MORBIDITY DURING ANTE, INTRA, AND POST PARTUM PERIOD AMONG CURRENTLY MARRIED WOMEN IN INDIA: A STUDY BASED ON RCH-DLHS-3 (2007-08)

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ANITA BHARGAVA

CENTRE FOR THE STUDY OF REGIONAL DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES
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जवाहरलाल नेहरू विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
Centre for the Study of Regional Development
School of Social Sciences
New Delhi-110067

Date: 25th JULY 2011

DECLARATION

I, *Anita Bhargava*, hereby declare that the dissertation entitled "**MORBIDITY DURING ANTE, INTRA AND POST PARTUM PERIOD AMONG CURRENTLY MARRIED WOMEN IN INDIA: A STUDY BASED ON RCH-DLHS-3 (2007-08)**" submitted for the award of the degree of **MASTER OF PHILOSOPHY** is my bonafide work and has not been submitted so far in part or in full, for any degree or diploma of this or any other university.

(ANITA BHARGAVA)

CERTIFICATE

It is hereby recommended that the dissertation may be placed before the examiners for evaluation.

Dr. Anuradha Banerjee
(Supervisor)

DR. ANURADHA BANERJEE
Associate Professor
Centre for the Study of Regional Devt.
School of Social Sciences
Jawaharlal Nehru University
New Delhi-110 067, India

Prof. Ravi S. Srivastava
(Chairperson)

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

Tel. : 6107676, 6167557 Ext. 2466, 2463 Gram : JAYENU Fax : 91-011-6165886, 6198234

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ACRONYMS

ANC: Antenatal Care

ANM: Auxiliary Nurse Midwife

ASHA: Accredited Social Health Activist

AWW: Anganwadi Worker

AYUSH: Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy.

CHC: Community Health Centre

DLHS: District Level Household and Facility Survey

EAG: Empowered Action Group

FHW: Female Health Worker

IEC: Information, Education and Communication

IFC: Individual, Family and Community

IIPS: International Institute for Population Sciences

IMR: Infant Mortality Rate

JSY: Janani Suraksha Yojana

LMO: Lady Medical Officer

MDG: Millennium Development Goal

MMR: Maternal Mortality Ratio

MoHFW: Ministry of Health and Family Welfare

NFHS: National Family Health Survey

NIHFW: National Institute for Health and Family Welfare

NIPI: Norway India Partnership Initiative

NPP: National Population Policy

NRHM: National Rural Health Mission

NSS: National Sample Survey

PHC: Primary Health Centre

PNC: Postnatal Care

RCH: Reproductive and Child Health

SC/ST: Scheduled Caste/ Scheduled Tribe

SPSS: Statistical Package for Social Sciences

TBAs: Traditional Birth Attendants

T.V: Television

UHP: Urban Health Post

WHO: World Health Organization

CHAPTER ONE

INTRODUCTION

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1.1 Introduction

Reproductive health has been defined by the World Health Organization as a "state of complete physical, mental, and social well being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes (UN, 1994)." Since the inception of the Cairo Conference in 1994, reproductive health has become a thrust area across the globe. Maternal health has stemmed out as the prime focus under the canopy of reproductive health. Under the influence of issues discussed in the conference, Government of India initiated numerous programmes and policies. The goal of improving reproductive health while considering maternal health an important feature, has further received copious momentum from the UN summit on Millennium Development Goals (MDGs) in the year 2000. The summit had set the goal to improve maternal health by reducing maternal mortality ratio and universal access to reproductive health. Both the targets were set to be achieved by the year 2015. The data highlighted in the summit of 2010 has shown that albeit the child mortality has been reduced significantly the targets of reducing maternal mortality could not be achieved in the fixed period. The Maternal Mortality Ratio of developing countries has remained more or less same and significant decline has been noticed. In contrary to the impetus programmes, level of maternal mortality has changed slightly, with almost 600,000 women still dying per year globally, 90 percent are from the developing world (**Hill AbouZahr and Wardlaw 2001**). Therefore, in the MDGs summit, (September 2010), UN Secretary General introduced 'Global Strategies for Women's and Children's Health' which has set target to "save lives of more than 16 million women and children, prevent 33 million unwanted pregnancies ....and ensuring access for women and children to quality facilities and skilled health workers".

Maternal morbidity is a crucial indicator of social well being as it often results in maternal deaths. Over the last decade, identification of severe maternal morbidity has emerged as a compliment or alternative to investigation of maternal deaths. In addition, it

also elicits the definition of antenatal and delivery care by skilled attendants or providers in the country. The states and the districts are at different stages in the demographic transition, and thus vary with respect to birth spacing intervals and age-specific fertility rates. Severe maternal morbidity may be a better indicator of the poor status of quality and effectiveness of obstetric care than mortality alone.

Although reductions in maternal mortality remains the ultimate goal of maternal health programmes, the difficulties in obtaining reliable and precise estimates of maternal mortality have precluded the use of mortality indicators as a measure of the effectiveness of such programmes (**Graham *et.al.*, 1996**). **Koenig et.al (1998)** rightly commented over the reliability of the responses collected during a survey, that 'interview-survey approach' is under attack because of poor correspondence between self-reported symptoms and bio-medical evidence of infection or abnormality.

Focus on maternal health had remained one of the major goals in all the health related programme nationally and globally. The summit held in 2000 to set Millennium Development Goals had focused to improve maternal health by reducing maternal mortality ratio by three quarters between 1990 and 2015. To focus on maternal health, various programmes have been introduced to improve the same. Although the maternal mortality ratio is declining, the vast variation in utilisation of maternal health services among the states inhibits the goal to be achieved. Largely, the maternal mortality ratio is very high in the weaker central and northeast regions of India as compared to south and north India. Maternal deaths in India are largely due to intangible factors like overall health status, reproductive health, access, and extent of utilisation of health services. In addition, there are no reliable estimates on maternal mortality in India.

1.2 Statement of the Problem

According to global estimates reported by the World Health Organization (2004), of the 210 million women who become pregnant each year, about 8 million are estimated to suffer life-threatening complications of pregnancy with many experiencing long-term morbidities and disabilities (**Shah and Patel 2008**).

The data based on SRS indicates that the major causes of maternal mortality continued to be unsafe abortion practices, ante and post-partum haemorrhage, anaemia,

obstructed labour, hypertensive disorders and post partum sepsis. Furthermore, it also learnt that there has been no major change in the causes of maternal mortality over the years. The Ninth Five Years plan envisaged universal screening of all pregnant women, identification of women with health problems, problems during pregnancy and appropriate management including referral to be envisaged where appropriate care is available. This, however, has not been operationalized.

The NFHS reports indicated institutional delivery is very low in the country and is particularly very low in the rural parts. RCH reports revealed that, though there are provisions of emergency transportation, supply of emergency obstetric care equipments, IFA tablets, provision of hiring private gynecologists by public health care services, there is a poor utilisation of maternal health care services across the states significantly in the northeast and central parts of India.

The 52nd NSS report (1995-96) had brought copious information on maternal and child health care. The registration for pre-natal care was only 45.5 percent and their average attendance was 4.4 percent. "Among them 66.6 percent had sought prenatal care as a routine, 29.9 had sought it on the advice of ANM and 6.8 percent because of illness." Registration was observed in case of merely 41 percent in rural areas as against 65 percent in urban areas. Childbirth mostly takes place at home. Moreover, hospital is a term used as a general sense of any place or health institution where delivery could be done and that which provides delivery facilities, which could either be a hospital in true sense or primary health centre, nursing home or a maternity home. More than 70.6 percent children are born at home in India. In urban areas, childbirths in hospitals are more common accounting for 59.4 percent of all births. Births at homes are only 37.8 per cent of the total. In rural areas, 77.9 percent of childbirths take place at home and only 17.9 percent of the births in hospitals. The postnatal care registration, furthermore, reveals that only 29 percent of the total rural mothers have registered for the same against 40 percent in urban areas. This report confirms that maternal health has remained an issue of concern but ironically remained neglected for more than a decade. The Ministry of Health and Family Welfare (MoHFW) has cited the causes of maternal mortality in India:

Table 1.1: Causes of Maternal Mortality

Causes	1997 (Percent)	1998 (Percent)
Haemorrhage	27.6	29.6
Puerperal complications	13.0	16.1
Obstetric Labour	10.7	9.5
Abortions	7.3	8.9
Toxemia of pregnancy	6.6	8.3
Anaemia	17.3	19.0
Others	17.5	8.4

Source: **India Country Report (2005), pp-57**

1.3 Definition and Concept of Reproductive Morbidity

Gynecology is derived from the Greek words *gynae* meaning woman and *logos* meaning discourse, which pertains to the diseases of women, and is generally used for diseases related to female genital organs. An understanding of the concept of reproductive morbidity is essential in order to overcome the misunderstanding of the terminologies of maternal morbidity and reproductive morbidity. Reproductive morbidity has largely remained a crucial issue of maternal health. The World Health Organization (1992) has defined reproductive morbidity as consisting of three types of morbidity: **obstetric, gynecologic, and contraceptive**[1]. (Obstetric morbidity is the equivalent of maternal morbidity).

*1. **Obstetric morbidity***— Maternal morbidity is usually defined as morbidities that occur during pregnancy or childbirth or within 42 days of childbirth. It is a kind of morbid conditions in a woman who has been pregnant (regardless of the site or duration of the pregnancy) from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes.

1. ***Direct obstetric morbidity*** results from obstetric complications of the pregnancy state (pregnancy, labour, and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above. This can include temporary conditions, mild or severe, which occur during pregnancy or within 42 days of

delivery, or permanent/chronic conditions resulting from pregnancy, abortion, or childbirth. Some chronic conditions (such as anaemia or hypertension) may be caused by pregnancy and delivery, but are equally likely to have other causes.

2. ***Indirect obstetric morbidity*** results from a previously existing condition or disease, such as sickle cell disease or tuberculosis, which was aggravated by the physiological effects of pregnancy. Such morbidity may occur at any time and continue beyond the reproductive years.

3. ***Psychological obstetric morbidity*** may include puerperal psychosis, attempted suicide, strong fear of pregnancy and childbirth, and may be the consequence of obstetric complications, obstetric interventions, cultural practices (such as isolation during labour and delivery), or coercion.

2. Gynecologic morbidity—includes any condition, disease, or dysfunction of the reproductive system, which is not related to pregnancy, abortion, or childbirth, but may be related to sexual behaviour.

1. ***Direct gynecologic morbidity*** includes reproductive cancers, premenstrual syndrome (PMS), endocrine system disorders, bacterial or viral sexually transmitted diseases (STDs) and their sequel (cervical cancer, pelvic inflammatory disease [PID], secondary sterility, AIDS), Reproductive Tract Infections (RTIs), and coital injuries.

2. ***Indirect gynecologic morbidity*** includes primarily traditional practices, some of which are for treatment of real or perceived gynecologic conditions (such as female genital mutilation, gishiri cuts).

3.***Psychological morbidity*** includes psychological disorders associated with STDs, infertility, traditional practices, dyspareunia, fistulae, and rape.

3 Contraceptive morbidity—includes conditions which result from efforts (other than abortion) to limit fertility, whether they are traditional or modern methods. Examples include menorrhagia from IUD use, thromboses from oral contraceptive use, and wound infections after Norplant insertion.

1.4 Review of Literature: This section provides a literature review of several sub themes from multiple sources.

1.4.1(a) Maternal Health

Distinctly, India is an extensive country where countless differences in entire pregnancy period are prominent. Maternal health has been enveloped with the widest range of practices that have direct or indirect impact on maternal as well as child health. It has been tussled between traditional and modern medical care throughout the world. Most of the obscure practices blended with conventional methods are mostly evident during pregnancy and in the post-partum period. The Maternal and Child Health programmes proclaim to ensure adequate antenatal care, safe delivery and postnatal care and to address the high risks among women enveloped with various factors during child bearing. Aspects such as pregnancy, delivery, antenatal and, postnatal care, nutrition, birth spacing and interval, as well as women's autonomy often determine maternal health in a country.

Hitherto, it is acclaimed that childbirth is confined to home and the use of antenatal care is far less than the satisfactory level. Women prefer to deliver at home for the use of traditional medicines and abdominal massage. There is a clear difference in care between adolescent and older women (**Reynolds et.al, 2006**). Hence, it is important to understand the antenatal care provided to the pregnant women. **Hart et.al (1990)** had explained about this concept in his study. Antenatal care is also provided against risk factors screened during pregnancy:-

(a) Those associated with the women's medical obstetrical and social history or circumstances,

(b) Those arising during the antenatal period.

Antenatal care is a kind of an umbrella under which all medical procedures and care are carried out that is needed during pregnancy. Despite the acceptance of the importance of antenatal care, women often utilise this only at the time of actual need. Apart from the poor facilities provided by the government and restraints imposed by the family, detest and distrust for care providers dissuade women to seek treatment. They further support the choice because they are reluctant to entrust the disposal of their placenta and products of conception to strangers like nurses (**Kyomuhendo, 2003**). Women have a wide range of intricate perceptions towards the utilisation of maternal health services. Commonly, women disrespect hospitalisation of those who suffer from

difficulties in pregnancy and sometimes require an episiotomy / caesarean section, though the circumstances often get beyond their control. "Women express cynicism about the efficacy and nature of maternal health services at local facilities. Giving birth at a health facility is viewed as an anticlimax, which is compared negatively with traditional options."

1.4.1(b) Urban-Rural Differentials in Maternal and Child Health (MCH) Programme

The urban-rural differences in seeking facilities from MCH programme introduced by the government are very complex. The study done by **Nagdeva (2009)** based on NFHS data revealed that there is an initial increase in antenatal visits outside the home both in urban and rural areas, but significant increase is in rural areas. The most prominent fact is that the utilisation of such facilities is found significantly low in urban women as compared to rural. The underlying reason for such a low utilisation is that the urban women have wide range of facilities and hence opt for the best and that what is affordable to her and in most cases being the private practitioners. They tend to visit general hospitals and maternity centres as compared to seeking facilities from government health workers (**Nagdeva, 2009**). In rural areas, women attend health care centres more, although the proportion is less, as it is not possible for the Auxiliary Nurse Midwives (ANMs) to provide antenatal care to all the women at home in 8-10 villages under their care.

1.4.1(c) Social, Cultural, and Economic Dimensions

Family plays a very important role in decision making related to the above-mentioned determinants. Among the family members, the mother-in-law has been observed a key role player who decides the contraception to be used and other personnel decisions, which otherwise, should be taken by the daughter-in-law. In addition, all the members of family usually subordinate women who have to leave her parental home and live in her husband's home. However, they are not the primary decision makers when it comes to seeking health care (**Bandhopadhyay and MacPherson, 1998; Prakash, Swain and Negi , 1994; Santow, 1995**).

Reynolds (2006) postulated that a high level of early childbearing is a common phenomenon in the developing countries and pregnancy and childbirth are the leading causes of death among women aged 15-19 years. In addition to early child bearing, the birth interval is also less that degrades the health of the mother. Radically, there is less literature on birth interval and maternal mortality that could bring out the relation of detrimental latent morbidity due to less birth interval and maternal mortality. **Winikoff (1983)** believe that the clearest and most well known mortality risks for mothers are the obstetrical risks of extremely high parity births and these births are known to be more subject to complications of pregnancy, labour, and delivery.

1.4.1(d) Women's status and Autonomy

Women's status and autonomy are abstract concepts in India as these differ from place to place and from one setting to another. **Bloom et.al (2001)** has tried to explain the women's status and autonomy in a broader sense. Womens' "status" refers to both the respect accorded to individuals and the personnel power available to them (**Mason, 1993**). While women value prestige, it is the level of personnel autonomy that appears to influence demographic behaviour and the resulting outcomes (**Basu, 1992; Jeejeebhoy, 1991**). On contrary, autonomy is defined as the capacity to manipulate one's personnel environment through control over resources and information, in order to make decisions about one's own concerns or about close family members (**Basu 1992; Dyson and Moore, 1983; Miles-Done and Bisharat, 1990**). Hence, autonomy is women's ability to determine events in their lives, even though men and other women may be opposed to their wishes (**Mason, 1984; Safilios-Rothschild, 1982**). "The health status of both women and children particularly female children suffers in relation to that of males in areas where patriarchal kinship and economic systems limit women's autonomy (**Caldwell, 1986**)."

In our country, differences are lucidly visible between women from North and South India in terms of women's autonomy, as it is observed that women from the South enjoy more autonomy than their counterparts in the north. Despite of such variations, much less research has focused on the relationship between women's status and the use of health services, a proximate determinant of maternal and child mortality (**McCarthy**

and Maine, 1992; Mosley and Chen, 1984). The reproductive health of women was found positively correlated with the freedom of movement and decision making power enjoyed by the women in the South (Tamil Nadu) as compared to North (Uttar Pradesh) (**Bhatia and Cleland 1995b**). Another interesting observation is the difference between the freedom of movement and decision-making power of young and old women. Although, the maternal services are required more at younger ages of reproduction, often older women of the family usually dominate the young during such decision making.

1.4.1(e) Misconceptions and Practices

A large contribution had been given by **Shah and Patel (2008)** in examining the misconceptions and common practices. It was observed that bleeding and foul discharge are thought to be as beneficial as women perceived that this cleansed them. Treatment seeking behaviour shows that women seek treatment only if they suffer with high grade fever and breakdown of stitches. The study by **Goyal and Bhandari (2008)** reveals that in many cases even the experiences of excessive bleeding and foul discharge are also ignored by women. Such studies are an important source of understanding the practices and experiences during pregnancy, childbirth, and the postpartum period among different sections of the society. The report on "maternal morbidity in India" (**Shah and Patel, 2008**) also reveals that 33 percent of Indian women suffers from one or other form of health problems or complications specifically convulsions and edema or vaginal bleeding. Women who have registered their pregnancy with the ANM had a reduced risk of experiencing complications such as convulsions and edema or vaginal bleeding. In addition, women are reported to be safe in the post partum period that have undergone maximum number of antenatal checkups. On the other hand, those who have lost the antenatal contact after the first trimester or those who lacked the follow up of antenatal checkup are found "being at risk" with respect to such complications. A relatively high proportion of Muslim women are found to experience postnatal health problems like massive vaginal bleeding and very high fever. The report also confirms the importance of hygienic conditions provided and adopted by the women during pregnancy and during childbirth as this reduces the risk of several health problems significantly.

Rama's (2004) study in rural Andhra Pradesh had brought appreciable explanation of the perception of the women regarding morbidity in ante partum, intra partum and post partum period. Interestingly, the decision to seek treatment or medical intervention entirely depends on the perception of the woman. If she is able to detect the problem and understand its consequences, it motivates her to seek treatment. "Perception by specific morbidity reveals that all those women who have suffered from life threatening morbidities considered their problem serious and all of them have sought treatment". However, a proportion of women perceived that treatment seeking may harm them or their fetus and hence avoided it. This study also acclaims that the life threatening morbidities largely occur during intra-partum period as compared to other stages and morbidities during this period might carry on to the post partum period that could worsen the condition of the mother.

1.4.2 Maternal Morbidity

Less research work is available on self-reported symptoms of morbidity and measured morbidity. It is important to explain the difference between self-reported symptoms of morbidity and actual morbidity. The researches which are carried out largely, collect the information made on memory recall by the respondents. Such community-based surveys eliciting self-perceived reproductive health problems do not necessarily provide an accurate estimate of the true prevalence of gynecological morbidity (**Gulati et.al, 2009**). Data on measured morbidity is collected from health centres where women undergo medical examination. Such data ensures the accuracy of the maternal morbidity.

Obstetric causes account for the largest share of maternal morbidity in developing as well as developed countries all over the world. Bad obstetric history has a relative risk of producing an obstructed labour during the delivery (**McDonagh, 1996**). Studies on maternal morbidity have been conducted all over the world with much emphasis on developed countries. The studies on developing countries suffer from accuracy of data as well as the rigidity and complexity concerned with the issue.

Often the complications and morbid conditions in the succeeding weeks after pregnancy are considered as "normal phenomenon" and hence do not seek treatment. A variety of reasons have been reported including acceptance of symptoms as normal,

quoted as "it happens to all women sometimes" and "it just happens" and financial constraints, fear and lack of time and escort to go a health facility (**Santhya, 2004**), which is further, complemented with customary rituals and cleanliness of the woman (**Bhatia and Cleland, 1995b**). With such conventional practices, the data collection on maternal morbidity is a difficult task until the morbidity gets severe and eventually gets diagnosed by a doctor.

However, the review of the literature has been done based on various aspects related to maternal morbidity i.e. severity of the problem, interrelation with gynecological morbidity, socio-economic conditions associated with maternal morbidity, misconceptions and practices related to maternal morbidity and perceptions explaining maternal morbidity.

1.4.2(a) Severity of Maternal Morbidity

A cross sectional study done in Brazil by **Souza JP *et al* (2007)** states that the severity of maternal morbidity can be fatal also. The cases are considered a near miss where women present potential complications during pregnancy, delivery, during the puerperium, and who survive merely by chance, or by good hospital care. "Near miss cases occur more often than maternal deaths and may generate more information because the women herself can be a source of data. Once severe maternal morbidity precedes maternal death, the systematic identification and the study of near miss cases may provide further understanding of the determinants of maternal mortality" (**Stones, 1991 and Pattison, 2003**). The study revealed that severe morbidity ratio varied between 15 cases/1000 deliveries in hospitals from where that data was collected. During severe morbid conditions, the women were admitted to ICU among which many are supported with intensive clinical support while others were admitted for monitoring and surveillance. A fair share of women had at least one significant morbid antecedence and the most frequent cause of morbidity was preeclampsia. A hypertensive syndrome was the primary determinant factor of near miss.

1.4.2(b) PHYSIOLOGY OF UTERUS

During the three periods, especially during intra and post partum, uterus, vagina or birth canal and cervix os are observed to be important reproductive organs. Infections

or any kind of harm to the organs results into deteriorated health of the mother in a long run if the problems remain undiagnosed. The uterine rupture, the incision made on vagina, breech presentation etc. leave permanent effect on the organs. **Mousa (2007)** has lucidly explained the physiology of the uterus in a review titled "treatment of primary postpartum hemorrhage." The uterus is composed of a unique interlacing network of muscle fibers known as 'myometrium'. The blood vessels that supply the placental bed pass through this latticework of uterine muscle (**Baskett, 2000**). Myometrial contraction is the main driving force for both placental separation and haemostasis through constriction of these blood vessels. This blood-saving mechanism is known as the 'physiological sutures' or 'living ligatures' (**Baskett, 2000**). The active management of the third stage of labour enhances the physiological process and is shown to be associated with a two-fold reduction in the risk of PPH and less need for blood transfusion (**Prendiville, 2002**). Furthermore, the physiological increase in the clotting factors during labour helps to control blood loss after separation of the placenta. A blood loss up to 500 ml at delivery is regarded as 'physiologically normal'. It is part of the normal mechanism that bring the mother's blood parameters to their normal non-pregnant levels, and a healthy pregnant woman can cope with it without any difficulty (**Gyte, 1992; Ripley, 1999**).

1.4.2(c) Medical facet of Morbidity

A study done by **Guise (2005)** revealed that uterine rupture has remained one of the major causes of maternal death cases. The recent review of uterine rupture limited to women with previous section in developed countries reported increased risk of uterine rupture and perinatal death for women undertaking trial of labour compared to elective caesarean section. **Cox (1963)** has made a similar observation where he established the fact that uterine rupture had remained the major factor of perinatal mortality cases among Black African women.

Of the septic causes, more than 85 percent of the women in **Langdale's study (1933)** are due to streptococcus haemolyticus, which is found in the genital tract of many women who do not become septic, and 50 percent of septic causes occur in spontaneous labour. In order to estimate the severity, a study was done in West Africa by **Prual *et al***

(2000) who stated "direct obstetric complications mainly involve hemorrhage, dystocia, hypertension, sepsis, or abortion among women." According to the author, severe hemorrhage included prepartum, peripartum and postpartum hemorrhage leading to blood transfusion or hospitalisation for more than four days (normal deliveries are never hospitalized more than three days in these settings) or to hysterectomy, caesarean section or death. Severe hypertensive disorders of pregnancy included eclampsia, severe pre-eclampsia (clinical diagnoses) and hypertension (diastolic blood pressure $\geq$ 90 mmHg) leading to hospitalisation or death. Sepsis included septicemia, peritonitis, odorous vaginal discharge leading to hospitalisation in the interest of the mother's safety, or to hysterectomy or death. Severe dystocia included obstructed labour or prolonged labour requiring either instrumental fetal extraction or caesarean section, and uterine rupture and other complications of prolonged labour such as laceration of the perineum, pelvic fistulae, or death. Caesarean sections performed for other purposes, such as fetal distress or scarred uterus, are also noticed as major complications as they were the significant risks for mothers in West Africa. Other complications that required caesarean sections, hysterectomies, and/or blood transfusion are classified as other direct obstetric causes.

