC is significantly very much higher in higher wealth quintile. The probability of expenditure incurred on PNC is about 30% significantly higher among those women with higher wealth quintile compared with poorest quintile women. PNC expenditure on women is significantly higher in all socioeconomic variables like Education, Wealth Quintile and Caste and Urban sector with highly significant.

3.5: CONCLUSION:

In this study we are estimating OOPE for maternal expenditure ANC, PNC and delivery for all EAG stats of India in 2014. OOPE depend on the ability to pay. OOPE is highest in all EAG states among women belonging to richest wealth quintile for ANC, PNC and Delivery.

Education is one of the social factor which determine the expenditure incurred on MHC, women who are more educated or up to primary spend more than the one who are less educated or illiterate.

Women having better socio-economic status demand for a better quality health care as they have the ability to pay. Regression results also showing that the Delivery care expenditure, ANC and PNC expenditure on women is significantly higher in all socioeconomic variables like Education, Wealth Quintile and Caste and Urban sector with highly significant.

In social group also comparison to SC, ST are less likely to spend on ANC, PNC and delivery care. But in case of OBC and Others they are more likely to spend on post-natal care. Similarly, expenditure on PNC is significantly very much higher in higher wealth quintile.

Women aged 20–29 and 30-39 were less likely to spend on delivery care compared with women aged 15-19 but compare to women of age group 40-49 it was more like to reference category in EAG states.

In religion, compare to Muslim Hindu and Others have higher expenditure incurred on Post-natal care, whereas in case of Christian they are less likely to spend compare to Muslim.

CHAPTER 4:

CATASTROPHIC IN MATERNATAL HEALTH EXPENDITURE IN EAG STATES OF INDIA IN 2014

INTRODUCTION:

OOP Payment is said to be catastrophic when the household decrease its expenditure on basic necessities over a definite period of time, sell assets, and collect debts in order to manage with the medical bills of one or more of its members. Catastrophic health expenditure is an indicator to see the amount to which the health system safeguards households against financial hardship. The major goal of health systems is to protect the household from the financial distress and to provide universal health coverage accessing of health services may lead the household to pay catastrophic payment of their income which in turn may turn them into the state of poverty. Thus protecting people from the clutch of catastrophic payment is the main objective of the policy makers. Catastrophic health expenditure is not always related with high medical cost, even if there is high medical cost and the household is financially strong or does not abide the full cost because the service is provided free or at a subsidised price, or is covered by insurance the household will not face catastrophic payment while in the other case even if small costs is incurred for a common illnesses and the household is not financially strong or have no insurance cover than it can be can be really disastrous. Incidence of catastrophic expenditure is estimated by the increase in the share of out of pocket expenditure.

METHODOLOGY: Household spending is said to be catastrophic when a household reduce its basic expenditure over a period of time to cope with health costs, but there is no fixed threshold level of household expenditure. In past studies, the threshold has varied from 5% to 20% of total household income.(Xu et al 2003). An OOP payment for health care is considered catastrophic when the payment exceeds some threshold (Z_{cat}), defined as a fraction of total household consumption. If S represents OOP payments for health care, Y represents total household expenditure, then a household is said to have incurred catastrophic payments when S/Y exceeds a specified threshold, N_{cat}. We have taken different cut-off point for this study. For delivery 2%, 5%,8% and more than 8% but in

case ANC and PNC cut-off point taken less than 1%, less than 2% and 2% or more than**.** We have taken different cut offs with taking reference from Soumitra Ghosh paper: Catastrophic payments and Impoverishment due to out of pocket health spending.[64]

Table 4.1: Catastrophic maternal expenditure (%) in EAG states due to prenatal factor in 2014

Background	UK	RAJ	UP	BIHAR	JHARKHAND	ODISSA	CHHAT	MP
Sector								
Rural	2	2	2	4	2	4	2	2
Urban	3	2	3	3	3	4	2	3
Age Group								
15-19	0	1	3	2	2	5	2	3
20-24	2	2	3	4	2	4	2	3
25-29	3	2	3	3	3	4	2	3
30-34	2	2	2	4	1	4	2	2
35-40	1	2	2	2	2	3	1	2
40-45	2	0	1	4	3	2	1	2
45-49	0	27	0	3	0	0	0	2
Religion								
Muslim	2	2	3	3	2	5	1	3
Hindu	3	2	2	4	2	4	2	3
Christian	0	0	2	0	2	5	2	1
other	1	4	4	0	2	4	1	6
Caste								
SC	2	2	2	4	1	4	3	2
St	9	1	4	3	1	3	1	2
OBC	2	2	2	3	2	5	2	2
Other	2	3	3	3	2	4	2	4
Wealth Quintile								
Poorest	2	2	3	4	2	4	2	3
Poorer	2	2	2	4	2	5	3	3
Middle	3	2	2	3	2	5	2	3
Richer	2	2	2	3	3	4	2	3
Riches	3	2	3	2	2	3	2	3
Education								
Illiterate	3	2	2	3	2	3	2	2
Primary	2	2	3	4	2	4	2	3
Higher	2	2	3	4	2	5	2	3

Source: NSSO 71st round schedule 25.0

UK: UTTARAKHAND, **RAJ:** RAJASTHAN, **UP:** UTTAR PRADESH, **CHHAT:** CHHATTISGARH, **MP**: MADHYA PRADESH

---

[64] Ghosh, S. (2010). Catastrophic payments and Impoverishment due to Out-of-Pocket health spending: The effects of recent health sector reforms in India.Asia Health Policy Program Working Paper, (15).

4.3.1: Antenatal Care

This table 4.1. shows catastrophic maternal health expenditure due to ANC in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is lower in rural area compare to urban area. In case of Bihar and Odisha the catastrophic rate for rural area was higher 4% each compared to that of urban area where it is 4% only for Odisha. In case of Odisha the catastrophic rate was equal for both rural as well as urban area that means people are spending equally in both the sectors.

In age group, 25-29 spend a largser quantity of their total household consumption expenditure in ANC care. The highest catastrophic maternal expenditure is in the state of Rajasthan where it is 27%; reason can be low sample size which is affecting the result.

In religion, Hindu and Others both have high expenditure in ANC care, both have high catastrophic rate. Highest catastrophic rate is in others category is in s Madhya Pradesh. The states spend a larger quantity of their household expenditure in ANC care services.

In various social groups, others (general caste) as well as Schedule tribe have the highest catastrophic rate compared to the other social group. Women from Schedule tribe spend larger share of expenditure in ANC care which also shows that they have to spend a larger share of their income in ANC which is generally free in government hospitals, but due to lack of knowledge and accessibility they are falling in the trap of catastrophic.

In case of wealth quintile, poorer and middle section has the highest catastrophic rate compared to the other groups. The result shows that poorer section and middle income group spends a large amount of their income in ANC care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services better than their counterparts.

Table 4.2: Catastrophic in maternal expenditure (%) in EAG states due to Delivery in 2014

Background	UK	RAJ	UP	BIHAR	JHARKHAND	ODISSA	CHHATISGRAH	MP
Sector								
Rural	3	3	6	10	5	10	6	4
Urban	7	4	9	7	9	10	8	7
Age Group								
15-19	1	4	11	8	7	15	26	3
20-29	4	3	6	9	6	10	5	5
30-39	4	4	6	12	6	8	6	4
40-49	5	6	5	9	5	6	0	5
Religion								
Muslim	3	3	7	7	5	6	6	6
Hindu	5	4	6	10	6	10	7	5
Christian	0	0	8	0	5	9	4	8
other	5	7	12	0	4	3	10	12
Caste								
SC	4	3	6	13	4	10	11	5
St	11	2	5	1	6	8	6	3
OBC	4	3	6	8	6	11	6	5
Other	4	5	8	11	8	9	8	7
Wealth Quintile								
Poorest	7	4	6	11	7	9	5	6
Poorer	4	4	6	8	5	11	6	4
Middle	4	3	6	8	6	10	11	4
Richer	3	3	8	8	6	9	8	4
Riches	4	4	7	12	4	6	8	6
Education								
Illiterate	3	3	6	7	5	7	4	4
Primary	4	3	5	14	5	10	6	4
Higher	5	4	7	10	8	11	8	6

Source: NSSO 71st round schedule 25.0

UK: UTTARAKHAND, **RAJ:** RAJASTHAN, **UP:** UTTAR PRADESH, **CHHAT:** CHHATTISGARH, **MP**: MADHYA PRADESH

4.3.2: Delivery Care

This table 4.2.: Shows catastrophic maternal health expenditure due to delivery in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is lower in rural area compare to urban area. In case of Bihar the catastrophic rate for rural area was higher 10% compared to that of urban area where it is 7%. In case of Odisha the catastrophic rate was equal for both rural as well as urban area that means people are spending equally in both the sectors.

In age group, 15-19 spend a larger quantity of their total household consumption expenditure in delivery care. The highest catastrophic maternal expenditure is in the state of Chhattisgarh where it is 26%; reason can be low sample size which is affecting the result.

In religion, Hindu and Others both have high expenditure in delivery care, both have high catastrophic rate. Highest catastrophic rate is in others category both in states Bihar and Madhya Pradesh. Both the states spend a larger quantity of their household expenditure in delivery care services.

In various social groups, others (general caste) have the highest catastrophic rate compared to the other social group. Women from general caste spend larger share of expenditure in delivery care which also shows that caste is a barrier in accessing maternal health services.

In case of wealth quintile, poorest section has the highest wealth quintile compared to the other groups. The result shows that poorer section spends a large amount of their income in delivery care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services**.**

Table 4.3: Catastrophic maternal expenditure (%) in EAG states due to postnatal factor in 2014

	UT	RAJ	UP	BIHAR	JHARKHAND	ODISSA	CHHATISGRAH	MP
Sector								
Rural	1	1	2	3	1	3	2	2
Urban	2	2	2	2	2	2	2	2
Age Group								
15-19	0	1	2	4	1	3	3	2
20-24	2	2	2	2	1	2	2	2
25-29	2	1	2	2	2	3	2	2
30-34	1	2	2	2	1	3	2	2
35-40	1	2	3	2	2	1	1	1
40-45	1	1	3	3	3	1	1	7
45-49	0	11	4	7	0	1	0	2
Religion								
Muslim	2	1	3	3	1	2	1	2
Hindu	1	2	2	2	2	3	2	2
Christian	0		2	0	1	2	2	0
other	2	1	2	0	1	1	1	5
Caste								
SC	1	1	2	2	1	4	2	2
St	3	1	4	2	1	3	1	2
OBC	2	2	2	3	2	3	2	2
Other	1	2	2	2	1	2	2	3
Wealth Quintile								
Poorest	2	3	2	2	2	3	2	3
Poorer	1	1	2	3	1	3	2	2
Middle	2	1	2	2	1	3	2	2
Richer	1	2	3	3	1	2	1	2
Riches	1	1	2	2	1	2	1	2
Education								
Illiterate	1	1	2	2	1	2	1	2
Primary	1	1	2	2	1	3	2	2
Higher	2	2	2	2	2	2	2	2

Source: NSSO 71st round schedule 25.0

UK: UTTARAKHAND, **RAJ:** RAJASTHAN, **UP:** UTTAR PRADESH, **CHHAT:** CHHATTISGARH, **MP**: MADHYA PRADESH

4.3.3: Post natal Care

This table 4.3 shows catastrophic maternal health expenditure due to PNC in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is lower in rural area compare to urban area. In case of Bihar and Odisha the catastrophic rate for rural area was higher 3% each compared to that of urban area.

In age group, 45-49 spend a larger quantity of their total household consumption expenditure in PNC care; reason can be in higher age group there are pregnancy complications which results in more PNC care. The highest catastrophic maternal expenditure is in the state of Rajasthan where it is 11%.

In religion, Hindu has high expenditure in PNC care and have high catastrophic rate. Highest catastrophic rate is in others category is in state of Madhya Pradesh. The state spends a larger quantity of their household expenditure in ANC care services.

In various social groups, others OBC have the highest catastrophic rate compared to the other social group. Women from OBC caste spend larger share of expenditure in PNC care which also shows that caste is a barrier in accessing maternal health services.

In case of wealth quintile, poorest section has the highest wealth quintile compared to the other groups. The result shows that poorer section spends a large amount of their income in delivery care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services.

Table 4.4: OOP and Catastrophic maternal expenditure in (%) EAG states Due to ANC in 2014

Background	ANC	
	OOP (MEAN Rs.)	**(OOP/HH_EXP)*100**
Sector		
Rural	2151	3
Urban	2940	3
Age Group		
15-19	1967	2
20-29	2428	3
30-39	2081	3
40-49	1427	3
Religion		
Muslim	2081	2
Hindu	2362	3
Christian	1391	2
other	2820	2
Caste		
SC	2049	3
St	1129	2
OBC	2342	3
Other	3392	3
Wealth Quintile		
Poorest	1738	2
Poorer	2194	3
Middle	2617	3
Richer	2692	3
Riches	4107	3
Education		
Illiterate	1635	2
Primary	2581	3
Higher Secondary	2894	3

Source: NSSO 71st round schedule 25.0

4.4: OOP and Catastrophic in Maternal Expenditure (%) in EAG States

4.4.1: Ante natal Care

This table 4.4: shows OOP and catastrophic maternal health expenditure % due to ANC in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is however similar in both rural and urban area. Place of residence affects a lot in accessing services. Urban area has accessibility as well as availability of services which tends household to use more.