A major cause of uterine rupture is obstructed labour among women who have a high incidence of contracted pelvis. "Juveniles in a population are found to be at high risk of obstetric complications" (**Fisk, 1989**). Other risk factors for uterine rupture include multiparity and particularly grand multiparity (**Neilson, 2003**), the use of uterotonic drugs to induce or augment labour, placenta percreta (**Topuz, 2004**) and rarely intrauterine manipulations such as internal podalic version and breech extraction. The study done by **Rajaram (1995)** acclaimed that in less and least developed countries, uterine rupture is an important cause of maternal mortality, accounting for about 9.3 percent of maternal deaths.

A study was carried out among women who are admitted to a hospital in Delhi by **Chhabra (2008)** who observed that the prime causes of obstetric morbidity are eclampsia, pre eclampsia, post partum hemorrhage, sepsis, obstructed labour, and uterine rupture. She has made an important observation that the proportion of post delivery or post abortion cases was higher in cases of sepsis as compared to other cases where the majority of admissions are antenatal. Morbidity also instigated by cases where the

women have to travel long distances and come from rural parts and usually have undergone unsafe delivery. Traditionally, primary postpartum hemorrhage is defined as bleeding from the genital tract of 500 ml or more in the first 24 hours following the delivery of the baby (**Cunningham, 1993**). Under estimation of blood loss following a delivery is a common problem. The record available in developing countries that too in rural areas is minimal. At times, the diagnosis is done subjectively and in many cases remains undetected (**Pritchard, 1962**).

In addition to obstetric complications, which augment maternal morbidity, gynecological morbidity also, gives impetus to the same. Untreated gynecological conditions such as reproductive tract infections (RTI's) can cause pregnancy related complications, congenital infections, infertility, and chronic pain. Such infections also significantly increase the risk of acquiring pelvic inflammation disease (PID) and the likelihood of infection of HIV (**Faúndes, 1994; Natraj, 1994; Population Council, 1999**). History of pelvic inflammatory disease or puerperal sepsis may be associated with menstrual disturbances, lower abdomen pain, congestive dysmenorrheal and infertility. **Bang and Bang (1994)** state that women generally do not like to talk about a white vaginal discharge openly because of an associated sense of guilt and shame and fear of marriage disharmony. **Rani and Bonu (2003)** state that poor use of lower-level health facilities is not unique to curative care for gynecological symptoms but applies as well to the use of maternal health services (antenatal and delivery care).

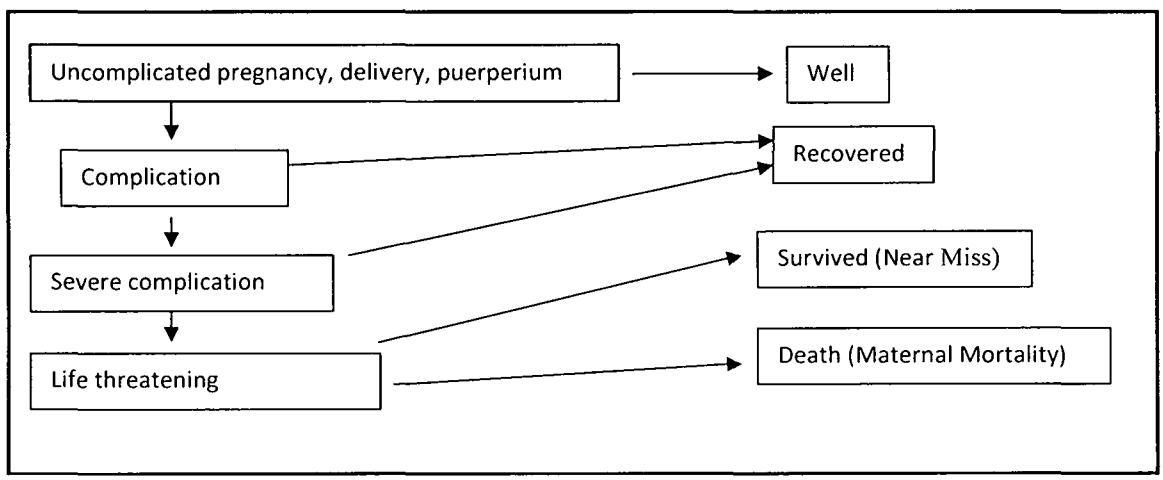
A study was done in a village of north India to establish the relationship between socio-economic status of the women and symptoms of maternal morbidity revealed that there was greater morbidity among women of lower socioeconomic status, parity greater than 4, birth interval greater than 36 months, having breech or caesarean delivery or a delivery assisted by relatives/neighbours. In addition, the authors have also found that the women are more at risk of morbidity when they are devoid of major five cleans i.e. clean hands, clean surfaces, clean cuts, clean cord and clean ties. Among the women, 75 percent are admitted as cases of morbidity such as weakness, lower abdominal pain, perineal pain, abnormal vaginal discharge, high fever, breast problems, and excessive vaginal bleeding. Maternal Anaemia is another important cause of morbidity with serious health implications on pregnant and lactating women and this reflects on infants as well

which leads to reduced productivity of adults and mental and cognitive impairments in children (**Helen Keller Worldwide, 2002**). Pregnant and lactating women suffer additional consequences; anaemia increases the risk of maternal deaths due to cardiac failure from postpartum hemorrhage (**Helen Keller Worldwide, 2002; Stoltzfus, 2003**).

1.5 Conceptual Framework

Pregnancy and childbirth are important and auspicious events of a woman's life. Childbirth is considered to be a mark shift of status from woman to mother. The entire period from conception until the period after childbirth is broadly categorised as- **ante partum** (the period include conception and gestation), **intra partum** (includes the delivery period until the childbirth takes place) and **post partum** (after childbirth and commonly estimated till two months). Despite all medical advancements, pregnancy outcome remains a challenging task for the pregnant woman as well as for the medical personnel. The intra partum is the most critical period of the entire cycle as the outcome is unpredicted and health conditions of the woman are uncertain. An understanding of pregnancy outcome is given in the following:

Fig 1.1: Cycle of pregnancy outcome



Source: Meile Minkauskine[2]

After understanding the above presentation, it is now necessary to design a framework to understand the information given by the Reproductive and Child Health (RCH) Survey. As mentioned in succeeding, the data survey wide range of information on maternal and child health. Therefore, it is appropriate to sketch a framework under

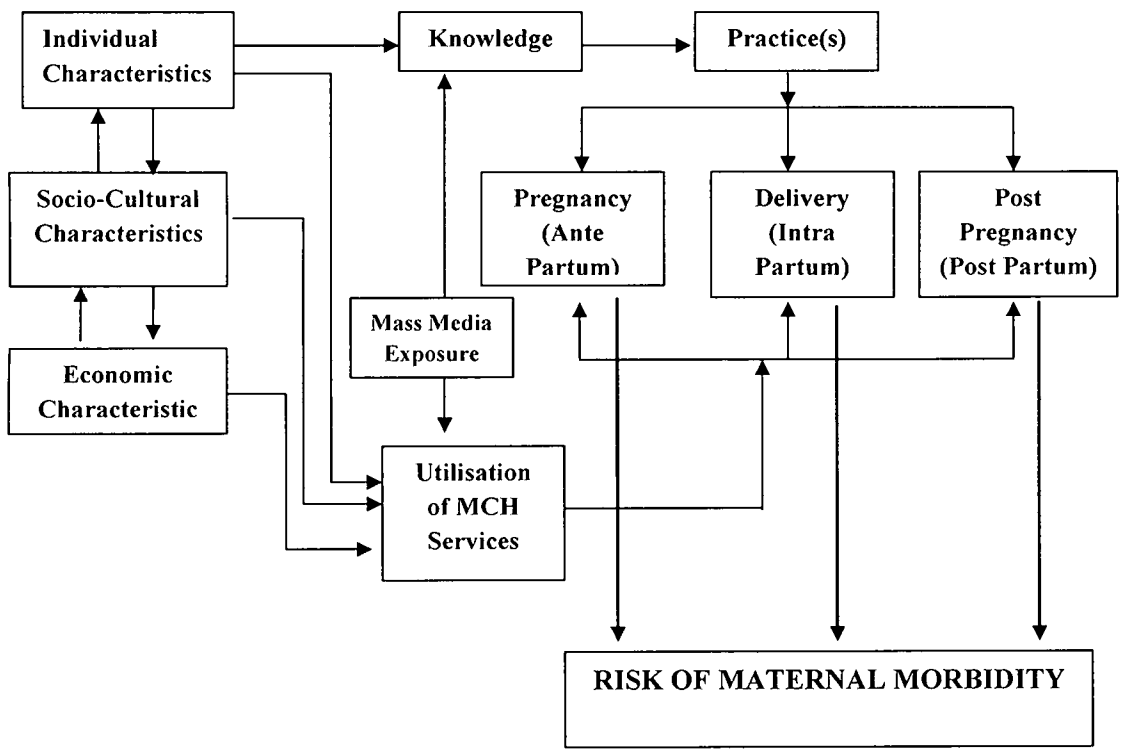
which the data can be utilised or to be more precise to understand the inexplicable issue of obstetric morbidity under the canopy of reproductive morbidity of woman. The conceptual framework explains the inter-linkages of factors affecting each other.

The etiology of maternal morbidity is begins from the individual, socio-cultural and economic characteristics of the woman, family and community. These three characteristics exert their role on the knowledge or perception towards the MCH services rendered from different sectors. Eventually, the knowledge plays a vital role during three stages viz. pregnancy, delivery and post delivery. Moreover, different sources of information modulate the knowledge of women, family and community. The practices, as a whole, determine the outcome of the delivery and hence influence the health status of the women.

Finally, the whole gamut of inter-linked factors show their impact on the risks of maternal morbidity, the women undergoes. The morbidities can either be temporary or sustains a permanent imprints on her health. At times, the morbidity, post partum in particular ends with the loss of maternal mortality.

Therefore, there is a need to examine the undermining factors that lead to maternal morbidity.

Fig 1.2: CONCEPTUAL FRAMEWORK



Description of Variables- The following variables have been considered in this study.

1. **Pregnancy problem**s (Ante partum period)
   - i. Swelling of hands, feet and face
   - ii. Paleness/giddiness/weakness
   - iii. Visual disturbances
   - iv. Excessive fatigue
   - v. Convulsions not from fever
   - vi. Weak or no movement of fetus
   - vii. Abnormal position of fetus
   - viii. Excessive vomiting
   - ix. Hypertension/high blood pressure
   - x. Excessive bleeding
   - xi. Vaginal discharge

2. **Problems During Delivery (Intra partum period)**

i. Premature labour

ii. Excessive bleeding

iii. Prolonged labour (more than 12 hours)

iv. Obstructed labour

v. Breech presentation

vi. Convulsion or hypertension.

3. **Problems during Postnatal period (Post partum period)**

i. High fever

ii. Lower abdomen pain

iii. Foul smelling Vaginal Discharge

iv. Excess bleeding

v. Convulsion

vi. Severe headache

Individual, Socio-Cultural and Economic Characteristics

i. Age of woman

ii. Education

iii. Number of Pregnancies

iv. Age at first birth

v. Religion

vi. Caste

vii. Place of residence

viii. Wealth index

Closely Associated predictors

i. Type of delivery- normal/ obstructed/ assisted

ii. Who conducted last delivery

iii. Place of last delivery

iv. ANC utilisation

v. PNC utilisation

vi. Obstetric fistula

Health services utilisation (Reasons for not availing):

i. Cost too much
ii. Poor quality of services
iii. Enough time was not paid for ante natal health check up
iv. No transportation- distance
v. No time to go
vi. Better at home
vii. Family did not allow
viii. Lack of knowledge

Mass Media Exposure: included various sources of information on MCH services

1.6 Objectives of the Study

The study aims to observe and analyse maternal morbidity in the High Focused States (HFS) of India. The question might arise that why the study targets to work on these states. The answer to this question lies in the fact that these states are identified as poor performers in various demographic indicators. States like Madhya Pradesh (70 per 1000 livebirths), Rajasthan (63 per 1000 livebirths) Odisha (69 per 1000 livebirths), Assam (64 per 1000 livebirths) and Bihar (56 per 1000 live-births) reflect high Infant Mortality Rate[3] whereas states like Uttar Pradesh (707 per 1000 livebirths) and Rajasthan (670 per 1000 livebirths) has evidently high Maternal Mortality Rate[4]. The goal of the study is to attempt to unveil the occurrence probability of determinants in these states. The distribution map would provide the patterns of morbidities across the states and districts. The pattern in turn would provide a plank to identify the conditions or determinants, which affect the morbidities. This would also help to elicit the utilisation of health services by currently married women in rural as well as in urban residences of these states. The study would also focus on closely related characteristics that have direct impact or relation with the morbidities. Lastly, the study would focus on the socio-economic and other possible predictors, which affect maternal morbidity in selected states.

[3]Source: Sample Registration System, Office of the Registrar General, India, Ministry of Home Affairs

[4]Source: RGI, SRS, 1998

The aim of the present study is to examine the determinants of maternal morbidity in poor and backward states that have been selected as 'study area'. The aim is divided into **objectives,** that are mentioned below:

1. To show morbidities at different level- national, state and district
2. To analyse the prevalence of morbidity at different levels
3. To explore various dimensions of closely related predictors on maternal morbidity
4. To analyse the relations and the impact of predictors on maternal morbidity
5. To delineate the relation between reasons for under utilisation of health care services and maternal morbidity

1.9 Research Questions

Following are the research questions that have been tested in the proposed study:

1. ***What is the pattern of each reported morbidity that reflects maternal morbidity at national and state level?***
2. ***What is the picture of the period prevalence rate and maternal morbidity rate at national and state level?***
3. ***How do 'closely associated predictors' play their role to define maternal morbidity at national and state level?***
4. ***What impact do other characteristics have on maternal morbidity?***
5. ***What is the relation between reasons of under utilisation of health care services and maternal morbidity?***

1.10 Database

The study has used RCH-DLHS-3 data which has been published in the year 2007-08 under the Ministry of Health and Family Welfare and was conducted by IIPS, as a nodal agency. DLHS-3 provides information related to the programme under the National Rural Health Mission (NRHM). Unlike other two rounds in which currently married women aged 15-44 years are interviewed, DLHS-3 interviewed ever-married women (aged 15-49). In DLHS-3, along with ever-married women, unmarried women (aged 15-24) have been also included as respondents. DLHS-3 adopted a multi-stage stratified probability proportion to size sampling design. Separate questionnaires for the

Village and Health Facilities have been used to gather required information. In the household questionnaire, information on all members of the household and socio-economic characteristics of the household, assets possessed, number of marriages and deaths in the household since January 2004, etc. have been collected.

The ever-married women's questionnaire contains information on women's characteristics, maternal care, immunisation and childcare, contraception and fertility preferences, reproductive health including knowledge about RTI/STI and HIV/AIDS. The unmarried women's questionnaire contains information on women's characteristics, family life, education, awareness about reproductive health, contraception and HIV/AIDS. The village questionnaire consists of information on the availability of health, education and other facilities in the village. In addition, whether these facilities are accessible throughout the year was also investigated. The health facility questionnaires contain information on human resources, infrastructure, and services. For the first time, population-linked facility survey was conducted in DLHS-3.

At the district level, all Community Health Centres (CHC) and District Hospital have been covered. Further, all Sub-Centres and Primary Health Centres (PHC), which are expected to serve the population of the selected Primary Sampling Unit (PSU), have been covered. Fieldwork was conducted during December 2007 to December 2008 and information was gathered from 7, 20,320 households from 601 districts across India. The data of 7,20,320 households are collected from 34 states and union territories of India (excluding Nagaland). From these households, 6,43,944 ever married women aged 15-49 years and 1,66,260 unmarried women aged 15-24 years are interviewed. This report is based on the data collected from these women[5].

1.11 Methodologies

The sample size of each state is representative of its population, which however differ from state to state viz. the small states have less sample and vice-versa. The study has been done with unweighted cases as giving weight has exaggerated the results during analysis but have remained same in uni-variate analysis where the frequency of currently married women have been obtained.

To test the **first research question**, bi-variate analysis was applied. Each reported morbidity has been cross-tabulated first at the national level followed by the state level. The cross tabulation was bifurcated into rural and urban residence in order to examine the distribution separately. At the state level, the mean value was obtained for each morbidity which has given scores. Based on the highest mean, morbidities have been and further cross-tabulated with districts to show the distribution at district level. However, at district level also, rural and urban differentials have been discerned.

The **second research question** dealt with the epidemiological aspect of the morbidities. The period prevalence rate was used to identify the rate of the selected morbidities. The equation is as follows:

$$\mathbf{PPR}_x = \frac{\sum_R^x CMW}{\sum_R CMW} * K$$

Where,

PPR_x = Period Prevalence Rate of specific Morbidity

$\sum_R^x CMW$ = Total currently married women reported specific morbidity in a given period in a given geographical area

$\sum_R CMW$= Total Currently Married Women in a given period in a given geographical area

K= Constant, considered as 10000

The PPR and MMR of the selected morbidities also were drawn on the map to show the pattern of the morbidities at the state level. Here also the rural and urban differences were maintained. At the district level, the total number of women reported for the morbidity has been considered.

The **third research question** has been tested by using closely associated variables. Bi-variate and multivariate techniques were applied to filter those variables which had shown direct influence on maternal morbidity. Such variables were highlighted in various scholarly research studies as well. The identified variables were cross-tabulated at national and state level and bifurcated according to the rural and urban residences. A group of several such determinants based on background characteristic of women and medical attributes had been selected and displayed at different levels using various statistical techniques.

The **fourth research question** is the most important question as it is the backbone of the entire study. It has been proven by using multivariate technique. All the selected variables classified into different sets, have been tested. In the first instance, uni-variate analysis has been run to obtain the frequency of all variables. Secondly, bi-variate and multi-variate techniques were applied to show the impact of determinants.

The **fifth research question** attempted to analyse reason for not utilising maternal health services. The reasons cited by the women have been examined using bi-variate techniques. In addition, exposure of mass media has also been included in the present study to observe the level of knowledge and awareness regarding the information on MCH services

Eventually, regionalisation of maternal morbidity has undertaken as one of the important tasks while conducting analysis in order to demarcate the regions into ordinal scale- high, medium, and low. Hence, MMR was delineated at the **state** as well as **the district level.** Notably the maps were prepared for rural and urban residences so that the severity of the problem can be identified in either of the residences.

1.8 Study area

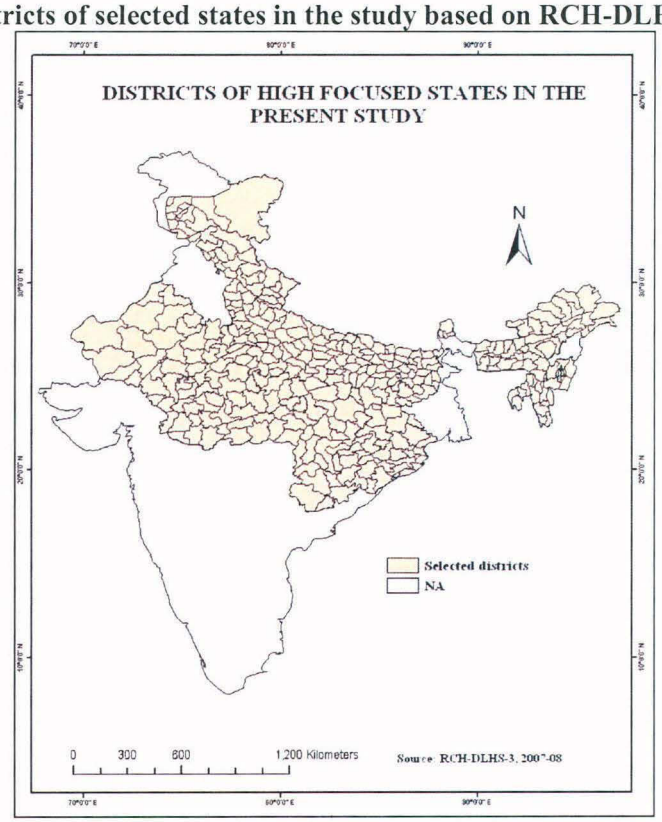
Under NRHM, maternal health scheme was introduced all over India and the Ministry of Health and Family Welfare carry out continuous evaluation. According to study by **Sharma (2009)**, where he reviewed the condition of the states after implementation of maternal health care services, found that large variations exist in the health system and its performance. The evidence is clearly supported by the observation that some of the states are performing better than others in the pre NRHM period. Therefore, a need had emerged to introduce a mission under which the lagging states could be brought forward and under such scheme, 18 states are focused and hence termed as "**high focused states.**" The proposed study area for present the empirical research work is high focused states in the country, which is divided into two broad categories:-

(1) **High focused northeast states**- These include: Arunachal Pradesh, Assam, Manipur, Mizoram, Sikkim, Meghalaya and Tripura (Nagaland was not covered under RCH DLHS-3 survey) and

(2) **High focused north and central states**- The states of Bihar, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, and Uttarakhand.

The study has further aimed to take into account the various **districts** of each state. In addition, rural-urban differentials have also been taken into account and finally, regionalisation of maternal morbidity has been mapped accordingly.

Map 1.1: Districts of selected states in the study based on RCH-DLHS-3 (2007-08)



1.9 Physiographic conditions of the states

1.9.1 Introduction

India is the second largest populous country and first in adopting family welfare programme in the world. Largely, the population policies and programme have seen a paradigm shift after the International Conference on Population Development (1994) in Cairo, recognizing the importance of reproductive health. When the Human Development Index (HDI) is estimated, life expectancy (e_0^0) is one of the important variables among three variables. Life expectancy is the most expressive indicator of improved health

status of any country. Despite indispensable efforts in improving the health conditions, apparently, demographic indicators like Crude Birth Rate, Crude Death Rate Infant Mortality Rate, Child Mortality Rate, and Maternal Mortality Rate (MMR) of developing countries remain constantly high. The timely need to curb maternal mortality significantly and to improve maternal health in general has strongly been stressed in the National Population Policy (2000). ICPD defined Reproductive Health as "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity, in all matters relating to the reproductive system with couples being able to have sexual relations without fear of pregnancy and contracting disease." *Reproductive morbidity* (RM) is defined as "any morbidity or dysfunction of the reproductive tract or any morbidity which is a consequence of reproductive behaviours' including pregnancy, contraceptive use, abortion, childbirth or sexual behaviour" (World Health Organization-1990).

1.9.2 Geo- physical Setting

In the present study, the states of India into two broad categories- (1) the northeastern states and (2) the north and central states. The northeastern states, as the name suggests, are located in Northeast direction of the country. Assam, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Sikkim and Tripura are selected as the northeast states for the present study. Bihar, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, and Uttarakhand are selected from North and Central India for the present study. There is a total of 367 districts in the selected 17 states of the country.

Physiography of the North and Central states

Jammu and Kashmir, Himachal Pradesh and Uttarakhand lie parallel in the foothills of the Himalayan Ranges. These states have exigent conditions of rugged and undulating hilly topography, which dissuades the connectivity of the villages. Despite continuous efforts, concrete roads and other infrastructural facilities are yet a dream to be achieved in these hilly states. The hilly terrain marginalises the accessibility and implementation of health care services and hence reduces the utilisation of health care services by the people. Further, the villages are settled sporadically in remote and

inaccessible areas that do not have any health care centre in approximately 20 kms vicinity. Lack of proper connectivity and transportation facilities enhances the challenges in the utilisation of health care services.

Jammu and Kashmir is similar to a coronet to the country and is endowed with stringent hilly ranges such as Karakoram, Nun Kun range, Zaskar range, and Nanga Parbat. The Himalayan ranges are found in crescent and haphazardous form as well. The highest level above the sea is 5000 meters. The harsh climate and uneven terrain lead to a challenging life in the state. Higher altitudes are uninhabited (281 villages) as basic facilities are not available. During winters the state suffers from extremely low temperature and snowfall due to which the road connectivity gets completely barred and utilisation of health facilities itself turns questionable. Moreover, the state suffers from negative elements such as terrorism and secularism that augment the conditions.