In religion, Hindu has high expenditure in ANC care and have high catastrophic rate. Many religions bar availing modern health facilities.

In various social groups, others (general caste) have the highest OOP compared to the other social group whereas the catastrophic rate is however same. Women from general caste spend larger share of expenditure in ANC care which also shows that caste is a barrier in accessing maternal health services.

In case of wealth quintile, Richest has the highest OOP compared to the other groups. The result shows that poorer section spends a large amount of their income in delivery care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services**.**

Table 4.5: OOP and Catastrophic maternal expenditure (%) in EAG states Due to delivery in 2014

Background	Delivery	
	OOP (MEAN Rs.)	(OOP/HH_EXP)*100
Sector		
Rural	5257	7
Urban	9121	8
Age Group		
15-19	6841	11
20-29	5974	7
30-39	5852	7
40-49	4891	6
Religion		
Muslim	6019	7
Hindu	5930	7
Christian	5207	7
other	9760	7
Caste		
SC	5006	7
St	2715	4
OBC	5931	7
Other	8843	9
Wealth Quintile		
Poorest	4411	7
Poorer	4883	7
Middle	6433	7
Richer	7945	8
Riches	11932	8
Education		
Illiterate	3891	7
Primary	5218	6
Higher Secondary	7845	8

Source: NSSO 71st round schedule 25.0

4.4.2: Delivery Care

This table 4.5 shows OOP and catastrophic maternal health expenditure % due to delivery in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is lower in rural area compare to urban area. Place of residence affects a lot in accessing services. Urban area has accessibility as well as availability of services which tends household to use more.

In age group, 15-19 spend a larger quantity of their total household consumption expenditure into delivery care. In the younger age group there are more delivery cases compared to the older age group.

In religion, others have high expenditure in delivery care and have high catastrophic rate. Many religions bar availing modern health facilities.

In various social groups, others (general caste) have the highest catastrophic rate compared to the other social group. Women from general caste spend larger share of expenditure in delivery care which also shows that caste is a barrier in accessing maternal health services.

In case of wealth quintile, poorest section has the highest wealth quintile compared to the other groups. The result shows that poorer section spends a large amount of their income in delivery care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services.

Table 4.6: OOP and Catastrophic maternal expenditure in (%) EAG states Due to PNC in 2014

Background	PNC	
	OOP (MEAN Rs.)	(OOP/HH_EXP)*100
Sector		
Rural	1631	2
Urban	2217	2
Age Group		
15-19	1514	2
20-29	1832	2
30-39	1598	2
40-49	1485	3
Religion		
Muslim	1945	2
Hindu	1727	2
Christian	1047	1
other	1906	2
Caste		
SC	1460	2
St	1033	2
OBC	1821	2
Other	2367	2
Wealth Quintile		
Poorest	1452	2
Poorer	1638	2
Middle	1925	2
Richer	2231	2
Riches	2489	3
Education		
Illiterate	1471	2
Primary	1614	2
Higher Secondary	2157	2

Source: NSSO 71st round schedule 25.0

4.4.3: Post natal Care

This table 4.6: shows OOP and catastrophic maternal health expenditure % due to PNC in different EAG States of India with different background variables.

In rural area women spends lesser in comparison to urban area. The catastrophic rate is however similar in both rural and urban area. Place of residence affects a lot in accessing services. Urban area has accessibility as well as availability of services which tends household to use more.

In religion, Muslim has high expenditure in PNC care and have high catastrophic rate. Many religions bar availing modern health facilities.

In various social groups, others (general caste) have the highest OOP compared to the other social group whereas the catastrophic rate is however same. Women from general caste spend larger share of expenditure in PNC care which also shows that caste is a barrier in accessing maternal health services.

In case of wealth quintile, Richest has the highest OOP compared to the other groups. The result shows that poorer section spends a large amount of their income in delivery care and it may lead to fall them in the circle of poverty.

In case of educational level, women from higher educational level have higher catastrophic rate compared to other groups. Higher educational level leads to higher autonomy and more knowledge of accessing services.

Table 4.7: Household Catastrophic Expenditure in Different Cut-Off Catastrophic in maternal expenditure in (%) EAG states due to ANC in different cut-off 2014

Background	Catastrophic		
	Less than 1%	Less than 2%	2% or more than
Sector			
Rural	46	20	34
Urban	40	21	40
Age Group			
15-19	45	20	35
20-29	43	21	36
30-39	50	17	33
40-49	56	18	27
Religion			
Muslim	43	23	34
Hindu	45	20	35
Christian	55	14	32
other	37	29	35
Caste			
SC	41	22	37
St	60	15	25
OBC	46	21	33
Other	35	19	46
Wealth Quintile			
Poorest	50	28	22
Poorer	42	29	29
Middle	48	17	34
Richer	39	25	35
Riches	45	23	32
Education			
Illiterate	49	20	31
Primary	44	20	36
Higher Secondary	41	22	38

Source: NSSO 71st round schedule 25.0

4.5: Catastrophic in Maternal Expenditure In EAG States with Different Cut Offs

4.5.1: Antenatal Care:

The above table 4.7 result shows that for less than 1% the catastrophic spending on ANC at these threshold estimated by independent variables .The results show that women in the age group 40-49 years paid more than their counterparts in this cut off point on ANC care. Catastrophic spending was high across the rural area in comparison to urban in EAG states of India. In this cut off point in Christian health expenditure is more compare to other counterpart in caste ST was highest among other caste. In wealth quintile in poorest quintile have higher expenditure in ANC in this cut off point among other wealth quintile and whose are illiterate women expenditure is higher compare to primary and higher education.

For instance, at the cut off of less than 2 % , the proportion of households incurring catastrophic spending was higher in women age 20-29 (21%) than in 15-19 (20%) and 40-49 (18%) Within the same cut-off, women belonging from Muslim have higher catastrophic rate than Hindu and other religious community. Significant differences were observed in catastrophic spending on ANC care between the poorest and the richest MPCE quintile households, and those women having higher education spends more and thus have higher catastrophic spending on maternity care than the others in the group.