Himachal Pradesh lies to the south east of Jammu and Kashmir and is popular for tourism. The altitude in the state varies from 350 meters to 7000 meters above sea. The physiography of the state can be divided into three zones viz. (1) the outer Himalayas or the Shivaliks, (2) the inner or the middle Himalayas and the greater Himalayas or the Alpines. The altitude of lower Himalayas ranges between 350 meters to 1500 meters and the rainfall in this zone ranges between 1.5 meters to 1.75 meters. The middle region includes the parts of Sirmaur, Mandi and parts of Kangra, Shimla, and Chamba and experience rainfall between 0.75 meters to 100 meters. **Uttarakhand**, previously known as Uttaranchal lies at the south slope of the Himalayas. The state is endorsed with glaciers, rivers, and ranges. Glaciers are being located at higher elevations, have cooler weather, and are covered with bare rocks and ice. Dense tropical forest covers are found at lower elevations. The state is so daedal that it is divided into two broad categories viz. (1) Garwal, the western region and (2) Kumaon, the eastern region. The climate of the state is diversified because of hilly terrain and plain areas. However, the climate varies within the mountains in accordance with the altitude of the place. In the southern foothills, the average summer temperatures vary between 30^0 C to 18^0 C and winter is bearable and normal. In the areas of the Middle Himalayas, the summer temperatures are usually around 15 to 18^0 C; however the winter temperature drops below the freezing point. The higher altitudes of Himalayas (more than 15,000 feet) are cold throughout the

year and at times become inaccessible due to heavy snowfall. The eastern edges of the Himalayan ranges are subject to heavy rainfall while the western division is relatively dry.

Uttar Pradesh is the sixth largest state of the country and lies in the foot hills of the Himalayan ranges. It is highest populated state of the country and is mainly drained by Ganga and its tributaries. Apart from the Gangetic plains region, the two other important topographical features are the Himalayan ranges and patches of Vindhyan Hills in the south. The state accounts for the highest population followed by Bihar and is listed under BIMARU states. It is an agricultural dominated state; however, the western parts show the prominence of industries.

Rajasthan, the largest state of the country lies in the northwestern front covering an area of 3, 42, 239 sq. km comprising 11 percent of the country's geographical area. The state has topography with varying features significantly dominated by parched and dry region. The extensive topography includes rocky terrain, rolling sand dunes, wetlands, barren tracts, or land filled with thorny scrubs, river-drained plains, plateaus, ravines, and wooded regions. Broadly, the topography of Rajasthan can be divided into many regions such as the Aravalli or the Hilly regions, the Thar and the other arid regions, the Plateaus including Vindhyan and the Malwa. The state has very less fertile plains in Mewar, the forest regions and the water bodies including rivers and salt lakes.

The Central States

The central states, as the name suggests, starts from West and extends up to Odisha on the eastern coast and in between lies Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Bihar and Jharkhand in a crescent shape. These states are poor performing states in achieving the goals of National Rural Health Mission (2005) and hence considered as highly focused states of India. However, the inevitable efforts of these states to meet the goals declared by NRHM continue to provide impetus for further decline in depressing health conditions. Madhya Pradesh, Chhattisgarh, Bihar, and Jharkhand are featured with dense forest cover and tribal proportion.

Madhya Pradesh is divided into regions like Malwa, Nimar, Bundelkhand, Chambal, Baghelkhand, Mahakoshal and the Central Vindhyan and Satpura region.

Malwa is a plateau region in the northwest area to the north of the Vindhyan Range. The Nimar (Nemar) region lies in the western part of the Narmada river valley. It is located in the south of the Vindhyans and in the southwest region of the state. Bundelkhand has rolling hills and fertile valleys and slopes downward to the Gangetic plain. Baghelkhand is a hilly region, located in the northeastern area of the state. It includes the eastern end of the Vindhya Range. The Mahakoshal region lies in the southeastern part of Madhya Pradesh and includes the eastern end of the Narmada river valley and the eastern Satpuras. Chambal, located in the northwestern area of this state, is a mountainous region, which has an abundance of red and soft sandstone. The Chambal drainage area is famous for badlands topography. The climate here is harsh and inhospitable in the state.

Chhattisgarh, which had been carved out of Madhya Pradesh, is characterised with the tribal population and dense forested area. **Bihar** is known to be one of the backward states of the country and is aptly considered as a BIMARU state. The state is divided into two unequal halves by the river Ganga and hence agriculture is the main economic activity. **Jharkhand** is located in eastern India and most of its parts lie in Chota Nagpur plateau. The plateau is a rich source of coal and other important minerals. The plateau is marked by many watersheds of the rivers like that of Damodar, Kharkai and Subarnarekha. The land area is covered with forests and mostly tribal population inhabits it.

Odisha lies on the eastern coast of India and is bounded by the Bay of Bengal. The physiography can be divided into three main regions- the coastal plains, the middle mountainous country and the northwestern plateau. The coastal width varies from south to the north of the state. The mountainous portions of Odisha cover about three-fourth of the entire state. The Plateau is almost flat and the monotony of topography is interrupted by the deep river valleys. Out of the total, twenty percent of the land cover is under forests of various types. The state is the home place for many tribes' populations and they are primarily dependent on agriculture.

The Northeastern states

Most of **Arunachal Pradesh** state is mountainous and its terrain largely consists of lofty, sporadically aligned ridges that separate deep valleys and rise to the peaks of the

Great Himalayas. Sikkim lies on the southern slopes of the Himalayas and is bounded on the north and northeast by Tibet, an autonomous region of China and in the south east of Bhutan. **Sikkim** is one of the highest regions of the country and is traversed by the Himalayan ranges and several spurs. Kanchenjunga (8,598 meters) one of the highest peaks of the world lies in Sikkim. Apart from being entirely mountainous, the state is covered with dense forests also, which are mostly inaccessible and unexploited.

The hills and valleys are important geographical features of **Manipur** state. Major part of the land is covered by forests, lakes, and wetlands are the major land features of the state. **Meghalaya** is a state, which geographically is better known as 'Meghalaya Plateau" or the "Shillong Plateau." It consists mainly of Garo, Khasi and Jaintia hills along with its outliers formed by Assam ranges. The elevation of the plateau ranges between 150 meters to 1961 meters above the sea and hence has irregular terrain. **Meghalaya** is the wettest state of India with average annual rainfall of 12 meters and thus makes the climate humid which further provide an appropriate breeding environment for mosquitoes that cause malaria. **Tripura** is located in the northeastern part of the country and bordered by Bangladesh, Mizoram, and Assam. It is the third smallest state of the country followed by Goa and Sikkim. The state mainly has hilly territory with altitudes varying from 50 to 3080 feet above sea level. It has moderate temperature and high humid atmospheric conditions.

Mizoram is the land of highlanders having common borders with Tripura, Manipur, and Assam. The state has a vast extension of the Mizo Hills, which dominate the state's topography, rising to more than 2000 meters near the Myanmar border. The state is characterised by a moderate temperature as the tropic of Cancer passes through the heart of the state. The state has prominent steep hills, and deep gorges.

1.10 Limitations of the Study:

1. Proportion of women in rural and urban residences.
2. Large amount of work on policies and programs.
3. Nomenclature of definitions used for various health problems

1.11 Chapterisation Scheme

In order to accomplish the objectives of the study, the entire work is organized into the following chapters:

1. ***Introduction and Physiographic Conditions of the States*:** Broadly, the chapter is introductory in nature and deals with conceptual framing of the study. The chapter consists of general introduction, review of literature, conceptual framework, objectives, research questions, study area, data base and methodologies and physiographic conditions of the states.

2. ***Differentials in Distribution of Total Ante, Intra and Post Partum at National and State Level*:** The chapters describes the distribution of morbidities at national and state level. The purpose of the chapter is to show the pattern of the morbidities at both the levels.

3. ***Differentials of Selected Morbidities at District Level*:** The selected morbidities are displayed at district level in rural and urban residences. Only those morbidities are shown that were observed high in calculation of mean for each morbidity.

4. ***Differentials in the Distribution of Maternal Morbidity and Maternal Morbidity Rate (MMR) at National And State Level*:** The maternal morbidity is calculated after combining the three morbidities and is shown in rural and urban residence at state level. In addition, the chapter shows the period prevalence rate at national level and pattern of maternal morbidity rate at district level.

5. ***Closely Associated Predictors of Maternal Morbidity*:** The chapter shows the different distribution and pattern of predictors that have direct impact on maternal morbidity. In addition, the chapter also accounts for the association of these predictors with the demographic characteristics of the women. Lastly, the chapter shows the impact of predictors on obstetric fistula, which is a clear indicator of severe morbidity among the women.

6. ***Predictors and Maternal Morbidity***: The chapter illustrates the impact of background characteristics and delivery related variables on maternal morbidity. Moreover, the chapter the exposure of the women to various sources of information regarding the ANC and institutional delivery related services available for them. In the end, the chapter accounts for the reasons for not utilising the MCH services, which reflects the perception of the women as well as the inhibiting roles of various factors.

7. ***Summary, Recommendations, and Conclusion***: The last chapter is the collective effort to show the summary and findings of each chapter in the present study. It also takes an opportunity to suggest policy imperatives that would help to curb maternal morbidity and eventually improve the overall maternal health.

Appendices

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END NOTES AND REFERENCES

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CHAPTER TWO

DIFFERENTIALS IN DISTRIBUTION OF TOTAL ANTE, INTRA, AND POST PARTUM MORBIDITY AT NATIONAL AND STATE LEVEL

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2.1 Introduction

Good health is an important aspect of human life. Every individual wants to remain in good health in order to achieve various goals in life. Secondly, good health as a states of holistic well being of an individual may be considered as an end in itself. At times, individuals seek treatment for different health problems, but few ailments are neglected with a perception that they are common and of short duration. Not all sustain in the body for a long period, however, few morbidities leave their effect on the health of the person which gets visible in the long run. In medical terms, the health problems are termed as a morbid condition or simply as morbidity. Morbidity has been derived from the Latin word *morbidus* meaning 'sick' or 'unhealthy'. Morbidity can be understood through the following definitions:

(a) It is the incidence of sickness of a specific disease in a geographical locality.

(b) It is a diseased state, disability, or poor health due to any cause.

(c) A diseased state or symptom puncture, if improperly performed, may be followed by a significant morbidity (*Journal of American Medical Association*)

Comorbidity is a terminology which is used when the patient suffers simultaneously with two or more number of medical conditions.

Morbidities have various facets which are characterised as general morbidities which can occur in any individual, few develop only among children and infants, few develop in senile stages, and few develop among women only and so on. The present study aims to investigate the epidemiology of morbidities that develop among married women who have experienced pregnancy.

Disease occurrence and health seeking behaviour go hand in hand. It is premised that differential utilisation of health care services is more among urban vis-a-vis rural

population. In addition, the type of services availed by urban populace ranges widely as compared to their rural counterparts. When comparisons are filtered between men and women, according to many studies, the utilisation of health care services remains low among women who, very often, neglect their health problems and seek treatment when their condition gets severe and affects their household activities. In addition, it has been evident from the studies that the kind of health services provided determines its distribution, utilisation, availability, accessibility, prices and health outcomes (**Rosenweig 1982**).

The present chapter has been divided into two sections i.e. **Section-1** covers the demographic characteristics of the currently married women in 17 states that are classified into the North and central and the northeastern region and **Section-2** provides the epidemiology of the morbidities that have been studied at three levels i.e. national, state and district level. At each level, the distribution was further bifurcated into rural-urban spatial pattern.

SECTION-1

Demographic Characteristics of Currently Married Women

2.1.1 Demographic Characteristics

As mentioned above, this section of the chapter has comprises of the demographic characteristics of the currently married women. The demographic characteristics determine the etiology of the morbidities among the population. The dimensions of women's health is guided by a host of factors like marital status, religion, caste, education, and a whole gamut of other socio-economic factors which have a conjoint effect on it. Very often negligence towards one's own health leads to health problems or morbid conditions. Moreover, socio-cultural norms add into the barring conditions. This has been more intricate in a rural residence where the rays of development and adequate health facilities have not yet reached to reduce the vulnerability of morbidity. The characteristics of the women are divided into the following:

1. Marital status
2. Age of the women

3. Religion
4. Caste
5. Education

1 Marital Status

To show the distribution of women, the percentage has been calculated with mathematical formula. For instance, the percent of rural women is calculated by considering rural women of a state in numerator and total rural women at national level in denominator and multiplied with '*k*'. The equation is as follows:

$$\frac{nx}{N} * 100$$

Where,

nx= Number of women in a geographical area of a state

N= Total number of women at national level

The statistical data has shown wide variation in the distribution across the states. Among **387916** currently married women in the selected states, 84 percent (**325671**) were rural women and 16 percent (**62245**) were urban women at the national level. Unweighted cases were used in order to emphasis the morbidity existing among the actual number of women.

Table 2.1: Rural-Urban distribution of currently married women in states

States	Currently Married Women		
North and Central	Rural (Percent)	Urban (Percent)	Total (Percent)
Bihar	12.4	6.2	11.4
Chhattisgarh	4.3	4.4	4.4
Himachal Pradesh	2.7	1.2	2.5
Jammu and Kashmir	3.8	3.9	3.8
Jharkhand	6.8	5.8	6.6
Madhya Pradesh	10.5	16	11.4
Odisha	7.1	5.3	6.8
Rajasthan	9.5	12.5	10
Uttar Pradesh	21	23.2	21.3
Uttarakhand	3.1	3.4	3.1
Northeastern			
Arunachal Pradesh	3.5	3.8	3.6
Assam	7.7	5.5	7.4

Manipur	2.2	2.6	2.3
Meghalaya	1.7	1.2	1.6
Mizoram	1.4	3.8	1.8
Sikkim	1.2	0.4	1.1
Tripura	1.1	0.7	1

Source: RCH-DLHS-3, 2007-08

The sample of women, needless to say, was greater in the north and central region as compared to the northeastern region. The column of **total** percent has shown the proportion total women in each state. In the **north and central states**, the highest value of 21.3 percent of women was observed in Uttar Pradesh. Notably, both the states Bihar and Madhya Pradesh account for common percentage value of 11.4. Rajasthan, the largest state of the country has shared 10 percent of the total currently married women. All other states have less than seven percent of women. The lowest share has been observed in Himachal Pradesh, that is, 2.5 percent followed by 3.1 in Uttarakhand and 3.8 in Jammu and Kashmir. In the **northeastern states**, the share has been less than 10 percent. Assam has shown the highest percentage of women that is 7.4 percent followed by 3.6 percent in Arunachal Pradesh. On the hand, states like Meghalaya, Mizoram, Sikkim and Tripura have shown lesser proportion of women.

In context of spatial distribution, in **the north and central states**, Uttar Pradesh accounted for the highest percent value, that is, 21 percent. Less than 21 percent of women have been observed in Bihar (12.4 percent) followed by Madhya Pradesh (10.5 percent). Less than 10 percent of women were observed in Rajasthan (9.5 percent), Jharkhand (6.8 percent) and others. The lowest value of 2.7 percent was recorded in followed by Uttarakhand with 3.1 percent and others. In the **northeastern states**, the score has been low in rural residence. Women residing in rural residence in Assam showed the highest value of 7.7 percent in the total rural population followed by 3.5 percent rural women in Arunachal Pradesh. Rural women in Tripura with merely 1.1 percent share the lowest percent. Sikkim (1.2 percent), Mizoram (1.4 percent), and Meghalaya (1.7 percent) are other states which have shown low percentage of rural women.

Similarly, in the **urban** context of the **north and central region**, the pattern showed that the women of Uttar Pradesh have shared highest percentage value that is

23.2 percent. The other two states namely, Madhya Pradesh and Rajasthan have shown scores more than 10 percent. In the rest of the states, the range varied from only one percent to less than seven percent urban women. In the **northeastern** region, Assam has shared highest 5.5 percent of women followed by 3.8 percent in Arunachal Pradesh and 2.6 percent in Manipur. The lowest value of percentage has been observed in states like Mizoram (3.8 percent) and Meghalaya (1.2 percent). The other two states namely Sikkim and Tripura have shown percentage less than one percent i.e. 0.4 and 0.7 percent respectively.

2 Age of the women

The **Table 2.2** illustrated the pattern of distribution of the women based on their age. At the national level, the age group of 25-29 years showed the highest 19 percent concentration of women in **rural residence.** The rest of the age groups presented a kind of series in the distribution of percent, viz. 15 percent in 34-35 years, 16 percent in 30-34 years and 17 in 20-24 years. On one hand, women belonging to 40-44 years age group have shown 11 percent while on the other hand, the lowest six percent of women were observed in 15-19 years of age group. The **urban residence** does not show much difference in percentage share of women in each age group. Highest four percent of women were accounted for the age group of 25-29 years. However, three age groups i.e. 20-24 years, 30-34 years and 35-39 years covered only three percent of the total women. The lowest one percent has been observed in 15-19 years of age group followed by two percent in 40-44 years of age group.

The pattern of rural-urban age group wise distribution provided a very interesting picture of the states. The EAG (***Empowered Action Group***) states displayed a significant proportion of **rural** women reported their status as married in the age group of **15-19 years**. Overall, in the **north and central states**, highest values of 27.5 percent of women were observed in Uttar Pradesh followed by 20.5 percent in Bihar and 10.6 percent in Madhya Pradesh. Another important finding of the table depicted that the central states showed the percentage values less than 10 percent. The proportion of women in Himachal Pradesh invariably remained low. In the **northeastern states**, the highest percentage share was recorded in Assam while other all of the remaining states showed

the scores less than two percent. Among, them Manipur accounted for the lowest percentage of women.

Table 2.2: Age Group (in years) of Currently Married Women in the High Focused States

States	15-19		20-24		25-29		30-34		35-39		40-44		Total	
North and Central	R	U	R	U	R	U	R	U	R	U	R	U	R	U
Bihar	21	13	14	7	12	6	11	6	11	6	12	6	13	6
Chhattisgarh	5	4	5	5	4	4	4	5	4	5	5	5	4	5
Himachal Pradesh	0.5	0.3	1.9	0.9	2.6	1.3	3.1	1.4	3.2	1.3	3.8	1.3	2.7	1.2
Jammu and Kashmir	1	1	3	2	4	4	4	5	4	5	5	5	4	4
Jharkhand	8	5	7	6	7	6	8	7	7	6	6	6	7	6
Madhya Pradesh	11	15	12	17	10	16	10	15	10	15	10	16	10	16
Odisha	5	4	7	6	7	5	8	5	8	5	7	5	7	5
Rajasthan	10	13	10	14	9	12	10	12	10	12	9	12	10	12
Uttar Pradesh	28	31	23	26	20	23	21	23	19	22	20	23	21	24
Uttarakhand	1	1	3	3	3	3	3	4	4	4	3	4	3	3
Northeastern														
Arunachal Pradesh	0.9	2.9	2.4	3.1	3.7	4.3	3.0	3.7	4.2	4.5	3.7	3.3	3.2	4
Assam	6.3	4.6	6.9	4.4	8.4	5.7	8.2	5.7	8.6	6.3	7.4	5.3	7.8	6
Manipur	0.5	1.1	1.4	1.8	2.4	2.6	2.2	2.6	2.7	2.9	2.7	3.2	2.1	3
Meghalaya	1.1	0.8	1.3	1.0	1.8	1.5	1.6	1.1	2.1	1.4	1.5	1.2	1.6	1
Mizoram	0.6	2.7	1.1	3.1	1.5	3.6	1.3	4.0	1.4	3.8	1.5	4.1	1.3	4
Sikkim	0.7	0.3	1.0	0.4	1.2	0.4	1.2	0.6	1.3	0.4	1.4	0.3	1.2	0.4
Tripura	1.3	0.9	1.2	0.7	1.1	0.8	1	0.6	1	0.7	1	0.7	1.1	0.7

Source: RCH-DLHS-3, 2007-08

The pattern in **urban residence** displayed the highest 31.1 percent of women in Uttar Pradesh followed by 14.6 percent in Odisha, 13.1 percent in Rajasthan and 12.5 percent in Bihar. Interestingly, the range varied from 0.3 percent to five percent in remaining of the **north and central states**. The pattern of distribution in the **northeastern states** depicted the highest percentage of women in Assam followed by Arunachal Pradesh and Mizoram. The remaining of the states showed less than two percent of currently married women in the age group of 15-19 years.

The pattern illustrated a slight increase in share in succeeding age groups. Uttar Pradesh accounted for highest proportion of women in the age group of **20-24 years** in **rural residence**. The other bigger states such as Bihar and Madhya Pradesh represented a

fairly good proportion of rural women. In remaining of the states, the range varied from 1.9 percent to less than 10 percent of women. In the **northeastern states**, the score of 6.9 percent of women has been observed in Assam followed by Arunachal Pradesh (2.4 percent). Mizoram accounted for the lowest one percent of women while all other states showed the scores less than 1.5 percent.

In context of urban residence in the north and central states, the highest scored was observed in four bigger states while other states accounted for less than 10 percent of women. Similar pattern of distribution was portrayed in **urban residence** of the **northeastern states.** Assam accounted for 4.4 percent of married women followed by 3.1 percent in Arunachal Pradesh and Mizoram. The rest of the **northeastern states** have shown less than two percent. The lowest 0.4 percent of women was observed in Sikkim.

In the **north and central states** in the age group of **30-34 years**, excluding the highest scores accounted consistently in bigger states, all other states of north and central region accounted for score less than 10 percent of **rural** women. To illustrate, the range of values varied from 3.1 percent women in Himachal Pradesh to 9.7 percent women in Rajasthan. In the **northeastern states**, women from Assam accounted for the highest proportion followed by 3 percent women in Arunachal Pradesh and 2.2 percent women in Manipur. The remaining of the states displayed less than 1.5 percent of women in rural residence.

The **urban residence** of the same age group exhibited highest 23 percent of women in Uttar Pradesh followed by 14.9 percent women in Madhya Pradesh and 12.1 percent women in Odisha. In remaining of the states, the range varied from 1.4 percent to 6.5 percent of women. One of the interesting findings showed that Bihar accounted for only six percent of women in this age group. The pattern in the **northeastern states** displayed the percentage of women observed in Assam. Around four percent of women were observed in two states namely Mizoram and Arunachal Pradesh. The rest of the states accounted for scores less than 3 percent. The two smaller states namely, Sikkim and Tripura showed the lowest proportion of women that had been same in both the states.

A gradually declining pattern is observed as the women recorded for succeeding age groups. The women belonged to the age group of **35-39 years** in **rural residence** in the **north and central states** showed highest proportion in Uttar Pradesh while Bihar and

Madhya Pradesh depicted the proportion with a mild difference in percentage scores. In all other states, less than 10 percent of women were observed. Lowest 3.2 percent of women were observed in Himachal Pradesh. In the **northeastern states**, Assam has accounted for the highest share of women in this age group followed by 4.2 percent in Arunachal Pradesh. The value has been less than three percent in the rest of the states out of which the lowest one percent of women were observed in Tripura.

In **urban residence**, Uttar Pradesh accounted for 21.5 percent of women in the age group of **35-39 years** in the **north and central states.** The pattern in Rajasthan (12 percent) and Madhya Pradesh (15.2 percent) also showed considerable proportion of women in this age group. Invariably, the highest proportion of women was exhibited in Assam followed by 4.5 percent in Arunachal Pradesh and 3.8 in Mizoram. Less than three percent of women were seen in all other states out of which, the lowest has been seen in Sikkim, that is, 0.4 percent.

The last age group **40-44 years** accounted for more than 20 percent of women in Uttar Pradesh while more than 10 percent of **rural** women were observed in Bihar and Madhya Pradesh in the **north and central states** region. Less than 10 percent of women were recorded in rest of the state. Uttaranchal and Himachal Pradesh shared the lowest percentage of women in this age group. Assam in the **northeastern states** exhibited less than 10 percent of women while rest of the states accounted for value of less than three percent. The lowest one percent has been seen in Tripura.

The pattern of women in this age group of **40-44 years** in **urban residence** showed highest proportion in Uttar Pradesh followed by Madhya Pradesh and Rajasthan. Notably the women consistently been observed low in Bihar. In few other states, the values varied from five to six percent such as Jharkhand (5.7) and Odisha (5.3 percent). The rest of the states showed less than five percent of women. In the **northeastern states**, invariably, the highest share observed in Assam followed by 4.1 percent in Mizoram and 3.3 percent in Arunachal Pradesh. Meager number of women was observed in Sikkim and Tripura. The remaining of the states showed value less than four percent.

3 Religion

Religion plays an important role during the three periods. A variety of traditional rites and rituals are performed during the three stages, which often are a boon for a woman as well as for the baby. The customary rituals performed after delivery have been found to have certain effects on women's genitals. The Table 2.3 has shown the women according to their religion and rural-urban distribution at the national and the state level. Hinduism is the dominant religion in the bigger states while Islam has a strong hold in only two to three states. Muslim women has hardly has followers in the northeastern states with the lone exception of the state of Assam.