At more than 2% cut-off, those women living in urban sector have higher (40) compare to rural (24%) higher probability of suffering catastrophic were on ANC care than its counterparts and by age group those women in age group 20-29 (36%) highest catastrophic spending on maternity care among other age-group. Religion wise spending on maternity care in Hindu religion women has spending higher compare its counterparts. In this cut off expenditure on maternity care is higher in other categories women compare to their counterparts. ANC care in wealth quintile group between the poorest and the richest MPCE quintile households, and those women have higher education in catastrophic spending on ANC care higher than their counterparts and also higher wealthiest quintile group.

Table 4.8: Catastrophic in maternal expenditure in (%) EAG states due to Delivery different cut off in 2014

Background	Catastrophic			
	2%	**5%**	**8%**	**More than 8%**
Sector				
Rural	52	19	19	10
Urban	44	17	24	14
Age Group				
15-19	49	17	18	16
20-29	50	19	20	11
30-39	53	19	18	10
40-49	57	12	26	5
Religion				
Muslim	51	19	18	12
Hindu	51	19	20	11
Christian	37	24	19	21
other	52	18	15	15
Caste				
SC	56	16	18	10
St	61	18	16	6
OBC	51	19	20	10
Other	38	22	22	18
Wealth Quintile				
Poorest	51	19	20	10
Poorer	55	19	16	10
Middle	51	19	19	11
Richer	52	15	21	12
Riches	39	20	27	14
Education				
Illiterate	59	16	16	8
Primary	54	19	20	7
Higher Secondary	43	20	22	14

Source: NSSO 71st round schedule 25.0

4.5.2: Delivery Care:

For 2% cut off, the results displays that catastrophic spending on Delivery is estimated by independent variables are presented in Table No. 4.8. The results show that women in the age group 40–49 years spent more than other women's belonging to other age groups in this cut off point . In rural area the catastrophic spending was high in comparison to urban area in EAG states of India. In this cut off point in Hindu and Muslim health expenditure is same but in caste ST was highest among other caste. In wealth quintile in poorer quintile have higher expenditure in delivery in this cut off point among other wealth quintile and whose are illiterate women expenditure is higher compare to primary and higher education.

For 5 % cut-off, the percentage of households that acquired catastrophic spending was higher in women age 30-39 (19%) than in 20-29 (18%) and 40-49 (14%) Within the same cut-off of 5%, women in households from other religious group than Hindu and Muslim religious community and those who belonged to Muslim were having higher catastrophic expenditures on maternity care than their counterparts. Remarkable differences were observed in catastrophic spending on maternity care between the poorest and the richest MPCE quintile households by all three definitions used, and those women have higher education in catastrophic spending on maternity care higher than their counterparts.

At the 8% cut-off, those women living in urban sector 24% compare to rural (18%) have higher probability of incurring catastrophic were spending on maternity care than its counterparts and by age group those women in age group 40-49 (28%) highest catastrophic spending on maternity care among other age-group. Religion wise spending on maternity care in Hindu religion women has spending higher compare its counterparts. In this cut off spending on maternity care is higher in other categories women compare to their counterparts. At the more than 8% cut-off, those women living in urban sector 14% compare to rural (10%) higher probability of incurring catastrophic were spending on maternity care than its counterparts and by age group those women in age group 10-19 (16%) highest catastrophic spending on maternity care among other age-group. Religion wise spending on maternity care in Muslim religion women has spending higher compare its counterparts. In this cut off spending on maternity care is higher in other categories women compare to their counterparts. Castes wise spending on maternity care in others

women has spending higher compare its counterparts. In this cut off expenses on maternity care is higher in richest quintile women compare to their counterparts and those women has higher education are expending more money on delivery care.

Table 4.9: Catastrophic in maternal expenditure in (%) EAG states due to PNC in different cut off in 2014

	Catastrophic		
	Less than 1%	**Less than 2%**	**2% or more than**
Sector			
Rural	48	21	31
Urban	47	23	30
Age Group			
15-19	57	10	34
20-29	47	22	31
30-39	49	21	30
40-49	48	16	36
Religion			
Muslim	51	18	32
Hindu	47	22	31
Christian	76	11	13
other	59	8	32
Caste			
SC	48	19	34
St	58	14	28
OBC	48	23	30
Other	43	24	33
Wealth Quintile			
Poorest	44	43	13
Poorer	42	38	20
Middle	53	21	27
Richer	46	27	26
Riches	56	21	23
Education			
Illiterate	50	20	30
Primary	51	18	31
Higher Secondary	44	25	31

Source: NSSO 71st round schedule 25.0

4.5.3: Post natal Care:

For less than 1%, the results from catastrophic expenditure on PNC at 1% thresholds are estimated by independent variables are presented in Table No. 4.9. The results show that women in the age group 15-19 years spent more than women in other age group. other age groups in this cut off point on PNC care households with catastrophic spending was high across the in rural compare to urban in EAG states of India. In this cut off point in Christian health expenditure is more compare to other counterpart in caste ST was highest among other caste. In wealth quintile in middle quintile have higher expenditure in PNC in this cut off point among other wealth quintile and whose are illiterate women expenditure is higher compare to primary and higher education.

For instance, at the less than 2 % cut-off, the proportion of households that incurred catastrophic spending was higher in women age 20-29 (22%) than in 15-19 (10%) and 40-49 (16%) With the same cut-off, women in households from Hindu than Muslim and other religious community and those who belonged to Hindu were having higher catastrophic expenditures on PNC care than their counterparts. Remarkable differences were observed in catastrophic spending on PNC care between the poorest and the richest MPCE quintile households by all three definitions used, and those women have higher education in catastrophic spending on maternity care higher than their counterparts and also higher wealthiest quintile group.

At the more than 2% cut-off, those women living in rural sector higher (31) compare to urban (20%) higher probability of incurring catastrophic were spending on PNC care than its counterparts and by age group those women in age group 40-49 (36%) highest catastrophic spending on maternity care among other age-group. Religion wise spending on maternity care in Muslim religion women has spending higher compare its counterparts. In this cut off spending on maternity care is higher in other categories women compare to their counterparts. PNC care between the MPCE quintile households middle quintile group of women has highest catastrophic to other counterparts by all three definitions used, and those women have higher education in catastrophic spending on PNC care higher than their counterparts and also higher wealthiest quintile group.