At the national level, in **rural residence**, Hinduism accounted for 67.4 percent followed by 9.2 percent women who follow the Islam and 7.2 percent of women follow other religion while 11.8 percent women has been observed in **urban residences** who follow the Hindu religion followed by 3 percent Muslim women and 1.4 percent of women who follow other religion.

Table 2.3: Religion of Currently married women in the High Focused States

States	Hindu		Muslim		Others	
North and Central	Rural	Urban	Rural	Urban	Rural	Urban
Bihar	**13.8**	**7.4**	**14.9**	**5.1**	0.2	0.2
Chhattisgarh	5.4	5.6	0.2	1.2	1.3	2.2
Himachal Pradesh	3.1	1.5	0.3	0.2	2.7	0.8
Jammu and Kashmir	1.3	1.8	**23.1**	**13.3**	2.7	2.8
Jharkhand	5.9	6.4	6.3	3.7	5	2.6
Madhya Pradesh	**13.1**	**18.7**	2	**11.7**	0.4	4.9
Odisha	8.7	6.9	0.4	1	2.4	1.4
Rajasthan	**11.4**	**13.7**	4.6	**11.3**	1.5	6.6
Uttar Pradesh	**23.3**	**21.2**	**24.5**	**42.2**	1.3	3.7
Uttarakhand	3.7	3.7	1.1	3.5	0.4	1.3
Northeastern						
Arunachal Pradesh	0.9	2.3	0.4	0.6	**18.9**	**13**
Assam	**6.6**	**6.2**	**20.5**	**4.7**	**4.3**	**1.8**
Manipur	0.7	2.6	0.5	1	**17.1**	1.8
Meghalaya	0.1	0.4	0.3	0.1	**17.6**	**10.4**
Mizoram	0	0.1	0.1	0.1	**15.9**	**45**
Sikkim	0.8	0.4	0.1	0.2	6.8	1.3
Tripura	1.1	1	0.7	0.1	1.4	0.1
National	**67.4**	**11.8**	**9.2**	**3**	**7.2**	**1.4**

Source: RCH-DLHS-3, 2007-08

In the **north and central states**, 23.3 percent women have been observed in Uttar Pradesh of **Hindu religion** followed by 13.8 percent in Bihar, 13.1 percent in Madhya Pradesh, 11.4 percent in Rajasthan and 8.7 percent in Odisha in **rural residence**. The lowest values of only 1.3 percent of Hindus have been observed in Jammu and Kashmir followed by 3.1 percent women in Himachal Pradesh. The rest of the states has shown value less than six percent. Notably in the **northeastern states**, largely, the religion has been observed very low as the value of less than 1.5 percent. Assam has only showed 6.6 percent of women who follow Hindu religion. Interestingly, Mizoram has shown the absence of the religion while the lowest value has been observed in Meghalaya.

In **urban residence**, 21.2 percent women have been observed in Uttar Pradesh in the **north and central state**s. Three states namely Madhya Pradesh (18.7 percent), followed by 13.7 percent women in Rajasthan and 7.4 percent women in Bihar have also shown considerable value of Hindu religion. States like Odisha (6.9 percent) and Jharkhand (6.4 percent) have shown moderate value of Hindu religion. The rest of the states has displayed the less than six percent of women who follow Hindu religion.

In the context of **Muslim religion**, highest 24.5 percent women have been observed in Uttar Pradesh followed by 23.1 percent in Jammu and Kashmir and 14.9 percent women in Bihar in **rural residence** of the **north and central states**. Meager/ Low values have been observed in states like Jharkhand (6.3 percent) and Rajasthan (4.6 percent). The rest of the states has shown values of percentage 2 or less than two percent. In the **northeastern states**, Assam has shown 20.5 percent of women who follow **Islam** in **rural residence**. The rest of the states have shown less than one percent of women who follow the Islam.

In **urban residence** on the **north and central states**, significantly, Uttar Pradesh has shown 42.2 percent of women who follow the Islam while other four states namely Jammu and Kashmir (13.3 percent), Madhya Pradesh (11.7 percent), Rajasthan (11.3 percent) and Bihar (5.1 percent) have shown moderate scores of religion. The rest of the states has displayed the value less than five percent with the lowest 0.2 percent of women observed in Himachal Pradesh.

In the context of **others** category the rural as well as urban residence have shown less than 10 percent of women in the **north and central states**. Among the northeastern

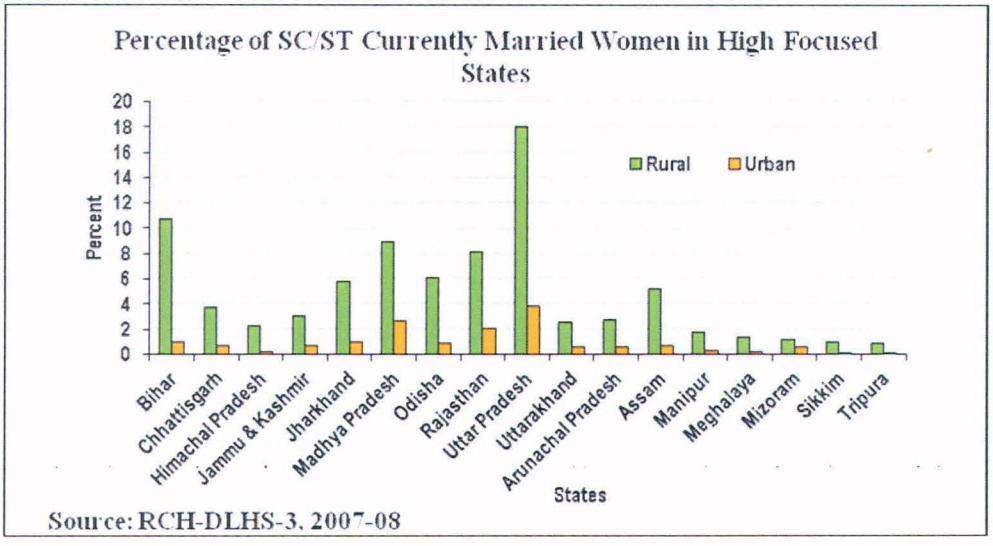
states, Arunachal Pradesh has shown the highest percentage of women followed by almost 18 percent of women in states namely, Manipur and Meghalaya. In the rest of the states, the range varies from 1.4 percent to 16 percent.

4 Caste

The data pertaining to the caste composition has unraveled an obsequent pattern against the well established notion. The distribution has been highly skewed for the general population as maximum women have been observed in SC/ST category. Among SC/ST, women were observed more in rural areas as compared to their counter parts of urban areas. At the national level, 82 percent women of SC/ST category were concentrated in rural areas and merely 16 percent were observed in urban areas.

Madhya Pradesh has accounted for the highest percentage of SC/ST women in urban areas followed by 20 percent in Rajasthan. Notably, except Madhya Pradesh, SC/ST population in the north and central states had been observed more than the national percentage of 82 percent in rural areas.

Fig 2.1



In the **north and central states**, the concentration of SC/ST currently married women in rural areas varied between 2.3 percent in Himachal Pradesh and 18 percent of women in Uttar Pradesh. More than 10 percent of the women had been observed in Bihar and Uttar Pradesh while the rest of the states have shown less than 10 percent of women

in SC/ST category. In urban residence, the highest four percent of SC/ST women were observed in Uttar Pradesh followed by around three percent of women in Madhya Pradesh, two percent women in Rajasthan and one percent of women in Bihar. The remaining states of the north and central region have shown values less than one percent.

In the **northeastern states**, highest 5.2 percent of SC/ST rural women were observed in Assam while the lowest 0.9 percent of women has been seen in Tripura. In all other states, the percentages of women have been less than five percent. The SC/ST women in urban residence of the northeastern region have been less than one percent. The range varied from 0.1 percent of women in Tripura to 0.7 percent women in Assam.

As mentioned above the SC/ST women share skewed percentage of the total population, the general population has been observed to be less across the high focused states. Overall, 1.7 percent of women out of the total currently married women has been observed in the general category. The **Table 2.4** has shown the distribution of general category women in rural and urban residence.

Table 2.4: Currently Married Women in the General Category

States	General (n=6828)			
	Rural		Urban	
North and Central States	Percent	N	Percent	N
Bihar	0.34	23	0.06	4
Chhattisgarh	0.12	8	0.18	12
Himachal Pradesh	0.03	2	0	0
Jammu & Kashmir	2.99	204	0.16	11
Jharkhand	0.28	19	0.1	7
Madhya Pradesh	0.86	59	0.51	35
Odisha	1.32	90	0.54	37
Rajasthan	0.42	29	0.09	6
Uttar Pradesh	0.34	23	0.12	8
Uttarakhand	0.06	4	0.01	1
Northeastern States				
Arunachal Pradesh	12.76	871	2.08	142
Assam	54.7	3735	8.1	553
Manipur	5.2	355	4.76	325
Meghalaya	1.27	87	0.51	35
Mizoram	0.23	16	0.07	5
Sikkim	0.22	15	0.04	3
Tripura	1.32	90	0.21	14
Total	**82.45**	**5630**	**17.55**	**1198**

Source: RCH-DLHS-3, 2007-08

The results of **rural** residence of the **north and central states** have shown that Jammu and Kashmir has accounted for highest three percent of women followed by 1.32 percent of women in Odisha. In remaining of the states, the values of percentage have been observed less than one percent. In **urban** residence, the percentage of women varied absence of women in Himachal Pradesh to 0.54 percent of women in Odisha.

The results from the **northeastern states** have shown a striking picture of the proportion of the women. In **rural** residence, highest 55 percent of women have been observed in Assam followed by 13 percent of women in Arunachal Pradesh. In the rest of the states, the percentage values had been observed less than 10 percent. In **urban** residence, 8.1 percent of general category women had been observed in Assam followed by five percent in Manipur and two percent of women in Arunachal Pradesh. In remaining of the states, the percentage values had been less than one percent.

5 Education

Education is a very important and indispensable predictor of any response variable in social science research. It reflects the positive impact when it is free of any restraints but shows no or minimal influence on the response variable if it is barred by other factors. Most importantly, education determines the health seeking behaviour of an individual. The **Table 2.5** has described the level of schooling completed by the women.

Table 2.5: Educational Status of Currently married women in High Focused States

States	None		Primary		Higher Secondary		Secondary	
North and Central	**R**	**U**	**R**	**U**	**R**	**U**	**R**	**U**
Bihar	40.8	28.3	9.3	5.4	9.5	6.1	7.4	4.8
Chhattisgarh	1	1.9	5.2	5.5	3.5	4.3	2.3	4.6
Himachal Pradesh	0.3	0	3.7	0.8	4.8	1.4	8.4	2.1
Jammu and Kashmir	2.2	1.9	2.5	2.2	4.1	3.8	5.4	4.5
Jharkhand	0.1	0	5	4.1	5.4	7.1	3.1	5.8
Madhya Pradesh	4.5	5.7	11.7	19.4	7.5	14.3	5.2	16.6
Odisha	11.7	24.5	9.1	6.6	8.3	6.2	6.7	5.3
Rajasthan	2	11.3	7.3	13	4.8	10.9	3.8	10.5
Uttar Pradesh	26	20.8	17.2	22.3	15.8	16.8	23.4	21.1
Uttarakhand	0	0	3.7	3	4.2	2.8	7.7	5.9
Northeastern								
Arunachal Pradesh	0.5	0	3.6	3.3	5.6	4.7	5.5	3.8
Assam	3.7	0	8.8	5.2	14	7.7	11	6.2
Manipur	0.8	0	2.6	1.5	4.1	3.1	5.7	3.8

Meghalaya	4.1	3.8	3.6	1.8	1.9	1.7	1.2	1.2
Mizoram	0.8	0	3	4.6	3	7.5	0.9	2.6
Sikkim	1	0	2.1	0.5	1.7	0.6	1.4	0.4
Tripura	0.5	1.9	1.7	0.8	1.9	1.1	0.9	0.9
National	**0.4**	**0.03**	**28.2**	**4.5**	**38.9**	**11.5**	**8.8**	**7.6**

Source: RCH-DLHS-3, 2007-08

Painting an optimistic picture, the table has shows that very few women have not received any education. Among the **north and central states**, Bihar held highest percentage of women who did not attend school, that is, 41 percent in rural and 28 percent in urban residence followed by Uttar Pradesh where 26 percent of women were observed in rural residence while 21 percent of women were observed in urban residence. Moreover, more than 10 percent of rural women in Odisha have also not attended school while around 25 percent of women were observed in urban residence. The urban women of Rajasthan have shown greater percentage of urban women than rural women who have not attended any school. In the remaining states, the scores had been less than 10 percent.

The results of primary level education attainment have shown that more than 15 percent of women from rural as well as urban residence in Uttar Pradesh and have attended school up to primary level followed by 12 percent of rural women and 19 percent of women in Madhya Pradesh who have attained a primary level of education. Overall, the primary level education has been observed more in urban residence as compared to rural residence. Rajasthan has shown 13 percent of women from urban residence while less than 10 percent of rural women who attained primary level of education. Significantly, the rest of the states have shown less than 10 percent of women who have attained a primary level of education.

The category of higher secondary education has shown percentage value less than 10 percent of women. However, only Uttar Pradesh has shown more than 15 percent of women who attained higher secondary education in urban as well as in rural residence. On the other hand, Chhattisgarh has shown the lowest percentage of women in the same category.

More than 20 percent of women in the category of secondary education have been observed in Uttar Pradesh. Significantly, remaining of the states has shown greater percent of women in urban residence as compared to rural residence. More than 10

percent of women have been observed in Madhya Pradesh followed by Rajasthan. On the other hand, lowest 2.1 percent of women from urban residence in Himachal Pradesh have shown attainment of secondary education in rural residence. The rest of the states has shown 10 percent of women in this category.

In the **northeastern region**, the lowest percentage of women have been observed in the category of no education which reflected the better conditions of the women. However, Meghalaya has shown considerable percentage of women in rural as well as in urban residence that have no education.

An increasing trend has been observed in the category of primary level of education. Assam has shown more than eight percent of women from rural residence while 5.2 percent of women from urban residence respectively. Remaining of the states has shown less than five percent of women in rural as well as in the urban residence, who had attained primary education.

The category of higher secondary education has shown highest percentages of women from each state as well as from both the residences. In Assam, 14 percent of women from rural residence have attained higher secondary education while around eight percent of women have been observed in rural residence. Similarly, in Arunachal Pradesh six percent of women were seen in rural residence while five percent were from urban residence followed by Manipur where 4.1 percent and 3.1 percent of women and three percent and 7.5 percent in Mizoram from rural and urban residences respectively.

Finally, a downfall has been observed in the percentage of women who attained secondary education. In rural residence, highest 11 percent of women have been observed in Assam followed by six percent of women in Manipur and 5.5 percent of women in Arunachal Pradesh. Remaining of the states has shown the value of percentage less than five percent. Similarly, in urban residence, highest 6.2 percent of women have been observed in Assam followed by four percent in Arunachal Pradesh and Manipur. Remaining of the states has shown values less than three percent in this category.

Conclusion

The background characteristics of the currently married women provided an opportunity to understand the status of the women in the study area. This understanding will enable a rich analysis that would be done in the succeeding chapters. The age group wise distribution had shown that the women in the high focused states had largely been concentrated in middle age groups. As a large proportion of women practice Hinduism the data shed light on the intricate traditional practices that are associated with pregnancy. Strikingly, a large proportion of women belonged to SC/ST category which has exhibited its relation with educational status. In the north and central states, bigger states such as Uttar Pradesh, Bihar, Jharkhand and Madhya Pradesh had consistently showed higher percentages of women in different characteristics. On the other hand, states like Himachal Pradesh, Chhattisgarh, Odisha and Uttarakhand had largely remained under the line of low scores. In the northeastern states, Assam, Mizoram, Tripura have shown greater variations while remaining of the states had shown slight fluctuations in different background characteristics of women.

Since, the data has been skewed towards the rural population, the thrust of NRHM has been rural India and therefore, significant variations had been more prominent than the urban women had. However, the concentration of Hindu women who largely belong to SC/ST had been a significant result of the analysis. The bigger and backward states have evinced major concentration of uneducated women which would play an important role in the analyses in the succeeding chapters.

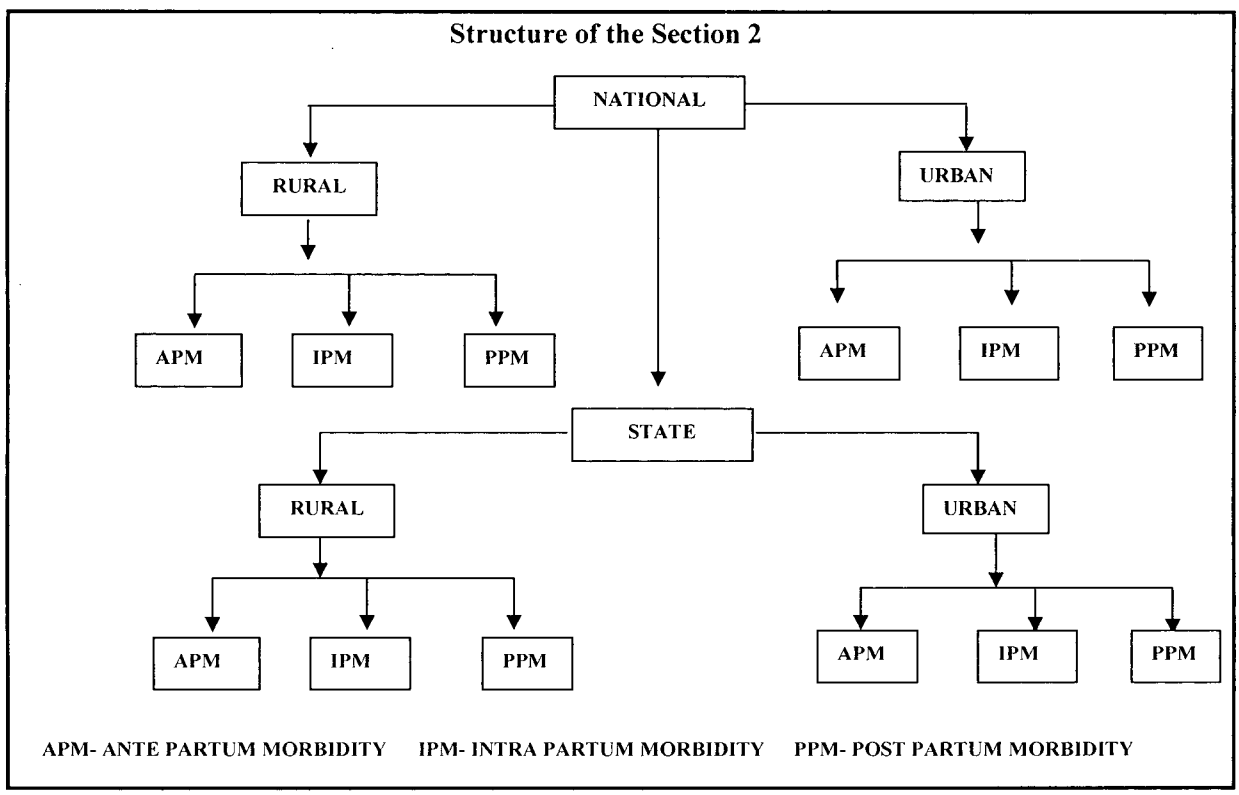
SECTION-2

Distribution of Morbidities in the High Focused States

2.2.1 Introduction

This section of the Chapter 2 has focused on the epidemiology of morbidities. The question on morbidities (symptoms) was asked to the women during the three years (2004) preceding the survey. The structure of Section-2 has been framed below:

Fig: 2.2



The morbidity has been categorized into three: (1) Ante partum period that reflected the health problems occurred during the time of pregnancy, (2) Intra partum period, which reflected reporting of health problems during delivery, and (3) Post partum period included the health problems after delivery. Following were the morbidities that were reported by the women in the survey:

Table 2.6: Reported Morbidities by the Currently Married Women in the High Focused States

Code	ANTE PARTUM	Code	INTRA PARTUM	Code	POST PARTUM
1	Swelling of hands, feet and face	14	Premature labour	20	High fever
2	Paleness/Giddiness/Weakness	15	Excessive bleeding	21	Lower abdomen pain
3	Visual disturbances	16	Prolonged labour (more than 12 hours)	22	Foul smelling vaginal discharge
4	Excessive fatigue	17	Obstructed labour	23	Excessive bleeding
5	Convulsions not from fever	18	Breech presentation	24	Convulsions
6	Weak or no movement of fetus	19	Convulsion/High BP	25	Severe headache
7	Abnormal position of fetus				
8	Malaria				
9	Excessive vomiting				
10	Hypertension/High BP				
11	Jaundice				
12	Excessive bleeding				
13	Vaginal discharge				

Source: RCH-DLHS-3, 2007-08

The codes of the morbidities had been used in plotting the graphs. From the table, it has been observed that 1-13 are the codes for ante partum morbidities, 14-19 are allotted to intra partum morbidities and 20-25 are the codes given to post partum morbidities.

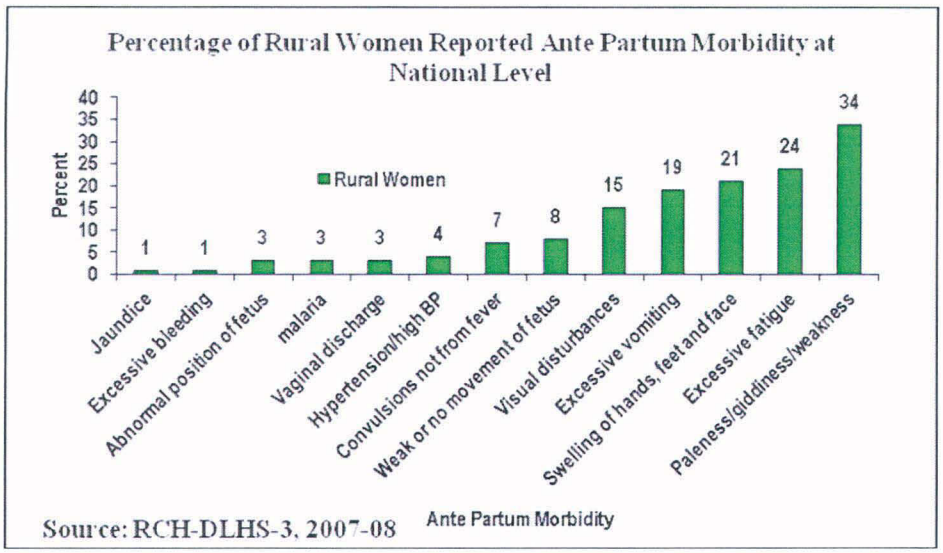
2.2.2 MORBIDITY AT NATIONAL LEVEL

2.2.2(a) Ante Partum Morbidity at National Level

The ante partum morbidities had responses for parasitic diseases like Malaria and water borne diseases like Jaundice. Both the problems lead to poor health of women and hence have significant influence on the outcome. Other morbidities have been vomiting, fatigue and convulsions that are often neglected by the pregnant women and hence treatment seeking have been observed minimal. The reporting has been found to be less even when women had suffered from severe problems such as vaginal discharge and excessive bleeding.

The bar graph (**Fig 2.3**) has shown the reported ante partum morbidities at national level. It needs to be mentioned that the national level in the present study had been the composite women of the 17 states of India. The results at national level have been affected by multiple responses given by a single woman. Therefore, it is called as comorbidity.

Fig 2.3

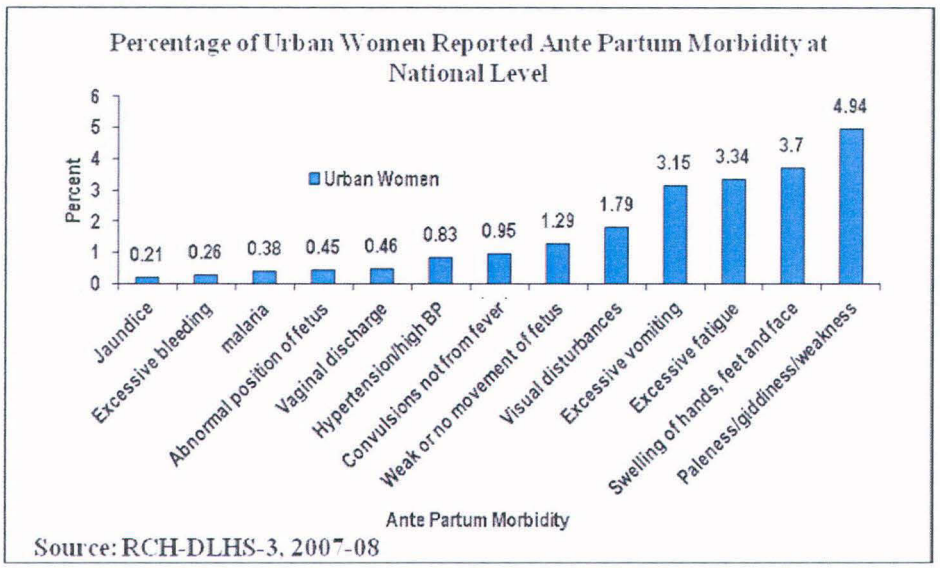


Overall, 37 percent of the total currently married women have responded to question regarding ante partum morbidities. Out of the 37 percent women, the data results have shown that 34 percent of women suffered from paleness/giddiness/weakness during pregnancy. More than 20 percent of women have suffered from excessive fatigue and swelling of hands, feet and face. The percentage of women suffered from excessive vomiting and visual disturbances have also been considerable. The rest of the morbidities has scored less than 10 percent of women.