90

CONCLUSION:

In this chapter we have estimated catastrophic intensity by different cut-off for ANC, Delivery and PNC health care expenditure for EAG states of India. For convince we have taken ANC, PNC together and delivery taken separately in different cut-off less than 1%, less than 2% and 2% or more than and for delivery 2%,5%,8% and more than 8% respectively. In ANC expenditure on maternity care is higher in other categories women compare to their counterparts. ANC care in wealth quintile group between the poorest and the richest MPCE quintile households, and those women have higher education in catastrophic spending on ANC care higher than their counterparts and also higher wealthiest quintile group. In delivery care is higher in other categories women compare to their counterparts. At the more than 8% cut-off, those women living in urban sector 14% compare to rural (10%) higher probability of incurring catastrophic were spending on maternity care than its counterparts and by age group those women in age group 15-19 (16%) highest catastrophic spending on maternity care among other age-group. Religion wise spending on maternity care in Muslim religion women has spending higher compare its counterparts. Spending on maternity care is higher in other categories women compare to their counterparts. Castes wise spending on maternity care in others women has spending higher compare its counterparts. Maternity care is higher in richest quintile women compare to their counterparts and those women has higher education are expending more money on delivery care. In PNC spending on maternity care is higher in other categories women compare to their counterparts. PNC care between the MPCE quintile households middle quintile group of women has highest catastrophic to other counterparts by all three definitions used, and those women have higher education in catastrophic spending on PNC care higher than their counterparts and also higher wealthiest quintile group.

CHAPTER 5:

SUMMARY AND CONCLUSION: This chapter presents summary and conclusions based on the entire work. This also points out limitations of the present research work and lists suggestions for possible future study.

The present study explains the utilization of maternal health care in Empowered Action Group States of India. Owing to concerned efforts by the government, non- government organization, bilateral and multilateral donors there has been significant progress towards improving the maternal health care. Still, most of the developing countries mainly in South Asia and Sub Africa face high maternal mortality rate. The Millennium Development Goal (MDG) 5 mark to reduce the Maternal Mortality Rate to three quarters by the end of 2015 has not been met. The main reason for the failure of MDG Goal is lack of accessibility to better health care services. There is great disparity in the utilisation of maternal health care services across socio-economic and demographic categories. Women's socio-economic and demographic status affects the utilization of maternal health care services. Research study states that cost is a major obstacle for poor households to access maternal care. (Frenk 2006; Su et al. 2006; Bonu et al.2009; Skordis -Worrall et al. 2011).

Utilisation of ,maternal health care is governed by several factors such as socio economic condition, quality of care, distance to health facility, lack of transport, women's low social status, age, caste, religion, educational level, economic status of the household, lack of autonomy and decision-making power and cultural norms.

Utilization of Antenatal care (ANC) in EAG State of India is maximum in the state of Uttar Pradesh (19%) of total India whereas lowest is in the state of Uttarakhand. The use of ante natal care in public sector is more as compare to the private sector. Both in case of rural as well as urban area the ANC is more in public facilities.

In case of religion, Hindu has the highest share of utilization compared to the other religion both in terms of public and private facilities, whereas the utilization in public facility was more than the private facility.

In case of wealth Quintile maximum ANC was utilized by poorest section of the society. In various Social groups OBC uses the maximum ANC. 25-29 age group uses the maximum utilization of ANC care, whereas illiterate women uses the maximum ANC care.

In case of place of delivery and PNC in EAG States of India, it is more in case of in public centers than the private centers. The reason can be that public centers are favorable for all the people of different wealth quintile. The government center's provide free and better facilities and is easily accessible and affordable. Due to the various initiatives taken by the government for better maternal health care the utilization of public facilities is more as compare to the private sector.

Utilization of private services also depend on the economic status of the family as it incur more money, therefore utilization of private services is mainly for the richer section of the society. As spending more in the private sector may lead to financial burden for the household, which may lead the family to financial distress.

Various socio-economic and demographic factors also affect the utilization of maternal health care services in EAG States of India. In case of place of delivery and PNC Hindu uses the maximum in public facilities compared to the other religion. In terms of wealth Quintile poorest section receives 34% public facilities, whereas middle quintile receives 25% of private facilities.

In social group OBC uses the maximum delivery care facility in both public and private care. In age group 20-24 there is maximum utilization of public and private delivery care facilities. In educational group illiterate uses the maximum delivery care facility, here the result suffer from limitation because of variation in sample size.

The result of multivariate analysis shows the determinants of the Prenatal, Postnatal and Delivery care in Public sector. The odds of ANC in public were significantly lower utilization among female who's in age group 40-44 compare to reference category in the state of EAG, during 2014. For instance, the odds of ANC in public were significantly lower utilization among urban compare to rural population.

Household wealth (MPCE) and individual educational attainment is another significant determinant of ANC services in public sector. The odds of utilization of ANC are little bit higher among the richest quintile compare to reference category. Individual education is less utilization of ANC in public sector. The odds of ANC in public sector was 17% lower utilization among those who are illiterate, 17% lower utilization in middle education compare to illiterate population.

After controlling the other factors the percentage of ANC in public sector is higher utilization in other social group. The findings show ANC care in public sector was 49 per cent lower utilization among Hindu compared to Muslim religion. In ANC in public sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

The odds of PNC in public were lower utilization among all age group compare to reference age group in the state of EAG, during 2014 but value is also signification. For instance, the odds of PNC in public were significantly lower utilization among urban compare to rural female population.

 Household wealth (MPCE) and individual educational attainment is another significant determinant of PNC services in public sector. The odds of PNC are higher utilization among the poorest quintile. Individual education is positively associated with PNC in public sector. The odds of PNC in public sector was 83 % utilization among those who educated up to primary level, 94% utilization among those who educated up to middle and higher level of schooling.

After controlling the other factors the percentage of PNC in public sector is significantly higher utilization in other social group 20% compare to reference group. The findings show PNC care in public sector was significantly 68 % lower utilization among Hindu compared to Muslim religion. .

The odds of delivery care in public sector were significantly higher utilization among urban compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of delivery care in public sector. The odds of

94

delivery care are higher utilization among the richer quintile. Individual education is negatively associated in utilization with delivery care in public sector.

The odds of delivery care in public sector were 87% utilization among those who educated up to primary level. After controlling the other factors the percentage of delivery care in public sector is significantly higher utilization in other social group.

The findings show delivery care in public sector was significantly 51 per cent lower utilization among Hindu compared to reference categories religion. In delivery care, public sector report higher utilization among the other caste groups than the reference category.

The result of multivariate analysis shows the determinants of the Prenatal, Postnatal and Delivery care in Private sector. The odds of ANC in private were significantly lower utilization among female whose in age group 45-49 in the state of EAG, during 2014 .For instance, the odds of ANC in private was significantly higher utilization among urban compare to rural population.