The **Fig 2.4** has shown the distribution of reported ante partum morbidities by urban women. The findings have shown that the reporting had remained low which could be a result of sampling factor. However, almost five percent of women have reported paleness/giddiness/weakness followed by almost four percent of women who had swelling of hands, feet and face. Largely the reporting of the morbidities has been less than one percent. From the figure, it can be interpreted that in rural as well as in urban areas women have reported high only for those morbidities which occurred frequently

and felt comfortable in reporting like vomiting, giddiness, swelling in hands, feet and face. Moreover, health problems are considered as ailments and therefore medical examination felt not required.

Fig 2.4

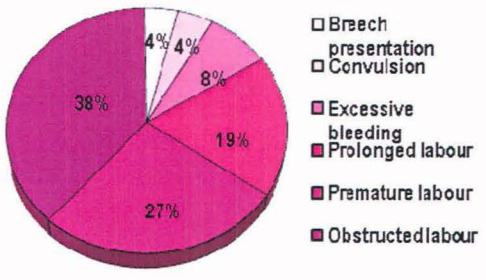


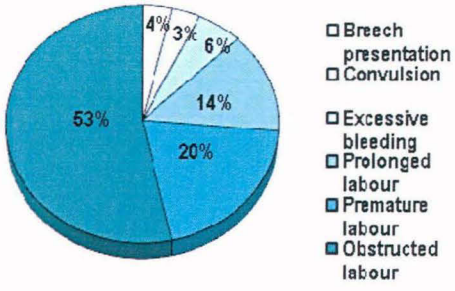
Thus, the problems are treated with homemade remedies. On the contrary, health problems such as excessive bleeding, vaginal discharge, and abnormal position of the fetus require medical examination of the organs. The tests are often exorbitant and therefore women could not afford them.

2.2.2 (b) Intra Partum Morbidity at National Level

Intra partum period is the most crucial stage of pregnancy when women suffer from perilous conditions. Generally, the position of the fetus in the womb determines the criticalities of the delivery. According to the **Fig 2.5,** the women in rural residence have reported 38 percent of obstructed labour that has accounted for highest among all the morbidities, followed by premature labour 27 percent and prolonged labour 19 percent. In urban areas, more than half of the women have reported obstructed labour at the national level followed by premature labour (20 percent) and prolonged labour (14 percent). For the remaining morbidities, less than 10 percent of women have reported. In certain cases, obstructed labour is associated with 'presentation', which could be understood by the picture attached below.

Fig 2.5





Intra Partum Morbidities in Rural Residence **Intra Partum Morbidities in Urban Residence**

According to a Medical dictionary[1], definition of presentation and its various forms can be understood as follows:

(1) **Presentation**: It is the condition where part of the fetus lying over the pelvic inlet; the presenting body part of the fetus.

1(a) **Breech presentation:** Presentation of the fetal buttocks or feet in labour; the feet may be alongside the buttocks *(complete breech p.);* the legs may be extended against the trunk and the feet lying against the face *(frank breech p.);* or one or both feet or knees may be prolapsed into the maternal vagina *(incomplete breech p.)*

1(b) **Brow presentation:** Presentation of the fetal brow (forehead) in labour.

1(c) **Cephalic presentation:** Presentation of any part of the fetal head in labour, whether the vertex, face, or brow.

1(d) **Compound presentation:** Prolapse of a limb of the fetus alongside the head in a cephalic presentation or of one or both arms in a breech presentation.

1(e) **Footling presentation:** Presentation of the fetus with one (single footling) or both (double footling) feet prolapsed into the maternal vagina.

1(f) **Funis presentation:** Presentation of the umbilical cord in labour.

1(g) **Shoulder presentation:** Presentation of the fetal shoulder in labour.

1(h) **Placental presentation (Placenta pre′via):** Low implantation of the placenta so that it partially or completely covers the cervical os (the opening of the cervix).

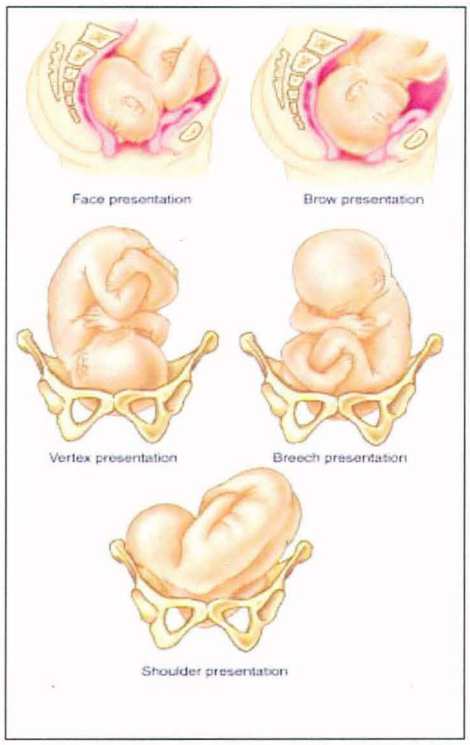
Percentages are used to designate the amount of obstruction; e.g., 100 percent is total placenta previa, and 50 percent indicates that about half the opening is obstructed. The condition occurs with greater frequency in women who have had multiple pregnancies or are over 35.

1(i) **Transverse Presentation (Lie)**: The relationship between the long axis of the fetus and the long axis of the mother. In a longitudinal lie the fetus is lying lengthwise, or vertically, in the uterus, whereas in a transverse lie the fetus is lying crosswise, or horizontally.

1(j) **Vertex presentation:** That in which the vertex of the fetal head is the presenting part.

Fig 2.6

Types of Breech Presentation



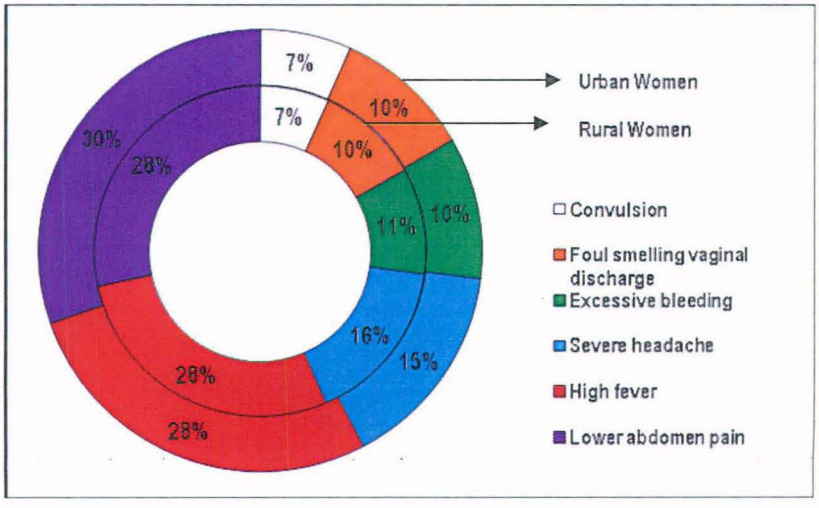
The **Fig 2.6** has shown a few kinds of presentation that lead to obstructed labour among women. Breech presentation is one of such conditions, which is considered most critical. However, the only four percent of rural women had reported for breech presentation during delivery.

From studying the definitions of presentation and its type, it can be concluded that unskilled personnels who assist the delivery may not be aware of such criticalities and on the other hand, such critical conditions require trained health personnels, which are, at times, not available in rural areas. The delivery complications show their affect on the health of the mother significantly for example increase in the intra abdominal pressure showing important role in genital prolapse (**Tilton et. al 1989**). Delivery complications are more common among obese women and prevalence of hypertension is higher among young women (**Asya Al Riyami et al. 2004**).

2.2.2 (c) Post Partum Morbidity at National Level

In reproductive health or gynecology, post partum or the obstetric period is the most important period of the pregnancy. Although, the delivery and post partum period are closely related to each other, the type of delivery has shown its impact on the post partum conditions of the women. In addition, the post partum period, in the country, is closely enveloped by traditional rituals, which are presumed to be made for the cleanliness of the women after the childbirth.

Fig 2.7 Percentage of Rural and Urban Women reported Post Partum Morbidity



The inner circle of the figure has shown reporting by rural women and the outer circle has shown the results of urban women at national level. The rural-and urban women have reported almost same for the morbidities with a slight difference in reporting of excessive bleeding, severe headache and lower abdomen pain. The symptoms that were asked in the survey, largely had been determined by the perception

of the women. Nevertheless, lower abdomen pain in rural as well in urban areas had been reported to be the highest post partum morbidity, that is, 30 and 28 percent respectively. The second highest reported morbidity was high fever (28 percent in rural as well as in urban) followed by severe headache (16 percent in rural and 15 percent in urban). Lowest reporting has been for convulsion, that is, 7 percent in rural as well as in urban areas. Ten percent of the women in rural and urban areas as well have reported for excessive bleeding.

2.2.3 MORBIDITY AT THE STATE LEVEL

2.2.3 (a) ANTE PARTUM MORBIDITY

The map has shown the distribution of ante partum morbidities in rural areas high focused states. The bars have shown the percentage values of women out of the total women population of that state. The data had been transformed based on following steps:

1) Bi-variate (cross tabulation) analysis was run for each morbidity with each state where the response is a categorical form i.e. yes and no.
2) The percent was obtained of those women who have responded for the morbidity. Therefore the equation adopted is:

$$\mathbf{Morb1} = \frac{nx}{N} * \mathbf{100}$$

Where,

Morb1= each morbidity such as swelling of hands, feet and face

nx= number of women who have reported 'yes' for the presence of symptom

N= total number of women in the state

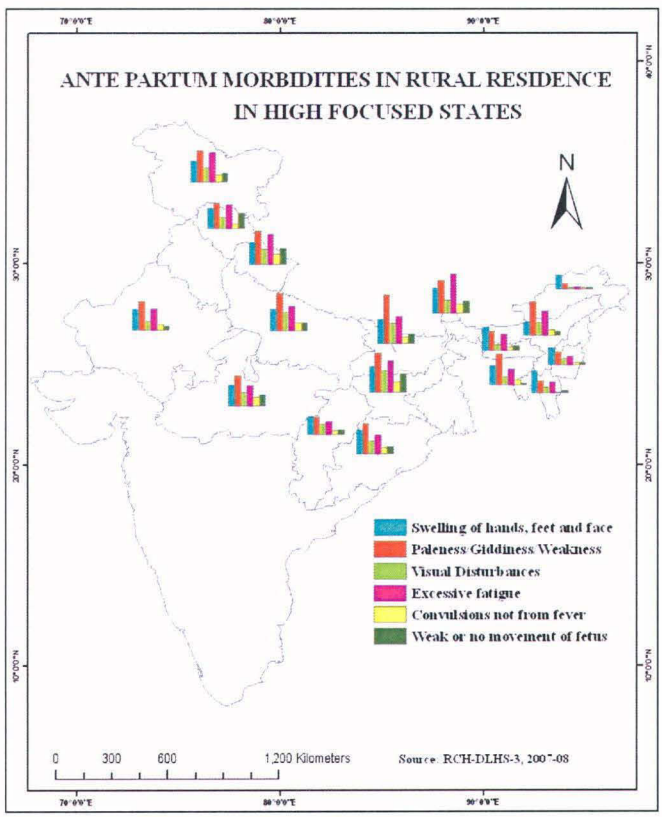
3) The above two steps were followed to find out the percent of morbidity in rural as well as in urban areas.

ANTE PARTUM MORBIDITY IN RURAL RESIDENCE

The **Map 2.1** has shown the pattern of **swellings of hands, feet, and face**. As an overview, the presence of symptoms among the women of the north and central states has not exceeded 30 percent. Interestingly the northern states have shown significant percent

of women as 24 percent of women in Jammu and Kashmir, 23 percent in Himachal Pradesh and 25 percent in Uttarakhand. In the northeastern states, Sikkim has shown the highest percent of women, that is, 29 percent followed by 27.5 percent in Meghalaya and 25 percent in Mizoram. Lowest reporting has been observed in Assam, that is, 14 percent of women followed by Arunachal Pradesh (15 percent). Likewise, to the north and central states, the percent of the women reported for morbidities has not exceeded 30 percent in the northeastern states.

Map 2.1



The bars showing **paleness/giddiness/weakness** reflected greater reporting in rural residence. In the north and central states, 57 percent of women in Bihar followed by 46 percent in Jharkhand and 44 percent in Uttar Pradesh had been the reporting by the women. In the rest of the states, the percentage values lie between 21 in Chhattisgarh and 36 percent in Jammu and Kashmir. In the northeastern states, Assam has shown highest percent, that is, 39 percent followed by 30 percent in Sikkim. In other states, the percentage value ranged varied from six in Arunachal Pradesh to 36 percent in Tripura.

Manipur and Mizoram have lightest difference in reporting i.e. 15 in the former and 14 in the latter respectively.

Altogether, **visual disturbances** remained a less reported morbidity among the women. In the **north and central states**, the percentages varied from 10 percent in Rajasthan to 25 percent in Jharkhand followed by 24 percent in Bihar. The response has very little variation among all the states. Similar condition has been observed in the **northeastern states** where only one percent was reported in Arunachal Pradesh, six percent in Mizoram, seven percent in Manipur and Meghalaya and nine percent in Tripura. The highest 15 percent response had been observed in Sikkim and Assam respectively.

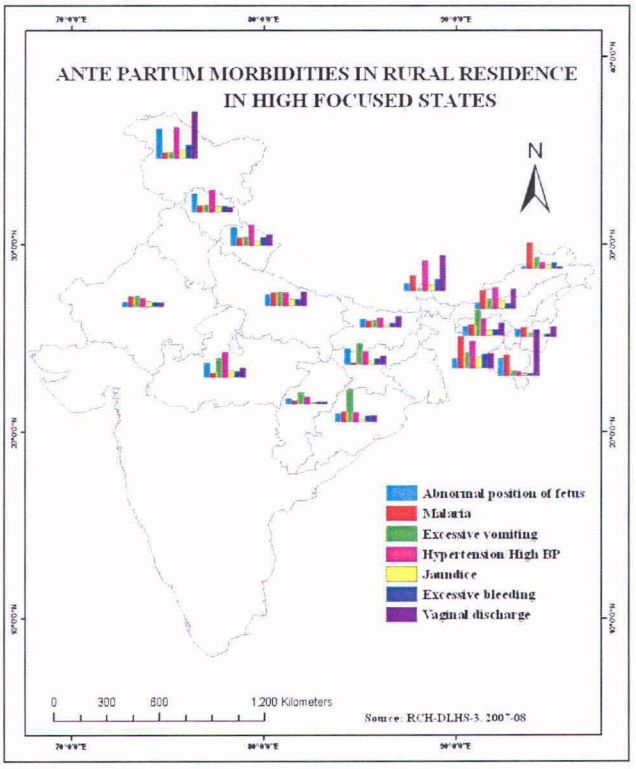
In the **north and central states, excessive fatigue** had a low variation but the response had been slightly higher than that of visual disturbances. Around 37 percent of women had been observed in Jharkhand followed by 35 percent in Jammu and Kashmir and Uttarakhand and 32 percent in Bihar. In other states, the percentage varies from 16 in Chhattisgarh to 26 percent in Uttar Pradesh. In the **northeastern states**, the variation has been quite significant, as only two percent have responded in Arunachal Pradesh and 46 percent in Sikkim. In all other states, the variation lay between 10 percent in Manipur and 29 percent in Assam and others falling within the range such as 13 percent in Mizoram, 18 in Tripura and 20 percent in Meghalaya.

Convulsion not from fever is yet another morbidity, which has been reported low by the women in rural areas. In the **north and central states**, 12 percent was reported in Uttarakhand and Jharkhand followed by 11 percent in Madhya Pradesh. The response in other states has been less than 11 percent such as eight percent in Jammu and Kashmir, Bihar and Odisha, nine percent in Uttar Pradesh and six and four percent observed in Himachal Pradesh and Chhattisgarh respectively. Among the **northeastern states**, merely one percent of women had been observed in Arunachal Pradesh and Mizoram. Around 11 percent of women were observed in Sikkim and with a slight difference of three and four percent in Manipur and Meghalaya respectively and six and seven percent in Tripura and Assam respectively.

The symptom of **weak or no movement of fetus** remains ambiguous in its nature as women could hardly recall properly about the movement of the fetus. Therefore, the

reporting remained low. Around 21 percent of women in Jharkhand followed by 19 in Uttarakhand, 18 in Himachal Pradesh, 14 in Madhya Pradesh and 11 in Jammu and Kashmir had reported in the north and central states. The lowest response was observed in Rajasthan that is four percent followed by five Chhattisgarh, nine in Uttar Pradesh and Odisha respectively. In the **northeastern states**, the response, as expected, remained very low for instance one in Arunachal Pradesh, two in Manipur, Mizoram and Tripura respectively and six in Meghalaya.

Map 2.2



Similar to the response of the above-mentioned symptoms, **abnormal position of fetus** has also remained poorly reported. Merely one had been the response from Rajasthan and Chhattisgarh respectively followed by two percent in Bihar and Odisha. Similarly, four percent has been observed in Jharkhand and Madhya Pradesh followed by five in Himachal Pradesh and Uttarakhand. The highest response was observed in Jammu and Kashmir that is eight percent. In the **northeastern states**, the percentage value varied from 0.5 in Arunachal Pradesh to five in Mizoram. The percentage in other states ranged from two in Manipur and Assam and three in Tripura and Meghalaya respectively.

Malaria had remained a less occurred problem among women in rural areas and hence, the reporting had been observed low. In the **north and central states**, as an average only four percent women have responded for the symptoms of Malaria during their pregnancy. The lowest response of two percent had been observed in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and Bihar respectively. The highest percent of nine had been seen in Odisha followed by six percent in Jharkhand and five in Madhya Pradesh whereas, Rajasthan, Uttar Pradesh and Chhattisgarh had a slight variation of three and four respectively. In the **northeastern states**, the percentage values had been low for instance one in Sikkim, Manipur ad Mizoram, three in Arunachal Pradesh and Assam respectively. Seven percent had been seen in Meghalaya as highest percent followed by five percent in Tripura.

The response for **excessive vomiting** was slightly higher among the rural women with an average of 20 percent across the states. In the **north and central states**, highest response had been observed in Rajasthan as well as in Bihar, that is, 20 percent followed by 26 percent in Odisha, 23 percent in Jammu and Kashmir, Uttarakhand, and Madhya Pradesh respectively. The lowest percent has been observed in Chhattisgarh, that is, 12 percent followed by 20 percent in Uttar Pradesh and Jharkhand. In the **northeastern states**, except five and six percent in Mizoram and Manipur respectively, rural women have responded quite well for the morbidity for instance Sikkim (27 percent) and Assam (25 percent). A slight difference of one percent was observed in Arunachal Pradesh followed by 15 percent and 16 percent in Tripura and Meghalaya respectively.

The reporting of **hypertension** has again reduced among the women. In **the north and central states**, highest nine percent of women had been observed in Jammu and Kashmir followed by seven in Madhya Pradesh, six in Himachal Pradesh, and Uttarakhand. Low reporting by two, three, and four percent of women had been noted in Rajasthan, Chhattisgarh, Bihar, Odisha and Uttar Pradesh and Jharkhand respectively. In the **northeastern states**, nine percent women were seen in Sikkim followed by eight in Tripura and six in Assam. Low response had been observed in states like Mizoram (one), two in Arunachal Pradesh and Manipur, and five percent of women in Meghalaya respectively.

Jaundice had remained a rare occurred morbidity among women and hence remained less reported. In the **north and central states**, interestingly, the percentage of women varied from one and two observed in Uttarakhand, Bihar, Jharkhand and Odisha in the former and Jammu and Kashmir, Himachal Pradesh, Rajasthan, Uttar Pradesh and Madhya Pradesh in the latter percentage category respectively. Notably Chhattisgarh has shown no reporting by the women. In the **northeastern states**, except Tripura where three percent of women reported, all other states shared a common picture with that of the north and central states. The percentage of women varied from one and two in Arunachal Pradesh, Manipur, Mizoram in the former to Sikkim, Meghalaya and Assam in the latter respectively.

In the **north and central states**, the women reported for **excessive bleeding** varied from zero in Chhattisgarh to highest four in Jammu and Kashmir. In other states, two percent of women have been observed in Himachal Pradesh, Uttarakhand, Uttar Pradesh, Jharkhand, and Odisha whereas one percent has been seen in Rajasthan and Bihar. In the **northeastern states**, the percentage of women varied from 0.7 in Mizoram to four in Tripura followed by three percent of women in Sikkim. In other states, two percent of women were seen in Arunachal Pradesh, Meghalaya, and one percent in Assam.

The women had given a mixed response to the symptoms of **vaginal discharge**. The highest percentage of women had been observed in Jammu and Kashmir and the lowest in Chhattisgarh (0.5 percent). In the rest of the states, the percentages of women varied from one in Rajasthan, two in Himachal Pradesh and Odisha, three in Uttarakhand, Bihar and Jharkhand and Madhya Pradesh respectively and four percent in Uttar Pradesh. In the **northeastern states**, the lowest percent had been observed in Arunachal Pradesh that is 0.6 and the highest was observed in Mizoram that is 13 percent followed by 10 percent in Sikkim. In remaining of the states, the variation of the percentage was observed from three in Manipur to four in Tripura and Meghalaya and six in Assam respectively.

ANTE PARTUM MORBIDITY IN URBAN RESIDENCE

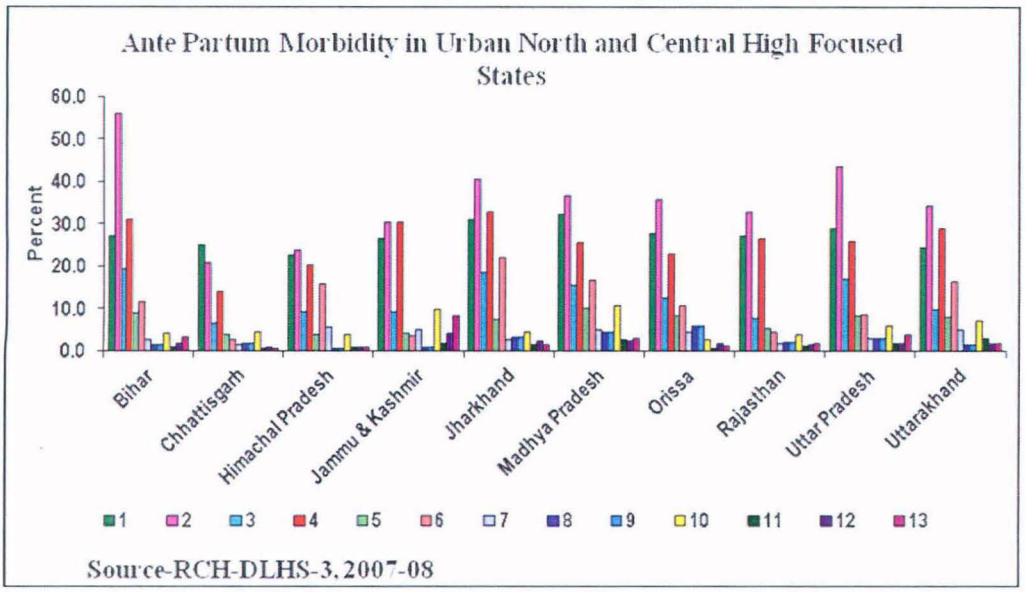
The **Fig 2.8** and **Fig 2.9** have displayed the ante partum morbidities in the north and central and northeastern states. In the urban areas of the **north and central states**,

women have reported **swelling of hands, feet, and face** quite well. The highest percentage of women have been observed in Madhya Pradesh, that is, 32 followed by 31 percent in Jharkhand, 29 in Uttar Pradesh, and 28 in Odisha. The lowest percentage of women, on the other hand, have been seen in Himachal Pradesh (22) followed by Uttarakhand (24), Chhattisgarh (25), Jammu and Kashmir (26) and 27 percent in Rajasthan and Bihar as well. In the **northeastern states**, 13 percent of women were observed in Arunachal Pradesh, Assam, and 14 percent in Manipur as the lowest percentage of women. The highest 23 percent of women were observed in Sikkim followed by 29 percent in Meghalaya, 26 percent in Mizoram and 4 percent in Tripura. Overall, 27 percent of the women have reported the morbidity out of total urban women.

In the **north and central states**, the highest percent of women reported for **paleness/giddiness/weakness** had been seen in Bihar (56) followed by Uttar Pradesh (43), Jharkhand (41), and Madhya Pradesh (37). In other states, the percentage values varied from 21 in Chhattisgarh to 36 percent in Odisha. In the **northeastern states**, the lowest percentage of women have been observed in Manipur (9) followed by 10 percent in Arunachal Pradesh, Mizoram (19). The highest 35 percent of women have been observed in Sikkim as well as in Assam followed by 33 in Tripura, 27 I Meghalaya and 19 in Mizoram.

The urban women have reported low for **visual disturbances.** Notably, 19 percent of the women in Bihar have reported the morbidity followed by 18 in Jharkhand, 17 in Uttar Pradesh, and 15 in Madhya Pradesh. A series of low percent has been observed for instance, seven in Chhattisgarh, 8 in Rajasthan, 9 in Jammu and Kashmir as well as in Himachal Pradesh and 10 in Uttarakhand and 12 percent in Odisha. In the **northeastern states**, except Sikkim and Assam, where 14 and 11 percent of the women have reported for the morbidity, the remaining states have shown a very poor percentage of women varied from three in Arunachal Pradesh, four in Manipur and Tripura and seven in Mizoram and eight in Meghalaya.

Fig 2.8



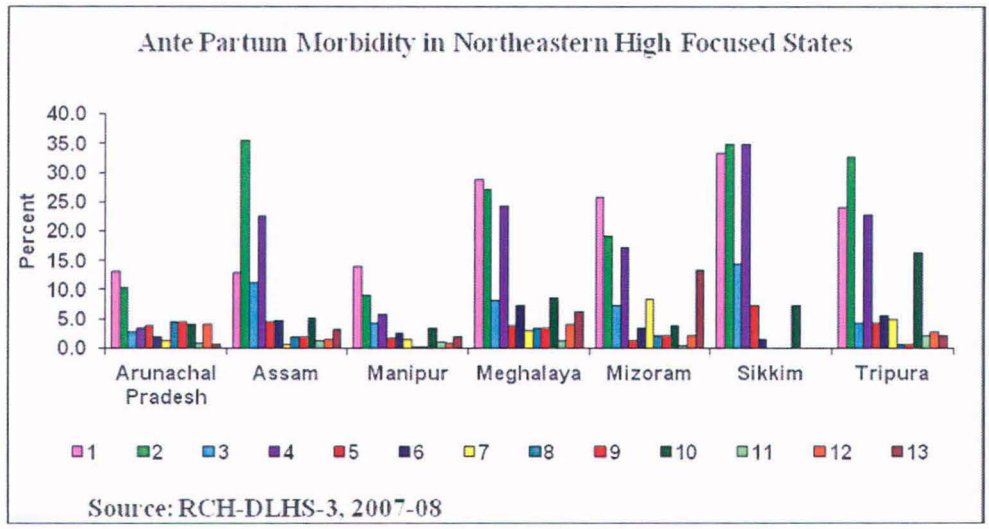
Around 24 percent of the total urban women have reported **excessive fatigue**. The percentages observed in states like Jammu and Kashmir (30), Uttarakhand (29), Rajasthan (27), Uttar Pradesh (26), Bihar (31), Jharkhand (33) and Madhya Pradesh (26) had been greater than the total percentage of urban women whereas Himachal Pradesh (20 percent) and Chhattisgarh (14) accounted the percentage lower than the total. Similarly, the percentage of women in the **northeastern states** had a picture of mixed colours painted by Arunachal Pradesh (3 percent) and Manipur (6 percent) which have observed lesser than the total percentage. On the contrary, 35 percent of women in Sikkim 35 followed by Meghalaya (24 percent), Tripura, and Assam (23 percent), have been equal and lesser than the total percentage of urban women.

The results of **convulsions not from fever** have shown overall seven percent of the total urban women reported for the morbidity. Hence, all the states have been observed with low percentage of women. The highest values of percentage in the **north and central states** were observed in Madhya Pradesh (10) followed by Bihar (9), eight percent in Uttarakhand, Uttar Pradesh and Odisha. On the other side, the lowest percentage of women have been observed in Jammu and Kashmir and Himachal Pradesh that is four percent followed by five percent in Rajasthan. In the **northeastern states,** except Sikkim where the percentage has been equal to the percentage of total urban women, all other states have shown low percentage values for instance one in Mizoram

followed by Manipur (two) and four percent in Arunachal Pradesh, Tripura, Meghalaya, Assam respectively.

The result of **weak or no movement of fetus** shows a mixed response picture of the states. The lowest percentages are observed in Chhattisgarh (3), followed by four percent in Jammu and Kashmir and Rajasthan, 9 percent in Uttar Pradesh, 11 percent in Odisha and Bihar, 16 percent in Himachal Pradesh and Uttarakhand and 22 percent in Jharkhand represent the series of high percentages in urban women. In the northeastern states, the percentage is very low which starts from merely one percent in Sikkim followed by two in Arunachal Pradesh as well as in Manipur, three in Mizoram, five percent in Assam, six percent in Tripura and seven percent in Meghalaya which is the highest percent in northeastern states.

Fig 2.9



The reporting of **abnormal position of fetus** has been one of the lowest reported symptoms under the category of ante partum morbidity. Overall, only three percent of the total women have reported for the morbidity. In the **north and central states**, highest six percent of women were observed in Himachal Pradesh followed by five percent in Jammu and Kashmir, Uttarakhand and Madhya Pradesh, four percent in Odisha and three in Uttar Pradesh, Bihar and Jharkhand respectively. In the **northeastern states**, Sikkim accounted for no reporting followed by 0.6 percent in Assam, one percent in Arunachal Pradesh, two in Manipur, three in Meghalaya, five in Tripura and eight in Mizoram.

Malaria is yet another morbidity, which has been reported low by the urban women residing in urban areas. In the **north and central states** the percentage of women varied from zero in Himachal Pradesh to merely six percent in Odisha. In the rest of the states, the percentage values lay within the range for instance one percent in Jammu and Kashmir, Uttarakhand, and Bihar, two percent in Rajasthan and Chhattisgarh, three percent in Uttar Pradesh and Jharkhand, and four percent in Madhya Pradesh. In the **northeastern states**, Sikkim and Manipur showed no reporting but in other states, the results have been from one percent in Tripura, two percent in Mizoram and Assam, and three percent in Meghalaya.

The response was quite high for **excessive vomiting** by the **urban** women across the states with an average of 21 percent. In the **north and central states**, 30 percent of women reported for the morbidity followed by 29 percent of women in Rajasthan and Madhya Pradesh, 28 percent in Odisha, 23 percent in Himachal Pradesh, 22 percent in Uttarakhand and Uttar Pradesh. Jammu and Kashmir, Jharkhand, and Chhattisgarh had exhibited slight differences in reporting that is 17 percent in former and 18 percent in the latter. In the **northeastern states**, the lowest percentages of women have been observed in Manipur, that is, four percent followed by eight percent in Mizoram. The highest reporting has been recorded in Sikkim and Assam, that is 28 percent, which is also higher than the average response percent of total urban women, followed by 21 percent in Tripura, 17 percent in Meghalaya, and 16 percent in Arunachal Pradesh.

Hypertension largely remained a less reported morbidity among the urban women. In the **north and central states**, the highest percentage has been recorded in Madhya Pradesh (11 percent) and Jammu and Kashmir (10 percent) followed by other states where the variation has been observed from three percent in Odisha followed by four percent in Himachal Pradesh, Rajasthan, Bihar, Jharkhand, and Chhattisgarh, six percent in Uttar Pradesh and seven percent in Uttarakhand. In the **northeastern states**, Tripura scored the highest percentage of women, that is, 16 followed by Meghalaya (9 percent), seven percent in Sikkim, five percent in Assam, four in Arunachal Pradesh and Mizoram, and three percent in Manipur.

Jaundice is another poorly reported morbidity by the urban women. Overall, only 315 women (two percent) out of 20646 urban women have responded to it. In the **north**

and central states, the variation had been from the absence of response in Odisha and Chhattisgarh to one, two and three percent of women in Himachal Pradesh, Rajasthan, Bihar, Jharkhand, Jammu and Kashmir, Uttar Pradesh, Uttarakhand ad Madhya Pradesh respectively. In the **northeastern states**, Sikkim and Mizoram showed no absence of reporting by the women followed by one percent of women in Arunachal Pradesh, Manipur, Meghalaya and Assam and two percent of women in Tripura.

Similar picture to that of jaundice, hypertension, **excessive bleeding** has also been morbidity suffered from low reporting by urban women. In the **north and central states**, the variation had been from 0.7 percent in Chhattisgarh to 0.9 percent in Himachal Pradesh followed by one percent in Rajasthan, two percent in many states such as Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Odisha and Madhya Pradesh followed by highest four percent observed in Jammu and Kashmir. In the **northeastern states**, Sikkim has shown the absence of reporting while Manipur has shown 0.9 percent of women. In remaining of the states, the difference of percentage varied from one percent in Assam, two percent in Mizoram, three percent in Tripura to four percent in Arunachal Pradesh and Meghalaya. Overall, 391 urban women have responded for the morbidity out of 20644 women.

As an overview, only three percent of total urban women have reported the **vaginal bleeding** during their pregnancy. Since the overall percent remained low, the states did not show significant variations. Only 0.6 percent of women in Chhattisgarh, 0.9 percent in Himachal Pradesh, one percent in Jharkhand and Odisha, two percent in Uttarakhand and Rajasthan, three percent in Bihar and Assam, and four percent in Uttar Pradesh were the state wise percentage of women. In the **northeastern states**, Sikkim has shown the absence of reporting while 0.7 percent of women have been observed in Arunachal Pradesh, two percent in Manipur and Tripura, six percent in Meghalaya and 13 percent in Mizoram.

2.5.2 INTRA PARTUM MORBIDITY

INTRA PARTUM MORBIDITY IN RURAL RESIDENCE

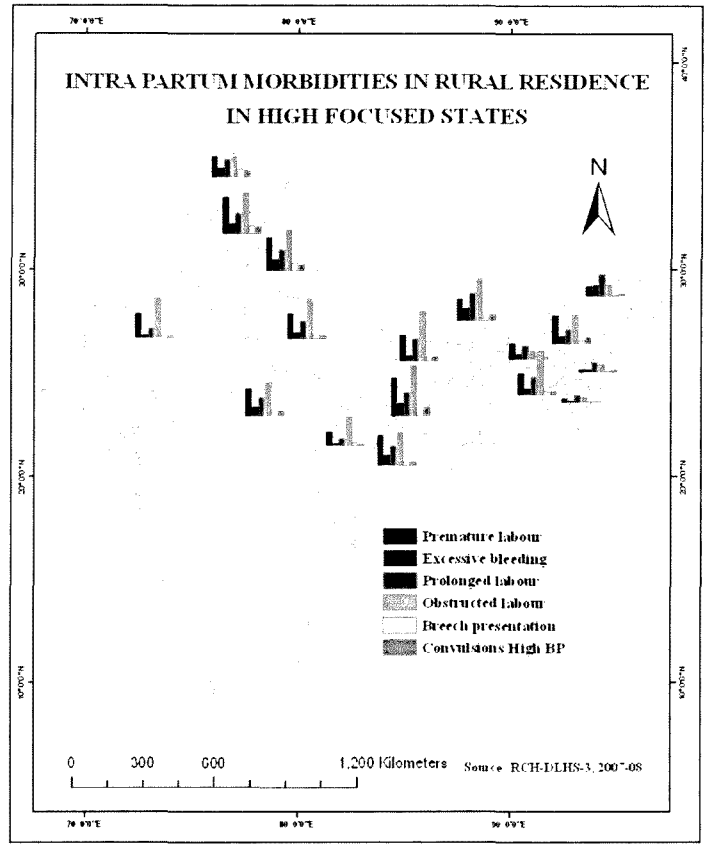
In the **north and central states**, rural women have reported fairly well for **premature labour** during delivery. On an average, 30 percent of rural women have reported for the morbidity. The highest 51 percent of women has been recorded in Jharkhand followed by 40 percent in Odisha. The lowest reporting has been observed in Chhattisgarh followed by 27 percent in Jammu and Kashmir. In remaining of the states, the difference in percentage of women varied from 32 in Rajasthan, 33 in Uttar Pradesh and 35 in Bihar. In the **northeastern states**, except Manipur and Arunachal Pradesh where reporting is 3 and 14 percent of women respectively, in the rest of the states, the reporting has been recorded such as 30 percent of women in Sikkim, 29 percent in Tripura, 22 in Meghalaya and 38 percent in Assam.

As an average, 10 percent of rural women in the **north and central states** have reported for **excessive bleeding** during their delivery. The lowest response was observed in Chhattisgarh (3 percent) followed by four percent in Rajasthan, eight in Uttar Pradesh, and nine percent in Bihar. The highest 17 percent of women were observed in Jharkhand followed by 15 percent in Uttarakhand, 14 in Himachal Pradesh, and Odisha respectively and 13 percent in Jammu and Kashmir. Among the **northeastern states**, three states namely Assam (11 percent), Arunachal Pradesh (14 percent), and Sikkim (18 percent) lay above the average whereas Tripura (9 percent) and Meghalaya (8 percent) lay below the average, which inferred poor reporting by the women.

Except poor response in Chhattisgarh, that is, nine percent of women, **prolonged labour** had been highly reported morbidity by the women in the **north and central states**. On an average, 23 percent of rural women have reported. The highest 31 percent of women has been recorded in Jharkhand followed by 30 percent in Bihar, 28 percent in Uttarakhand, 27 percent in Himachal Pradesh, 26 percent in Odisha. Rajasthan (12 percent) lay below the average while Uttar Pradesh (25 percent) and Madhya Pradesh remained on and above the average line of the percentage respectively. The lowest reporting, on the other hand, has been observed in Mizoram (10 percent) followed by Manipur (13 percent) and 19 percent in Meghalaya and Assam respectively of the

northeastern states. Moreover, Sikkim (37 percent), Arunachal Pradesh (29 percent), and Tripura observed reported percentage of women above the average line.

Map 2.3



Obstructed labour had emerged out as a very highly reported morbidity by the rural women. On an average 40 percent of rural women had reported for the morbidity. In the **north and central states**, the highest 66 percent of women had been observed in Bihar and Jharkhand followed by 53 percent in Himachal Pradesh, Uttarakhand, and Uttar Pradesh respectively. The lowest but significant percentage of women have been recorded in Jammu and Kashmir (26) followed by 37 percent in Chhattisgarh. The percentage of women in Rajasthan (52 percent) and Madhya Pradesh (45) displayed them above the average percent of total rural women. The **northeastern states** portrayed a picture of mixed reporting. The lowest seven percent of women have been observed in Mizoram followed by nine percent of women in Manipur, 11 percent in Meghalaya, and 15 percent in Arunachal Pradesh. The rest of the states like Sikkim (55 percent), Tripura (57 percent), and Assam (38 percent) remained above the average percent of total rural women.

The breech presentation had been a low reported morbidity by the rural women with an average response of merely five percent. In the **north and central states**, the highest 11 percent of women had been recorded in Himachal Pradesh followed by 10 percent in Jammu and Kashmir and nine percent of women in Uttarakhand. A series of low percentages of women has been observed in Rajasthan and Chhattisgarh (2 percent), Uttar Pradesh and Bihar (5 percent), four percent of women in Odisha and eight percent in Jharkhand and Madhya Pradesh. In the **northeastern states**, all the states had percentage of women lower than the average percentage for instance four percent in Tripura, Meghalaya, and Assam followed by three percent in Sikkim and merely one percent of women in Arunachal Pradesh and, Manipur and Mizoram.

Convulsion/ high BP remained poorly reported by mere five percent of total rural women. In the **north and central states**, the highest 12 percent of women had been observed in Jharkhand followed by nine percent in Himachal Pradesh, eight percent in Jammu and Kashmir, and Uttarakhand respectively and these states have remained above the average percentage of total rural women. In remaining of the states like Bihar and Madhya Pradesh, the percentage of women had been slightly higher than the average of total women while Uttar Pradesh (4 percent) and Odisha (4 percent) lay below the average percentage of women. The lowest reporting was observed in Chhattisgarh, that is, merely two percent. In the **northeastern states**, except Sikkim and Assam where 8 percent of women reported, in the remaining of the states the percentage of women had been very low.

INTRA PARTUM MORBIDITY URBAN RESIDENCE

The urban women have reported moderately for **premature labour** during the delivery period. On an average, 20 percent of urban women have reported for the morbidity. In **the north and central states**, the highest 56 percent of women were observed in Jharkhand followed by 44 percent in Himachal Pradesh, 43 percent in Bihar and Odisha respectively. The lowest 16 percent of women had been observed in Chhattisgarh followed by 20 percent in Jammu and Kashmir. The rest of the states like Uttarakhand and Uttar Pradesh (31 percent), Rajasthan (33 percent) and Madhya Pradesh (38) remained above the average percentage of total urban women. In the **northeastern states**, except Tripura (36 percent) and Assam (34 percent), all other states have been observed below the average

percentage of total urban women for instance, lowest two percent reported in Manipur followed by nine percent in Mizoram, 10 percent in Sikkim and 14 percent in Arunachal Pradesh.

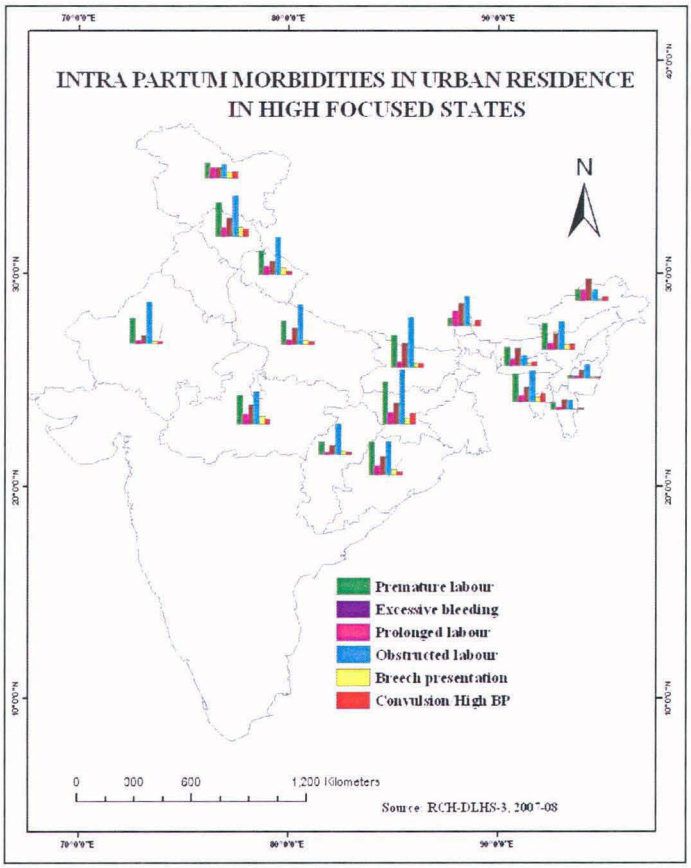
The reporting for **excessive bleeding** had remained low by urban women. On average, 10 percent of urban women experienced it during their delivery. Despite such reporting the percentage of women had remained high in the **north and central states** for instance highest 16 percent of women were observed in Jharkhand followed by 14 percent in Jammu and Kashmir, 13 percent in Odisha and Madhya Pradesh, 12 percent in Himachal Pradesh and 11 percent in Uttarakhand. On the contrary, low percentage of women had been recorded in Chhattisgarh (3 percent) Rajasthan (4 percent), Uttar Pradesh (6 percent) and Bihar (8 percent) respectively. In the **northeastern states**, highest 20 percent of women reported were seen in Sikkim followed by 14 percent in Arunachal Pradesh. The rest of the states like Manipur (3 percent), Mizoram (4 percent), Tripura, Meghalaya, and Assam (9 percent) laid below the average percentage line of total urban women.

Prolonged labour remained a moderately reported morbidity by the urban women with an average percent of 21. In the **north and central states**, highest 32 percent of urban women were observed in Bihar followed by Jharkhand (28 percent), 26 percent in Madhya Pradesh and 25 percent in Odisha. The lowest 11 percent of women were reported in Rajasthan followed by 12 percent in Chhattisgarh, 14 percent in Jammu and Kashmir and 18 percent in Uttarakhand. Few other states have remained above the average line of the percentage of women such as Himachal Pradesh (24 percent) and Uttar Pradesh (23 percent). In the **northeastern states**, except three states viz. Manipur (11 percent), Mizoram (14 percent) and Tripura (20 percent), all other states had percentage of women above the average such as Assam (21 percent), Meghalaya (23 percent), Arunachal Pradesh (28 percent), and Sikkim (30 percent).

Like the rural women, **urban women** had also reported fairly well for **obstructed labour** with an average of 39 percent of women. In the **north and central states,** the percentage of women had remained significantly high for instance 71 percent in Jharkhand, 65 percent in Bihar, 54 percent in Rajasthan, 53 percent in Himachal Pradesh, and 52 percent in Uttar Pradesh. In a few states, moderate percentage of women was recorded for

instance Uttarakhand (49 percent), Odisha (44 percent), Madhya Pradesh (43 percent), and Chhattisgarh (39 percent).

Map 2.4



In the **northeastern states**, with a few exceptional states such as Arunachal Pradesh (14 percent), Manipur (17 percent), Mizoram (12 percent), and Meghalaya (13 percent), the rest of the states have been observed above the average line of the percentage of total urban women viz. 40 percent in Tripura and 39 percent in Sikkim. Assam with 37 percent of women has shown moderate reporting of the morbidity.

Breech presentation, which is necessary to be supported by clinical examination, has shown poor reported by the urban women. The highest 11 percent of women were reported in Himachal Pradesh followed by Madhya Pradesh (10 percent). The rest of the states viz. Rajasthan (3 percent), Chhattisgarh (4 percent), Uttar Pradesh (5 percent), Bihar (6 percent), Odisha (7 percent) and eight percent of women in Uttarakhand and Jharkhand have shown a series of low percentages of women. In the **northeastern states**, except Tripura and Assam where six percent of women were observed, all other states

have been observed below the average line. In addition, merely one percent of women were observed in Mizoram, two percent in Arunachal Pradesh and Manipur and three percent in Sikkim and Meghalaya respectively have also remained below the average percentage of total urban women.

Convulsion/ High BP, is yet another poorly reported morbidity by the urban women all over the states with an average of merely six percent of women. In the **north and central states**, the percentage of women had such 15 percent in Jharkhand. Around 10 percent of women reported in Himachal Pradesh who was found to be more than average percentage of women. The rest of the states has shown a series of low percentages of women viz. three percent in Rajasthan and Chhattisgarh, four percent in Uttarakhand, Uttar Pradesh, and Odisha, seven percent in Bihar and Madhya Pradesh, and eight percent in Jammu and Kashmir respectively. In the **northeastern states**, three states viz. Manipur (2 percent), Mizoram (2 percent), and Arunachal Pradesh (5 percent) have remained below the average percentage of women while Meghalaya (6 percent) has similar percent of women as the average percentage of women. Tripura (11 percent), Assam and Sikkim (8 percent) laid above the average line.

2.5.3 POST PARTUM MORBIDITY

POST PARTUM MORBIDITY IN RURAL RESIDENCE

High fever has been one of highest reported morbidities by total rural women, that is, 18 percent among all the post partum morbidities. In the **north and central states**, Bihar showed 35 percent of women reported for the morbidity followed by 34 percent in Uttar Pradesh, 26 percent in Uttarakhand, Jharkhand, and Madhya Pradesh respectively, 25 percent in Jammu and Kashmir and 20 percent in Odisha. Remaining states like Himachal Pradesh (14 percent), Rajasthan (13 percent), and Chhattisgarh (11 percent) showed the percentage of women less than the average. In **the northeastern states**, except Assam (20 percent), all other states viz. Mizoram (4 percent), Manipur (7 percent), Arunachal Pradesh (19 percent), Tripura and Meghalaya (11 percent) and Sikkim (14 percent) had been observed below the average percent of women.