Household wealth (MPCE) and individual educational attainment is another significant determinant of ANC services in privet sector. The odds of ANC are higher utilization among the wealthiest quintile higher utilization compare to counterpart. Individual education is positively associated with ANC utilization in privet sector.

The odds of ANC in private sector were 20% higher utilization among those who educated up to primary level. After controlling the other factors the percentage of ANC in privet sector is significantly higher utilization in other social group. The findings show ANC care in privet sector was significantly 6 per cent lower utilization among Hindu compared to Muslim religion. . In ANC in private sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

The odds of PNC in private were lower utilization among all age group compare to reference age group in the state of EAG, during 2014 and value is also signification. For instance, the odds of PNC in private were significantly higher utilization among urban compare to rural female population. Household wealth (MPCE) and individual educational attainment is another significant determinant of PNC services utilization in privet sector.

The odds of ANC are higher utilization among the richest quintile. Individual education is positively associated with PNC utilization in privet sector.

The odds of PNC in private sector were 21% higher utilization among those who educated up to primary level. After controlling the other factors the percentage of PNC in privet sector is significantly higher utilization in other social group compare to reference group. The findings show PNC care in privet sector was significantly 12 per cent lower utilization among Hindu compared to Muslim religion. .

The odds of delivery care in privet were significantly higher utilization among urban compare to rural population. Household wealth (MPCE) and individual educational attainment is another significant determinant of delivery care in utilization of private sector.

The odds of delivery care are higher, in utilization among the richest quintile. Individual education is positively associated with utilization of delivery care in private sector. Utilization of delivery care in private sector was 13% lower among those who educated up to primary level, among those who educated up to middle and higher level of schooling. After controlling the other factors the percentage of delivery care in privet sector is significantly higher utilization in other social group.

The findings show delivery care in privet sector was significantly 32 per cent higher utilization among Hindu compared to reference categories religion. In delivery care in privet sector was reportedly higher utilization among the other caste groups than that of SC/ST and OBC.

In this study we are estimating OOPE for maternal expenditure ANC, PNC and delivery for all EAG stats of India in 2014. OOPE depend on the ability to pay. OOPE is highest in all EAG states among women belonging to richest wealth quintile for ANC, PNC and Delivery. Education is one of the social factor which determine the expenditure incurred on MHC, women who are more educated or up to primary spend more than the one who are less educated or illiterate.

Women with higher socio-economic status demand better quality health care and they also have the ability to pay. Regression results also showing that the Delivery care expenditure, ANC and PNC expenditure on women is significantly higher in all socioeconomic variables like Education, Wealth Quintile and Caste and Urban sector with highly significant. In social group also comparison to SC, ST are less likely to spend on ANC, PNC and delivery care. But in case of OBC and Others they are more likely to spend on post-natal care.

Similarly, expenditure on PNC is significantly very much higher in higher wealth quintile. Women aged 20–29 and 30-39 were less likely to spend on delivery care compared with women aged 15-19 but compare to women of age group 40-49 it was more like to reference category in EAG states. In religion, compare to Muslim Hindu and Others have higher expenditure incurred on Post-natal care, whereas in case of Christian they are less likely to spend compare to Muslim.

In Catastrophic ANC expenditure on maternity care is higher in other categories women compare to their counterparts. ANC care in wealth quintile group between the poorest and the richest MPCE quintile households, and those women have higher education in catastrophic spending on ANC care higher than their counterparts and also higher wealthiest quintile group. In delivery care is higher in other categories women compare to their counterparts.

At the more than 8% cut-off, those women living in urban sector 14% compare to rural (10%) higher probability of incurring catastrophic were spending on maternity care than its counterparts and by age group those women in age group 15-19 (16%) highest catastrophic spending on maternity care among other age-group.

Religion wise spending on maternity care in Muslim religion women has spending higher compare its counterparts. Spending on maternity care is higher in other categories women compare to their counterparts. Castes wise spending on maternity care in others women has spending higher compare its counterparts. Maternity care is higher in richest quintile women compare to their counterparts and those women has higher education are expending more money on delivery care. In PNC spending on maternity care is higher in other

97

categories women compare to their counterparts. PNC care between the MPCE quintile households middle quintile group of women has highest catastrophic to other counterparts by all three definitions used, and those women have higher education in catastrophic spending on PNC care higher than their counterparts and also higher wealthiest quintile group.

Refrences:

1. Abegunde, D. O., &Stanciole, A. E. (2008). The economic impact of chronic diseases: how do households respond to shocks? Evidence from Russia.*Social science & medicine*, *66*(11), 2296-2307.

2. Addai, I. (2000). Determinants of use of maternal–child health services in rural Ghana. *Journal of biosocial science*, *32*(01), 1-15.

3. Ahmed, S., Creanga, A. A., Gillespie, D. G., &Tsui, A. O. (2010). Economic status, education and empowerment: implications for maternal health service utilization in developing countries. *PloS one*, *5*(6), e11190.

4. Alam, M., &Tyagi, R. P. (2009). A Study of Out of Pocket Household Expenditure on Drugs and Medical Services. *Delhi: Population Research Centre, Institute of Economic Growth*.

5. Ante natal care: WHO Report- O. Lincettowww.who.int/pmnch/media/publications/ aonsectionIII_2.pdf

6. Balaji, R., Dilip, T. R., &Duggal, R. (2003). Utilization and expenditure on delivery care services: some observations from Nashik district, Maharashtra. In *Reg Health Forum* (Vol. 7, pp. 34-41).

7. Bhatia, J. C. (1993). Levels and causes of maternal mortality in southern India.*Studies in family planning*, 310-318.

8. Bhatia, J. C., & Cleland, J. (2001). Health-care seeking and expenditure by young Indian mothers in the public and private sectors. *Health policy and Planning*, *16*(1), 55-61.

9. Bonu, S., Bhushan, I., Rani, M., & Anderson, I. (2009). Incidence and correlates of 'catastrophic'maternal health care expenditure in India. *Health policy and planning*, *24*(6), 445-456.

10. Borghi, J. O., Ensor, T., Somanathan, A., Lissner, C., Mills, A., & Lancet Maternal Survival Series steering group. (2006). Mobilising financial resources for maternal health. *The Lancet*, *368*(9545), 1457-1465.

11. Borghi, J., Storeng, K. T., &Filippi, V. (2000). Overview of the costs of obstetric care and the economic and social consequences for households.*Reducing financial barriers to obstetric care in low-income countries*, *24*.