In **rural** residence 21 percent of women reported **lower abdomen pain** that had been recorded to be the highest reported morbidity. In the **north and central states**, 36

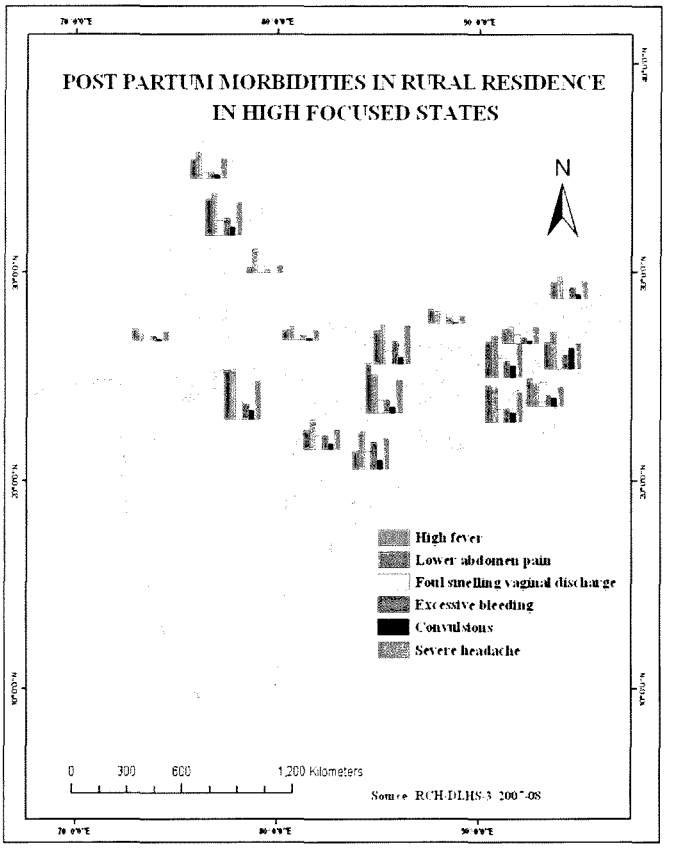
percent of rural women of Bihar have reported it highest followed by 31 percent in Jharkhand, and 30 percent in Uttarakhand. The states like Jammu and Kashmir (29 percent), Uttar Pradesh (28 percent), Madhya Pradesh (25 percent), and Himachal Pradesh (22 percent) have shown moderate percentage of women that continued to fall above the average percentage of total rural women. On the contrary, lowest nine percent of women were observed in Chhattisgarh followed by 17 percent in Odisha and 18 percent in Rajasthan. In the **northeastern states**, except Arunachal Pradesh (6 percent), all other states had showed either highest or moderate percentage of women for instance Assam (27 percent) and Sikkim (28 percent), Manipur (10 percent), Meghalaya (12 percent), Mizoram (17 percent) and Tripura (17 percent).

Foul smelling vaginal discharge had remained poorly reported by the rural women with an average of merely eight percent. In the **north and central region**, many states shared a common percentage value for instance 10 percent of women were observed in Jammu and Kashmir and Himachal Pradesh, 14 percent in Bihar and Jharkhand, nine percent in Uttar Pradesh and Madhya Pradesh and four percent in Rajasthan and Odisha. Moreover, Chhattisgarh has shown exceptional sever percent of women reported for it. In the **northeastern states**, except Sikkim where 13 percent of women remained high, remaining of the states were below the average percentage of women viz. merely one percent in Arunachal Pradesh, three percent in Manipur, five percent in Mizoram, six percent in Meghalaya and seven percent in Tripura as well as in Assam.

The rural women have reported poorly for **Excessive bleeding** with an average of eight percent of women. As compared to their counterpart, the **north and central states** had shown greater percentage of rural women. The highest 17 percent of women were observed in Jammu and Kashmir followed by 12 percent in Uttarakhand and Jharkhand, 11 percent in Bihar and 10 percent in the Himachal Pradesh Uttar Pradesh and Madhya Pradesh respectively. The rest of the states viz. Rajasthan and Chhattisgarh (4 percent) and Odisha (8 percent) had shown the percentage of women less than the average. In the **northeastern states**, highest 20 percent of women were observed in Sikkim followed by 10 percent in Assam. The rest of the states showed a low percentage of women which lay below average percentage of total rural women for instance lowest two percent in

Mizoram followed by three percent of women in Arunachal Pradesh, Manipur, and Mizoram respectively, four percent in Meghalaya and eight percent in Tripura.

Map 2.5



The rural women have reported **Convulsions** low across the states with an average of only five percent of women. In the **north and central states**, highest nine percent of women were observed in Jharkhand followed by seven percent in Bihar, Odisha, and Madhya Pradesh and six percent in Jammu and Kashmir, and Uttarakhand respectively. The lowest two percent of women have been recorded in Chhattisgarh followed by three percent in Rajasthan and four percent in Himachal Pradesh and Uttar Pradesh. In the **northeastern states**, Assam exceptionally has shown 15 percent of women among all the states including the north and central states as well. On the other hand, Mizoram has shown the absence of women reported followed by merely one percent in Arunachal Pradesh and Manipur, two percent in Meghalaya, three percent in Tripura, and seven percent of women in Sikkim.

The total rural women with an average of 16 had reported moderately for **severe headache** during post partum period. In the **north and central states**, Jammu and Kashmir and Bihar have shown 28 percent of women that had been significantly greater than the average percentage of total rural women followed by states like Jharkhand (24 percent), Uttarakhand and Uttar Pradesh (23 percent) and Madhya Pradesh (21 percent). Three states namely Himachal Pradesh, Rajasthan and Odisha showed a 14 percent of women that had been a common figure among all of them. The lowest six percent of women were reported in Chhattisgarh. In the **northeastern states**, 22 percent of women reported in Sikkim while Assam (18 percent), Tripura (12 percent), and Meghalaya (11 percent) have shown greater percentage of women than the average. The lowest five percent of women were observed in Mizoram followed by seven percent in Arunachal Pradesh and Manipur.

POST PARTUM MORBIDITY IN URBAN RESIDENCE

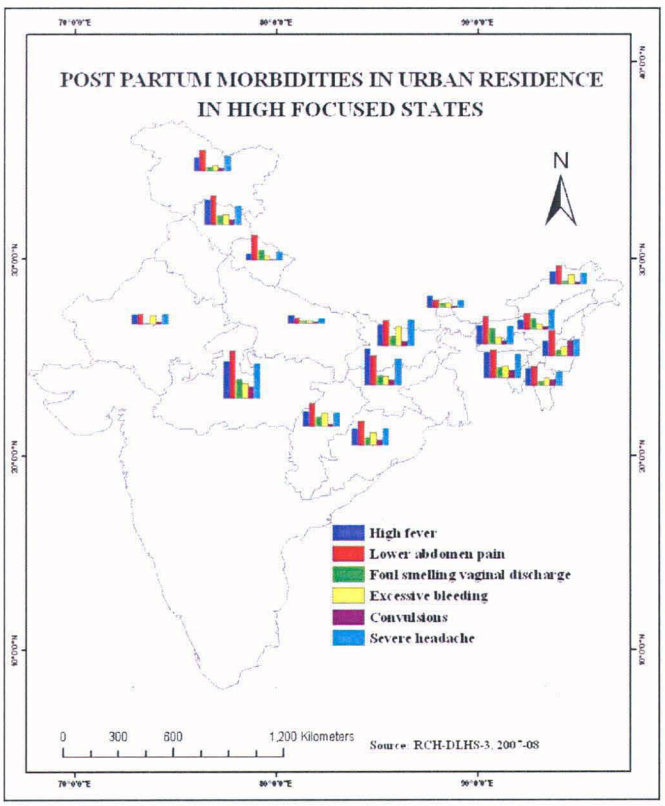
Across the high focused states, on an average 13 percent of total urban women have reported for **high fever.** In the **north and central states**, the percentage of women had been significantly higher as compared to its counterpart. The highest 29 percent of women were observed in Bihar followed by a very slight difference of one percent in Uttar Pradesh (28) and 20 percent in Madhya Pradesh. Except Chhattisgarh (9 percent), Rajasthan (10 percent) and Himachal Pradesh (11 percent), remaining of the states has shown the percentage of women greater than the percentage of total urban women for instance Jammu and Kashmir (17 percent), Uttarakhand (19 percent), Jharkhand (15 percent) and Odisha (13 percent). In the **northeastern states**, except Sikkim, all other states have shown scores less than the percentage of total urban women for instance five percent in Mizoram, six percent in Manipur, seven percent in Arunachal Pradesh and Meghalaya respectively and nine percent in Tripura and 12 percent in Assam.

On an average, 18 percent of the total urban women had reported **lower abdomen pain** during post partum period. In the north and central region, except Chhattisgarh (6 percent), Odisha (15 percent), and Rajasthan (16 percent), remaining of the states had shown the fair percentage of women viz. Bihar (37 percent), Uttarakhand and Jharkhand (23 percent), Madhya Pradesh (22 percent), Jammu and Kashmir (20 percent), and

Himachal Pradesh (18 percent). In the **northeastern states**, mixed percentage scores had been observed. The lowest four percent of women had been observed in Manipur followed by eight percent in Arunachal Pradesh. Moderate percentage of women had been observed in Meghalaya (13 percent) and Tripura (14 percent). Three states namely Assam (20 percent), Sikkim, and Mizoram (19 percent) laid above the average line of a percentage of the total urban women.

Foul discharge had remained a low reported morbidity with an average of six percent of total urban women. In the **north and central states**, a common value of percentage had been prominently seen for instance, seven percent of women in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Uttar Pradesh, and three percent in Odisha and Chhattisgarh respectively.

Map 2.6



The lowest two percent of women were seen in Rajasthan whereas Bihar (15 percent) and Jharkhand (12 percent) had shown greater percentage value than the average. Similarly, the low percentage profile was carved in the **northeastern states** for instance merely one percent of women reported in Arunachal Pradesh followed by two percent in Manipur

and Tripura respectively and four percent in Assam and Sikkim whereas Mizoram (97 percent) and Meghalaya (9 percent) fell above the linear line of the average percentage of total urban women.

Excessive bleeding had also been poorly reported by total urban women during post partum period with an average of seven percent of women. In the **north and central states,** highest 15 percent of women were observed in Jammu and Kashmir followed by 10 percent in Himachal Pradesh and 11 percent in Bihar. Lowest four percent of the women had reported in Rajasthan and Chhattisgarh respectively. A series of percentage values had been observed for instance Jharkhand (5 percent), Odisha (6 percent), Uttar Pradesh (7 percent), Uttarakhand (8 percent), and Madhya Pradesh (9 percent). In the **northeastern states**, merely one percent of the women had reported in Manipur, Mizoram, and Tripura respectively followed by two percent in Arunachal Pradesh and Meghalaya and four percent of women in Sikkim. Highest 12 percent of the women had reported in Assam which had been greater than the average percentage value.

Convulsions, throughout the morbidities had remained a low reported morbidity by urban women. In the post partum period also, merely four percent of the women had reported with slight variations across the states. In the **north and central states**, highest nine percent of women reported had been observed in Bihar followed by six percent of women reported in Madhya Pradesh. Three states namely Jammu and Kashmir, Uttarakhand, and Uttar Pradesh showed percentage values equal to the average percentage of total urban women (5 percent). The lowest two percent of women reported in Himachal Pradesh, Rajasthan and Chhattisgarh respectively followed by three percent of women in Jharkhand and five percent in Odisha. In the **northeastern states**, except Assam (12 percent) and Sikkim (4 percent), all other states have accounted for less than the average percentage of women for instance one percent in Manipur, Mizoram, and Tripura followed by two percent in Arunachal Pradesh and Meghalaya respectively.

Severe headache had been moderately reported by the urban women with an average percentage value of 13. In the **north and central states**, highest 27 percent of women had been observed in Bihar followed by 20 percent in Jammu and Kashmir, Uttar Pradesh, 18 percent in Madhya Pradesh and 15 percent in Uttarakhand. The states like Himachal Pradesh and Odisha (10 percent), Rajasthan (11 percent), Jharkhand (14

percent) has shown percentage scores less than the average of total urban women. The lowest six percent of women had been accounted in Chhattisgarh. In the **northeastern states**, 13 percent of women had been reported in states like Sikkim and Assam. Meghalaya has shown the percentage value greater than the average percentage value while states like Manipur (3 percent), Mizoram (6 percent), Arunachal Pradesh (7 percent) and Tripura (9 percent) had accounted values less than the average percentage of total urban women.

Conclusion

The pattern of three morbidities displayed at national level had been such that the reporting had been observed highly skewed for rural residence throughout the analyses. Among the three morbidities, reporting for morbidities during intra partum period had been largest followed by post partum period. Overall, obstructed labour had been reported highly by the currently married women from both the two regions i.e. the north and central region and northeastern region. The critical conditions is caused due to lack of skilled assistance in obstetric period. Interestingly, several of the morbidities under ante partum morbidity had been reported low such as Malaria, Jaundice, excessive bleeding, abnormal position of fetus, vaginal discharge and hypertension. Similarly, breech presentation and convulsion had been reported less under intra partum and Convulsions, foul smelling of vaginal discharge and excessive bleeding had been reported less in the last category of post partum period. The underlying reason behind such a pattern need a special attention. The response rate was high for those morbidities that could be answered without any feeling of hesitation. Contrastingly, the health problems that carried a sense of shyness, were poorly reported. For instance, vaginal bleeding and foul smelling vaginal discharge from all the three periods reflected the disgraced feelings in reporting. Moreover, the health complications that needed medical attention or clinical tests were another set of morbidities suffered from poor response. Since, rural women of poor families could not afford the expensive medical examinations; they remained unaware of the severity of the complications.

At the state level, the variations in the pattern of reporting had been more prominent and clear. The state level analysis had been carried out for rural and urban residences separately. The bigger states largely showed a greater proportion of women who reported high for the morbidity.

However, the states namely Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Rajasthan, Odisha, Chhattisgarh, have remained insignificant in reporting from the north and central region while Manipur, Arunachal Pradesh and Meghalaya had been observed with low reporting by the women. However, the women from these states had reported significantly for several morbidities for instance, abnormal position of fetus and hypertension had been highly reported in Jammu and Kashmir, Himachal Pradesh and Uttarakhand while excessive vomiting had been highly reported in Odisha and Meghalaya. Moreover, women have reported high for Malaria in Arunachal Pradesh. Vaginal discharge had been highly reported in Jammu and Kashmir and Mizoram. Excessive bleeding in the post partum period had been significantly reported in Odisha and Himachal Pradesh. Hence, the conclusion that can be drawn from the data is that the provision of maternal health care services has not been very satisfactory in these states. Moreover, the physiographic location also plays a major role in determining accessibility to the health care services as these states are either hilly or the forest covered . The states with a majority of tribal population have indicated lesser utilisation of maternal health care services. Hence, the complex mesh of such factors/the gamut of such factors may lead to the development of severe morbidities among the women.

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CHAPTER THREE

DIFFERENTIALS OF SELECTED MORBIDITIES AT DISTRICT LEVEL

CHAPTER-3

DIFFERENTIALS OF SELECTED MORBIDITIES AT DISTRICT LEVEL

3.1 Introduction

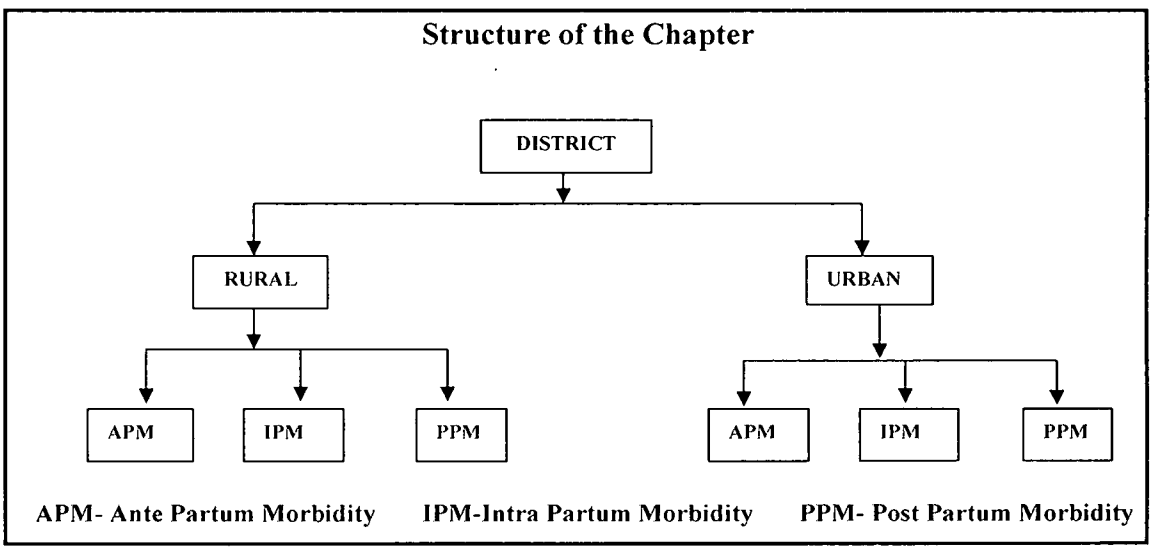
The Norway India Partnership Initiative (NIPI) had found that five northern states namely Bihar, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh account for more than 65 percent of maternal deaths in India. Half a million women that die every year from maternal causes, approximately 100,000 are Indian. The blazing finding has reflected the snail progress towards reaching the Millennium Development Goal 5 that calls for a ¾ reduction in maternal mortality by 2015. As discussed in the preceding chapters, the NRHM has tried to provide ample of maternal health facilities to the women in order to curb maternal mortality. For this, significant efforts are seen in the field of facility based deliveries provided to the women.

However, these commendable achievements have been eclipsed by glaring gaps in the implementation of MCH programs. For instance, as per the standards developed by RCH, to access the adequacy of any sub center (established to provide facility based deliveries), the sub center should have 60 percent of essential equipments for RCH services; if it matches, it is adequately equipped otherwise inadequately equipped. The survey report of Uttar Pradesh state has shown that out of a total of 8403 sub centers, only 848 (35.3) percent have adequate stock/supply of essential drugs for RCH services, and none of the sampled Sub-Centres in Bulandshahar, Firozabad, Pilibhit, Ambedaker Nagar and Azamgarh districts have adequate essential drugs. The similar situation had been cited in the report of Bihar where women have undergone at least a/ one complication during pregnancy, delivery, and post delivery. The Lack of ANC facilities results into/ poses higher risk to maternal health. The districts under survey (DLHS-3) lacked in ANC facilities which in turn poses higher risk to maternal health. The only

contradictory fact of the report is that the rural women have slightly less/ lesser complications as compared to their urban counterparts.

In many districts, there is no regular power supply at the PHC or Sub centers. In addition they lack proper functional vehicles. In PHC of many districts 10 deliveries were conducted in the previous month prior to the survey, PHCs in 15 districts namely Jyotiba Phule Nagar, Unnao, Kanpur Dehat, Lalitpur, Banda, Chitrakoot, Fatehpur, Kaushambi, Faizabad, Ambedakar Nagar, Shrawasti, Gonda, Siddharthnagar, Azamgarh and Chandauli had never conducted any delivery. In the light of the above mentioned information an attempt has been made to show district wise patterns of the ante, intra and post partum morbidity based on rural-urban differentials. The structure of the chapter has been delineated below:

Fig 3.1



In the present chapter, only those morbidities with high values had been shown /which the women reported high. The selection was done on the basis of the calculated mean of the percentage of women reported for each morbidity.

Table 3.1: Mean of Morbidities in rural and urban residence

Code	Morbidities	MEAN RURAL	MEAN URBAN
	ANTE PARTUM		
1	Swelling of hands, feet and face	**24**	**25**
2	Paleness/Giddiness/Weakness	**32**	**31**
3	Visual disturbances	14	10
4	Excessive fatigue	**25**	**23**
5	Convulsions not from fever	7	6
6	Weak or no movement of fetus	9	8
7	Abnormal position of fetus	3	3
8	Malaria	3	2
9	Excessive vomiting	20	21
10	Hypertension/High BP	5	6
11	Jaundice	1	1
12	Excessive bleeding	2	2
13	Vaginal discharge	4	3
Code	**INTRA PARTUM**		
14	Premature labour	**30**	**28**
15	Excessive bleeding	10	10
16	Prolonged labour (more than 12 hours)	**23**	**21**
17	Obstructed labour	**40**	**39**
18	Breech presentation	5	5
19	Convulsion/High BP	5	6
Code	**POST PARTUM**		
20	High fever	**18**	**13**
21	Lower abdomen pain	**21**	**18**
22	Foul smelling vaginal discharge	8	6
23	Excessive bleeding	9	7
24	Convulsions	5	4
25	Severe headache	**16**	**13**

Source: RCH-DLHS-3, 2007-08

The mean was calculated by using simple mean formula (X/*N*) where numerator *X* was considered as the summation of percentages of all the states and denominator *N* was 17 represented the total number of states. Separate mean was calculated for rural as well as for urban residence. The highest morbidity means in the above table were separated for district level analysis. The morbidities namely **swelling in hands, feet and face, paleness/giddiness/weakness and excessive fatigue** were selected from ante partum morbidities. Likewise, **premature labour, prolonged labour (more than 12 hours),**

and obstructed labour were chosen from intra partum morbidities and **high fever, lower abdomen pain and severe headache** were selected from post partum category.

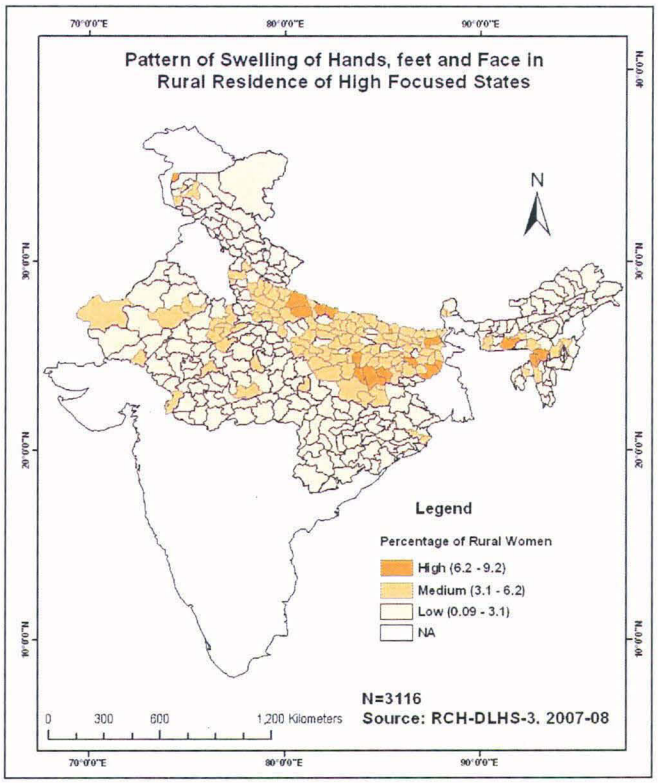
With the help of ArcGIS software, district level maps were prepared to show the pattern of the morbidities in the districts of states of the study area. The percentage values were the proportional share of each district in the total number of women who reported the morbidity. The percentage values that reflected the pattern has been categorized into ordinal scale i.e. low, medium, and high. The low category reflected the lowest; medium depicted the moderate and high represented the highest reporting by the women. The choro-chromatic technique has helped to display the disparities at three levels.

3.2 ANTE PARTUM MORBIDTY

3.2 (a) Swelling of Hands, feet and Face

The **Map 3.1** reflected the pattern of **swelling hands, feet, and face** reported by the **rural** women during their pregnancy. Over all, the percentage of women at district level had been less than 10 percent.