12. Castro-Leal, F., Dayton, J., Demery, L., &Mehra, K. (2000). SECTION ON DEVELOPING HEALTH SYSTEMS-Public Spending on Health Care in Africa: Do the Poor Benefit?. *World Hospitals and Health Services*, *36*(2), 23-30.

13. Datta, P., Mukhopadhyay, I., &Selvaraj, S. (2013). Medical devices manufacturing industry in India: Market structure, import intensity, and regulatory mechanisms. ISID-PHFI Collaborative Research Programme Working Paper Series 02.

14. De Costa, A., &Diwan, V. (2007). 'Where is the public health sector?': Public and private sector healthcare provision in Madhya Pradesh, India. *Health Policy*, *84*(2), 269-276.

15. Dhar, R. S. G., Nagpal, J., Sinha, S., Bhargava, V. L., Sachdeva, A., &Bhartia, A. (2009). Direct cost of maternity-care services in South Delhi: a community survey. *Journal of Health, Population and Nutrition*, 368-378.

16. Duggal, R. (2004). The political economy of abortion in India: cost and expenditure patterns. *Reproductive health matters*, *12*(24), 130-137.

17. Duggal, R., Nandraj, S., &Vadair, A. (1995). Special Statistics on Health Expenditure Across States. *Economic and Political Weekly, Bombay*, *30*(15).

18. Filippi, V., Ronsmans, C., Campbell, O. M., Graham, W. J., Mills, A., Borghi, J., ...&Osrin, D. (2006). Maternal health in poor countries: the broader context and a call for action. *The Lancet*, *368*(9546), 1535-1541.

19. Garg, C. C., & Karan, A. K. (2009). Reducing out-of-pocket expenditures to reduce poverty: a disaggregated analysis at rural-urban and state level in India.*Health policy and planning*, *24*(2), 116-128.

20. Ghosh, S. (2010). Catastrophic payments and Impoverishment due to Out-of-Pocket health spending: The effects of recent health sector reforms in India.*Asia Health Policy Program Working Paper*, (15).

21. Goli, S., Rammohan, A., &Pradhan, J. (2016). High Spending on Maternity Care in India: What Are the Factors Explaining It?. *PloS one*, *11*(6), e0156437.

22. Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., ...&Mathers, C. D. (2011). Global burden of disease in young people aged 10–24 years: a systematic analysis. *The Lancet*, *377*(9783), 2093-2102.

23. Gouda, J., Gupta, A. K., &Yadav, A. K. (2015). Association of child health and household amenities in high focus states in India: a district-level analysis. *BMJ open*, *5*(5), e007589.

24. Govil, D., Purohit, N., & Gupta, S. D. (2013). An Assessment of Out of Pocket Expenditure on Child Bearing Process Post Janani SurakshaYojana: A Case from Rajasthan, India1. *Korea*, *26*, 31.

25. Krishna, A. (2006). Pathways out of and into poverty in 36 villages of Andhra Pradesh, India. *World development*, *34*(2), 271-288.

26. Kruk, M. E., Galea, S., Prescott, M., & Freedman, L. P. (2007). Health care financing and utilization of maternal health services in developing countries.*Health Policy and Planning*, *22*(5), 303-310.

27. Kumar, K., Singh, A., Kumar, S., Ram, F., Singh, A., Ram, U., ...&Kowal, P. R. (2015). Socio-economic differentials in impoverishment effects of out-of-pocket health expenditure in China and India: Evidence from WHO SAGE.*PloS one*, *10*(8), e0135051.

28. Ladusingh, L., &Pandey, A. (2013). Health expenditure and impoverishment in India. *Journal of Health Management*, *15*(1), 57-74.

29. Leive, A., &Xu, K. (2008). Coping with out-of-pocket health payments: empirical evidence from 15 African countries. *Bulletin of the World Health Organization*, *86*(11), 849-856C.

30. Leone, T., James, K. S., &Padmadas, S. S. (2013). The burden of maternal health care expenditure in India: multilevel analysis of national data. *Maternal and child health journal*, *17*(9), 1622-1630.

31. Li, Y., Wu, Q., Xu, L., Legge, D., Hao, Y., Gao, L., ...& Wan, G. (2012). Factors affecting catastrophic health expenditure and impoverishment from medical expenses in China: policy implications of universal health insurance.*Bulletin of the World Health Organization*, *90*(9), 664-671.

32. Mahapatro, M. (2015). Equity in utilization of health care services: Perspective of pregnant women in southern Odisha, India. *The Indian journal of medical research*, *142*(2), 183.

33. Mangiaterra, V., Pendse, R., McClure, K., & Rosen, J. M. P. S. Notes-World Health Organization. 2008; 1: 1-4. *Diponible en: http://www. who. int/making_pregnancy_safer/documents/mpsnnotes_2_lr. pdf.*

34. McCarthy, J., & Maine, D. (1992). A framework for analyzing the determinants of maternal mortality. *Studies in family planning*, *23*(1), 23-33.

35. McCord, C., Premkumar, R., Arole, S., &Arole, R. (2001). Efficient and effective emergency obstetric care in a rural Indian community where most deliveries are at home. *International Journal of Gynecology& Obstetrics*, *75*(3), 297-307.

36. Mistry, R., Galal, O., & Lu, M. (2009). Women's autonomy and pregnancy care in rural India: A contextual analysis. *Social science & medicine*, *69*(6), 926-933.

37. Mohanty, S. K., Chauhan, R. K., Mazumdar, S., &Srivastava, A. (2014). Out-of-pocket expenditure on health care among elderly and non-elderly households in India. *Social indicators research*, *115*(3), 1137-1157.

38. Mukherjee, S., Singh, A., & Chandra, R. (2013). Maternity or catastrophe: a study of household expenditure on maternal health care in India. *Health*, *5*(1), 109-118.

39. Nahar, N., Afroza, S., &Hossain, M. (1998). Incidence of low birth weight in three selected communities of Bangladesh. *Bangladesh Med Res Counc Bull*,*24*(2), 49-54.

40. Nanda, G., Switlick, K., &Lule, E. (2005). Accelerating progress towards achieving the MDG to improve maternal health: a collection of promising approaches. *HNP, World Bank. See http://siteresources. worldbank.*

org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-
1095698140167/NandaAcceleratingProgresswithCover. pdf.

41. Pantoja, A., Floyd, K., Unnikrishnan, K. P., Jitendra, R., Padma, M. R., Lal, S. S., ...& Wares, F. (2009). Economic evaluation of public-private mix for tuberculosis care and control, India. Part I. Socio-economic profile and costs among tuberculosis patients. *The International Journal of Tuberculosis and Lung Disease*, *13*(6), 698-704.

42. Pathak, P. K., Singh, A., & Subramanian, S. V. (2010). Economic inequalities in maternal health care: prenatal care and skilled birth attendance in India, 1992–2006. *PloS one*, *5*(10), e13593.

43. Patil, S. S., Berad, A. S., &Angadi, M. M. (2009). A study to assess catastrophic household expenditure on childhood illness in an urban slum in Bijapur. *Indian Journal of Community Medicine*, *34*(4), 335.

44. Peters, D. H. (Ed.). (2002). *Better health systems for India's poor: findings, analysis, and options*. World Bank Publications.

45. Post natal care- WHO Report : Charlotte Warren, Pat Daly, LallaToure, PyandeMonge

46. poverty: a disaggregated analysis at rural-urban and state level in India.*Health policy and planning*, *24*(2), 116-128.

47. Prinja, S., Bahuguna, P., Gupta, R., Sharma, A., Rana, S. K., & Kumar, R. (2015). Coverage and Financial Risk Protection for Institutional Delivery: How Universal Is Provision of Maternal Health Care in India?. *PloS one*, *10*(9), e0137315.

48. Qadeer, I. (2013). Universal health care in India: Panacea for whom?. *Indian journal of public health*, *57*(4), 225.

49. Raban, M. Z., Dandona, R., &Dandona, L. (2013). Variations in catastrophic health expenditure estimates from household surveys in India. *Bulletin of the World Health Organization*, *91*(10), 726-735.

50. RamaRao, S., Caleb, L., Khan, M. E., & Townsend, J. W. (2001). Safer maternal health in rural Uttar Pradesh: do primary health services contribute?.*Health policy and planning*, *16*(3), 256-263.

51. Rannan-Eliya, R. P., Kasthuri, G., &Alwis, S. D. (2012). *Impact of maternal and child health private expenditure on poverty and inequity: maternal and child health expenditure in Bangladesh*. Technical Report C. Mandaluyong City.

52. Ronsmans, C., Graham, W. J., & Lancet Maternal Survival Series steering group. (2006). Maternal mortality: who, when, where, and why. *The Lancet*,*368*(9542), 1189-1200.

53. Roy, K., & Howard, D. H. (2007). Equity in out-of-pocket payments for hospital care: evidence from India. *Health policy*, *80*(2), 297-307.

54. Say, L., &Raine, R. (2007). A systematic review of inequalities in the use of maternal health care in developing countries: examining the scale of the problem and the importance of context. *Bulletin of the World Health Organization*, *85*(10), 812-819.

55. Sen, A. (1999). Principles and Basic Concepts of Equity and Health.

56. Sharma, S., Smith, S., Pine, M., & Winfrey, W. (2005). Formal and Informal Reproductive Healthcare User Fees in Uttaranchal, India. *Washington, DC: Constella Futures, POLICY Project*.

57. Singh, A., Kumar, A., &Pranjali, P. (2014). Utilization of maternal healthcare among adolescent mothers in urban India: evidence from DLHS-3. *PeerJ*, *2*, e592.

58. Singh, A., Pallikadavath, S., Ram, F., &Ogollah, R. (2012). Inequalities in advice provided by public health workers to women during antenatal sessions in rural India. *PLoS One*, *7*(9), e44931.

59. Skordis-Worrall, J., Pace, N., Bapat, U., Das, S., More, N. S., Joshi, W., ...&Osrin, D. (2011). Maternal and neonatal health expenditure in Mumbai slums (India): a cross sectional study. *BMC public health*, *11*(1), 1.

60. Vidler, M., Ramadurg, U., Charantimath, U., Katageri, G., Karadiguddi, C., Sawchuck, D., ...&Derman, R. (2016). Utilization of maternal health care services and their determinants in Karnataka State, India. *Reproductive Health*,*13*(1), 55.

61. Vora, K. S., Mavalankar, D. V., Ramani, K. V., Upadhyaya, M., Sharma, B., Iyengar, S., ... &Iyengar, K. (2009). Maternal health situation in India: a case study. *Journal of Health, Population and Nutrition*, 184-201.

62. Wagstaff, A. (2002). Poverty and health sector inequalities. *Bulletin of the world health organization*, *80*(2), 97-105.

63. Wagstaff, A., &Claeson, M. (2004). The Millennium Development Goals for Health, Rising to the Challenges: The World Bank. *Washington DC*.

64. Wagstaff, A., &Doorslaer, E. V. (2003). Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998. *Health economics*, *12*(11), 921-933.

65. WHO, U. (2007). UNFPA, World Bank. Maternal mortality in 2005: estimates developed by WHO, UNICEF.

66. World Health Organization. (2005). Improving maternal, newborn and child health in the South-East Asia region. *New Delhi: WHO Regional office for the South-East Asia*.

67. World Health Organization. (2010). WHO technical consultation on postpartum and postnatal care.

    www.who.int/pmnch/media/publications/aonsectionIII_4.pdf

68. Xu, K., Evans, D. B., Kawabata, K., Zeramdini, R., Klavus, J., & Murray, C. J. (2003). Household catastrophic health expenditure: a multicountryanalysis.*The lancet*, *362*(9378), 111-117.

69. Yadav, A. K., Gouda, J., & Ram, F. (2016). SELF-REPORTED MORBIDITY AND BURDEN OF DISEASE IN UTTAR PRADESH, INDIA: EVIDENCE FROM A NATIONAL SAMPLE SURVEY AND THE MILLION DEATHS STUDY.*Journal of biosocial science*, *48*(04), 472-485.

Table a. Demographic and health indicators in EAG states of India

States	MMR SRS (2010-12)	TFR SRS 2011	Census Female Population 2011			Census Sex Ratio 2011	IMR SRS 2011	CBR SRS 2011	CDR SRS 2011
			Age-Group	RURAL	URBAN				
Uttarkhand		NA	15-49	1817811	826203	963	36	19	6
Rajasthan	255	3.0	15-49	12311856	4562955	928	52	26	7
Uttar Pradesh	292**	3.4	15-49	36005743	11595830	912	57	28	8
Bihar	219*	3.6	15-49	20176831	2865955	918	44	28	7
Jharkhand		NA	15-49	5873819	2101978	948	39	25	7
Odisha	235	2.2	15-49	9171548	2003394	979	57	20	9
Chhattisgarh		NA	15-49	5035575	1675732	991	48	25	8
Madhya Pradesh	230***	3.1	15-49	12647138	5429462	931	59	27	8

*Bihar/Jharkhand

**Uttar Pradesh/Uttarakhand

***Madhya Pradesh/Chhattisgarh

NA: Not Available