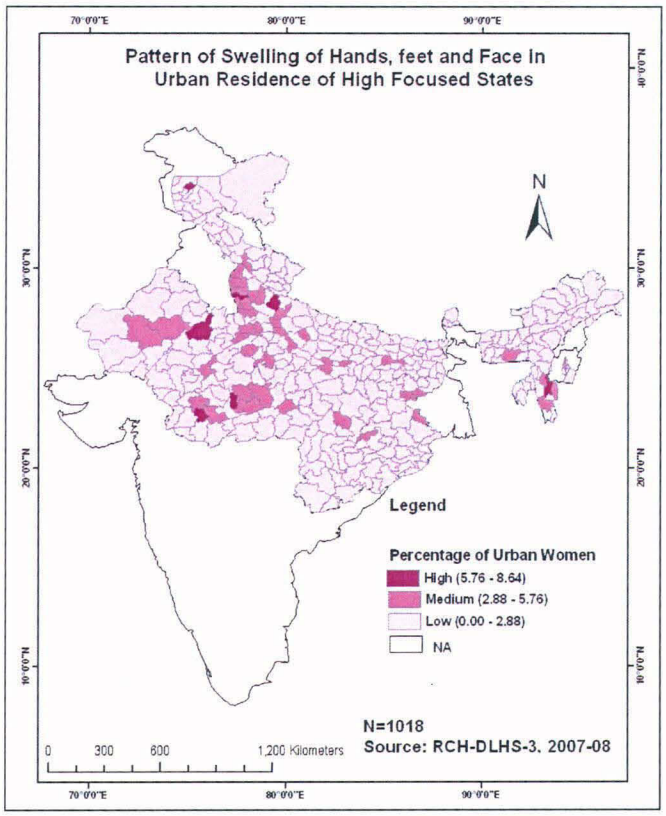
Map 3.1



The pattern clearly has depicted that largely, the districts have shown low level of reporting by women. Around 25 districts have shown absence of reporting. The districts of Madhya Pradesh, Chhattisgarh, Uttarakhand, Himachal Pradesh, Jammu and Kashmir, Arunachal Pradesh, Sikkim, Rajasthan have shown low level of reporting. Medium level of reporting has been accounted in districts of Rajasthan, Uttar Pradesh, Bihar, Jharkhand, Meghalaya and Tripura. However, high level of reporting has been observed in few districts of Uttar Pradesh such as Ghaziabad, Budaun and others, Kolasib, Aizawl in Mizoram and so on. Interestingly, Srinagar has accounted for the highest reporting of morbidity.

The **Map 3.2** depicted the highly skewed reporting of morbidity in **urban residence.** More than 50 percent of the districts have shown concentration of low reporting.

Map 3.2



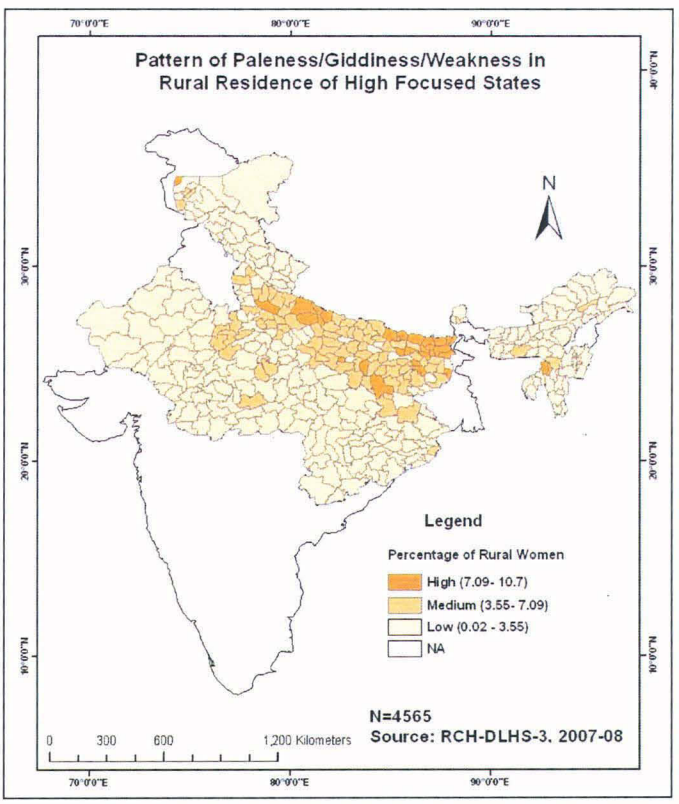
The range of low reporting varies from zero to merely two percent of women. Specifically, the districts of Jammu and Kashmir, Uttar Pradesh, Himachal Pradesh,

Uttarakhand, Bihar, Chhattisgarh, Madhya Pradesh, Orissa, Sikkim, Arunachal Pradesh, Meghalaya and Tripura have shown low level of reporting. Since the states have less concentration of urban areas and therefore the results have depicted low reporting. In the medium category, 46 districts have shown that reporting values varied between 2.8 to 5.7 percent. Sporadic distribution of medium level reporting has been seen in Rajasthan, Uttar Pradesh and Madhya Pradesh. Moreover, one or two districts are also seen in Bihar, Jharkhand, Meghalaya and Chhattisgarh. A total of eight districts such as Bhopal, Srinagar, Indore, Ghaziabad, and Bareilly have shown high reporting of morbidity.

3.2 (b) Paleness/Giddiness/Weakness

Over all only 1.2 percent women out of the total currently married women of the study area have reported for the morbidity of **paleness/giddiness/weakness** in **rural** residence

Map 3.3

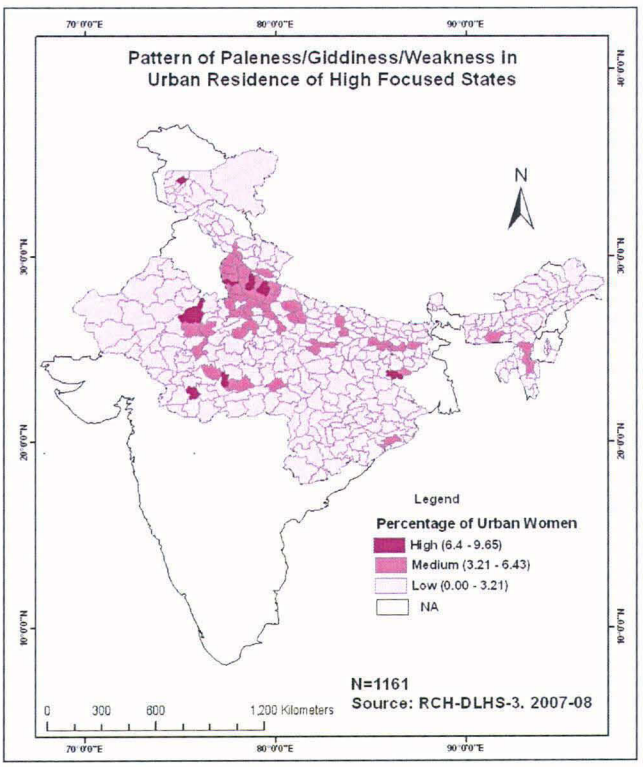


The pattern in **Map 3.3** has revealed that 37 districts such as Lakhimpur, Bahraich, Shrawasti, Balrampur, Sitapur, Shahjahanpur, Budaun, Kannauj, Pratapgarh, Naugarh Siddharthnagar, Maharajganj and others of Uttar Pradesh, which lie on the border, have high reporting of the morbidity.

In addition, districts of Bihar such as Paschim Champaran, Purba Champaran, Madhubani, Araria, Purnia, Kishanganj and others have also reported high morbidity. In the category of medium level reporting, districts have been observed from Rajasthan, Madhya Pradesh, Mizoram, and Assam. In addition, two or three districts of Jharkhand have also shown medium level of reporting. Remaining 243 districts have shown low level of reporting from the states namely, Rajasthan, Orissa, Chhattisgarh, Madhya Pradesh, Uttarakhand, Himachal Pradesh, Sikkim, Arunachal Pradesh, Tripura, Manipur and Mizoram.

The morbidity pattern in **urban residence** has been shown in **Map 3.4**. The results have shown that 0.3 percent women out of total currently married women who have reported during the survey.

Map 3.4



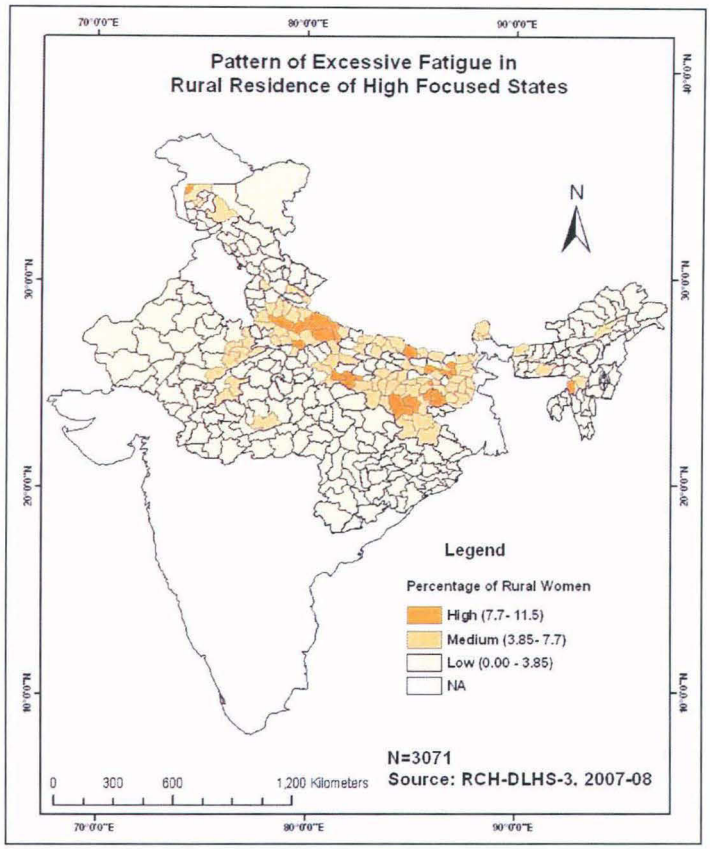
Largely, the pattern has depicted low reporting of the morbidity. However, in the high category, eight districts namely Bokaro, Moradabad, Indore, Jaipur, Srinagar, Bhopal, Bareilly and Ghaziabad have shown reporting by more than six percent of women.

In the medium category, the values varied from 3.21 to 6.43 percent of women who have reported moderately for the morbidity. Around 47 districts have observed under the category of medium level reporting in districts such as Lakhisarai, Nalanda, Hardwar, Mathura, Khorda, Baghpat, Meerut, Rampur, Aizawl, Kolasib, Kota and others. Remaining, 299 districts from states like Orissa, Chhattisgarh, Madhya Pradesh, Rajasthan, Jammu and Kashmir, Assam, Arunachal Pradesh, Sikkim and Manipur have shown low level of reporting out of which absence of reporting has been observed in nine districts.

3.2 (c) Excessive Fatigue

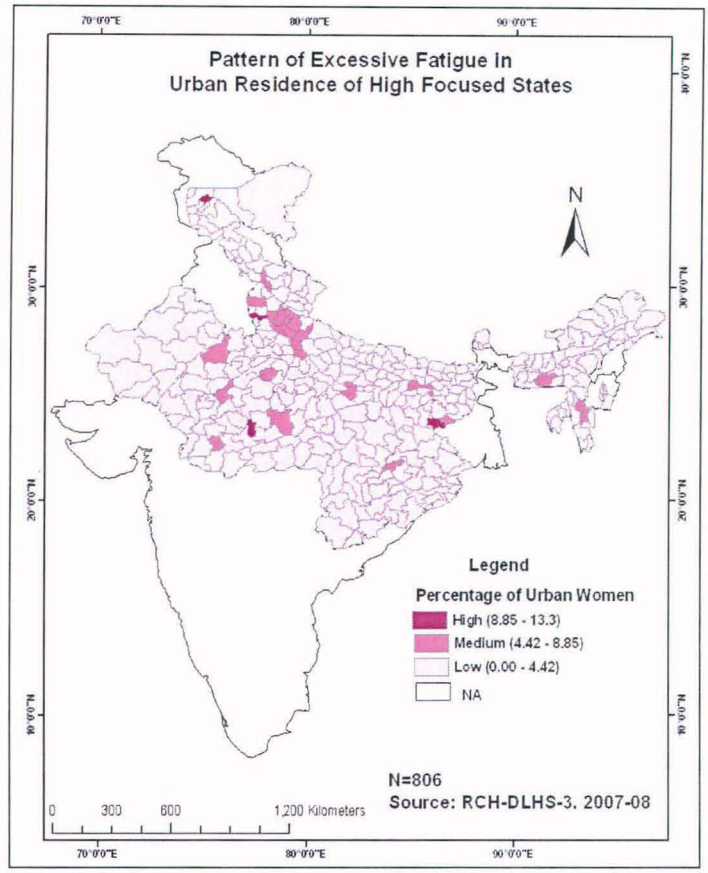
The **Map 3.5** has shown the pattern of **excessive fatigue** in rural residence. Out of the total currently married women, only 0.79 percent of women have reported for excessive morbidity in rural residence of the study area. Nevertheless, out of such a meager percent of women, high level of reporting has been from the women from 20 districts such as Kodarma, Palamu, Sant Ravidas Nagar, Giridih, Sitapur, Kaushambi, Karimganj, Madhepura, Kupwara and others. The range for medium level of category has varied from 3.8 to 7.7 percent of the women. The concentration of the medium level of reporting has been observed mostly in the states namely Uttar Pradesh, Bihar and Jharkhand. Sporadic distribution of medium level reporting has been seen in the districts like Jhalawar, East and West districts of Sikkim, West Khasi Hills, Goalpara, Kokrajhar, Dewas and others. Remaining 249 districts have shown low level of reporting and the range has been observed from absence of reporting in three districts namely Upper Subhansiri, Tirap and West Siang to 3.8 percent of women in other districts.

Map 3.5



The **Map 3.6** depicting **excessive fatigue** experienced by women in **urban** residence has shown largely the districts under low reporting. Out of total currently married women, only 0.2 percent of women have reported for the morbidity. Absence of reporting has been observed in 25 districts from Arunachal Pradesh, Rajasthan and Orissa. Excluding the districts where absence of reporting has been observed, 302 districts of the present study have been categorised under low level of reporting. Almost entire states of the study area have been concentrated with low level of reporting. Medium level reporting has been observed in 23 districts namely Bareilly, Budaun, Allahabad, Kannauj, Patna, Dehradun, Gwalior, Rampur, Sagar, Kolasib, Aizawl and so on. Lastly, four districts namely, Bokaro, Ghaziabad, Bhopal and Srinagar have shown high level of reporting by the women.

Map 3.6

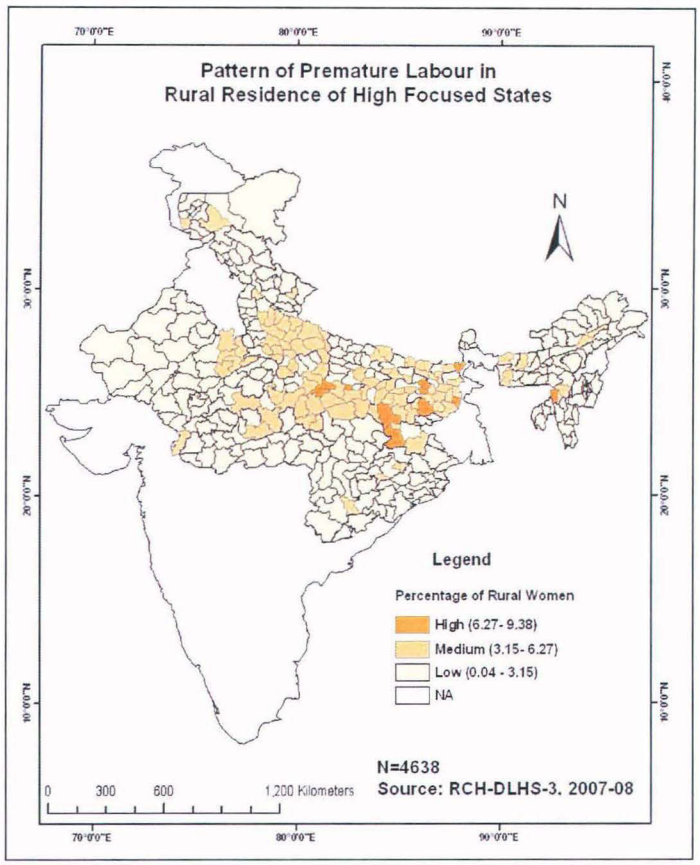


3.3 INTRA PARTUM MORBIDITY

3.3(a) Premature Labour

The **Map 3.7** has shown the reporting for **premature labour** by the **rural** women during delivery period. Overall, 1.2 percent women out of total currently married women of the study areas have reported for the morbidity. The category of highest reporting of the morbidity varies from 6.27 to 9.38 percent of women. Out of total rural districts, only 13 districts have shown high reporting such as Kaushambi, Chitrakoot, Sant Ravidas Nagar, Begusarai, Pakaur, Karimganj, Giridih, Latehar and others. The concentration of medium level reporting had been in Uttar Pradesh, Bihar, Madhya Pradesh and Jharkhand followed by sporadic distribution across the districts. Around 255 districts have been observed in low level of reporting by the rural women.

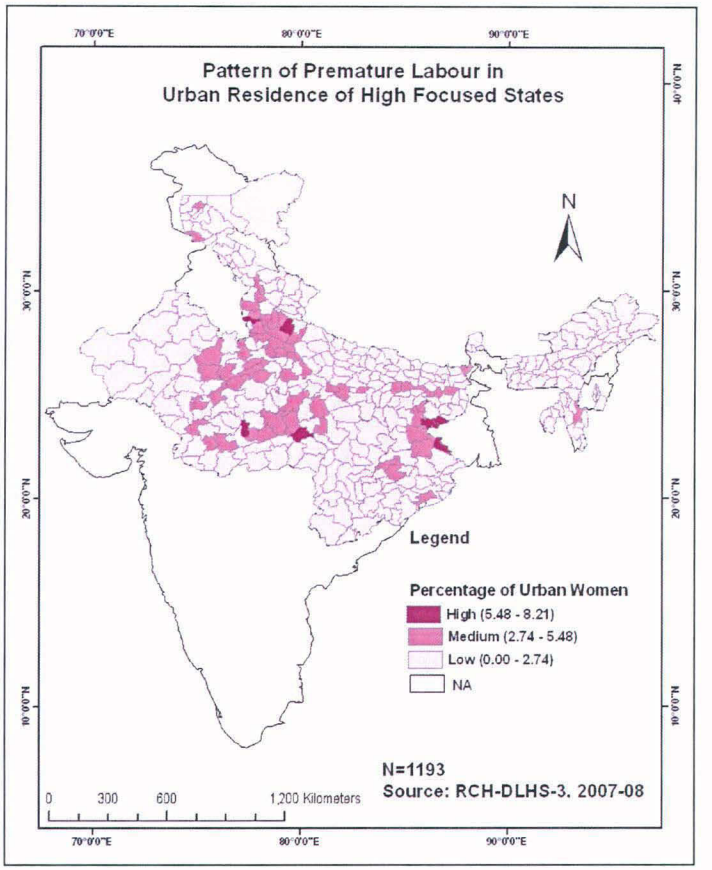
Map 3.7



The range varied from 0.04 percent in Lohit and Chandel to 3.15 percent of women observed in Lalitpur and Gorakhpur.

The pattern of morbidity in **urban** residence has largely shown the concentration of the medium and high level reporting n central parts of the study area. Overall 0.3 percent of women out of the total currently women have reported for the morbidity across the districts. The **Map 3.8** has shown that the pattern of the morbidity largely has been concentrated with low level of reporting.

Map 3.8

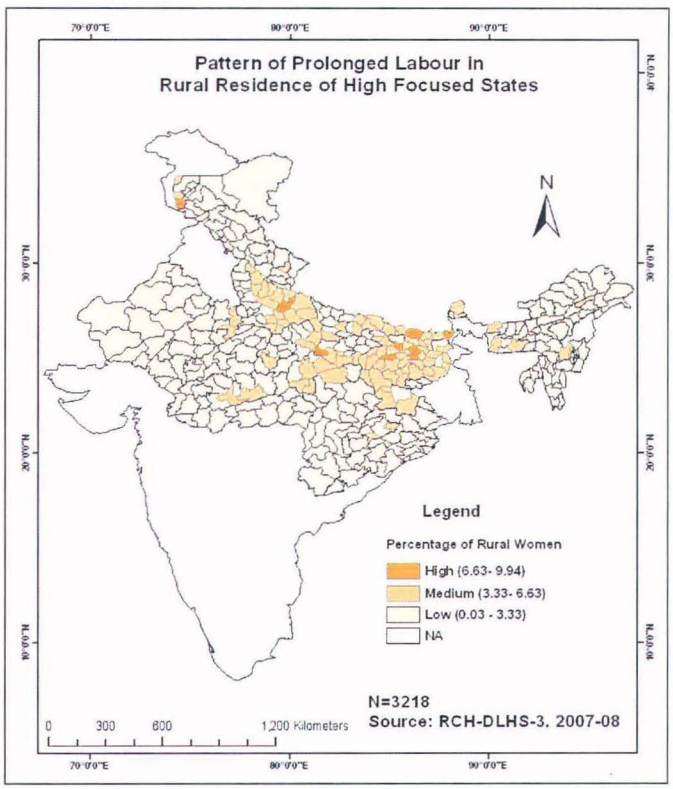


Nine out of the total 354 districts have shown absence of reporting while in the northeastern states, only Aizawl has shown medium level of reporting. On the other hand, seven districts namely, Jabalpur, Bhopal, Purbi Singhbhum,, Bokaro, Dhanbad, Ghaziabad ad Bareilly have shown high level of reporting. The medium level of reporting has been observed in 57 districts and covered the states like Madhya Pradesh, Rajasthan and Uttar Pradesh. Sporadic distribution has also been observed in Bihar, Uttarakhand, Jammu and Kashmir and Jharkhand. Remaining 290 districts covering states like Himachal Pradesh, Rajasthan, Orissa, and others in the north and central region have shown low level of reporting. Entire northeastern region has been observed under low level of reporting.

3.3(b) Prolonged Labour

The **Map 3.9** has shown **prolonged labour** reported by the rural women across the districts in the study area. Overall, 0.83 percent of women out of total currently married women have reported for the morbidity during her delivery period. The pattern largely has shown low reporting of the morbidity with a very small concentration of moderate and high reporting.

Map 3.9

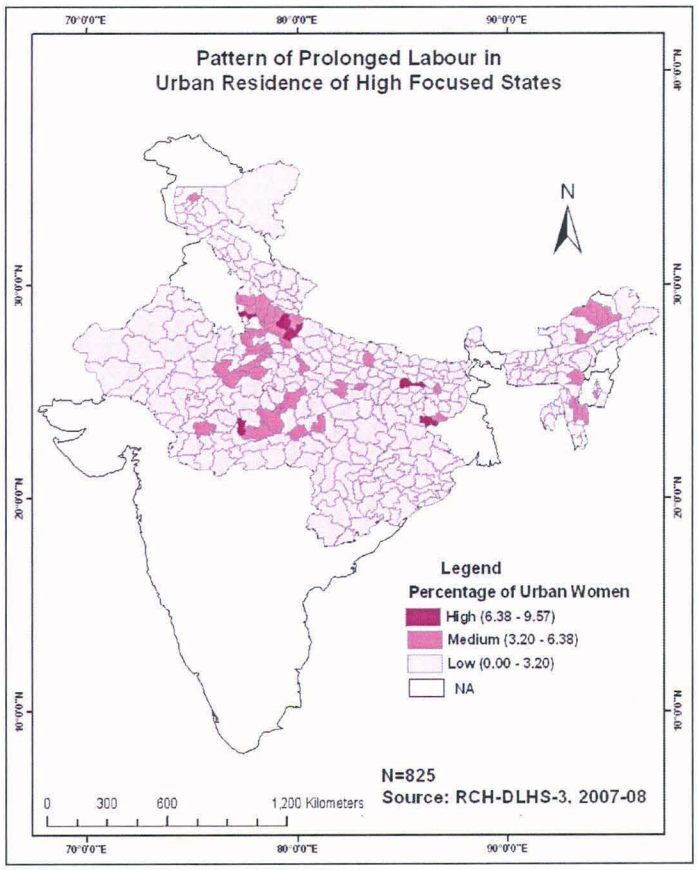


In the category of high reporting, 10 districts out of total 36 districts have shown high level of reporting such as Budaun in Uttar Pradesh, Latehar, Madhubani, Begusarai and others in Bihar, Rajauri in Jammu and Kashmir and other districts. In the category of medium level of reporting, the range varied from 3.33 percent to 6.63 percent of women who reported for the morbidity. Around 94 districts have been categorised under medium level category. The concentration of the medium level reporting has been observed largely in Uttar Pradesh, Bihar, and Jharkhand. Sporadic distribution has also been observed in Madhya Pradesh, western Rajasthan, Odisha, Assam, Meghalaya, and

Manipur. The rest of the 262 districts have been categorised under low level of reporting and the range varied from 0.03 percent of women in Udaipur of Rajasthan to 3.29 percent in Pithoragarh of Uttarakhand and Dhalai of Tripura.

The **Map 3.10** of **prolonged labour** in **urban** residence has shown 0.1 percent of women across the districts of the study area. Only six districts namely, Ghaziabad, Bareilly, and Shahjahanpur in Uttar Pradesh, Patna in Bihar, Bokaro in Jharkhand and Bhopal in Madhya Pradesh have been observed under the category of high reporting the women.

Map 3.10



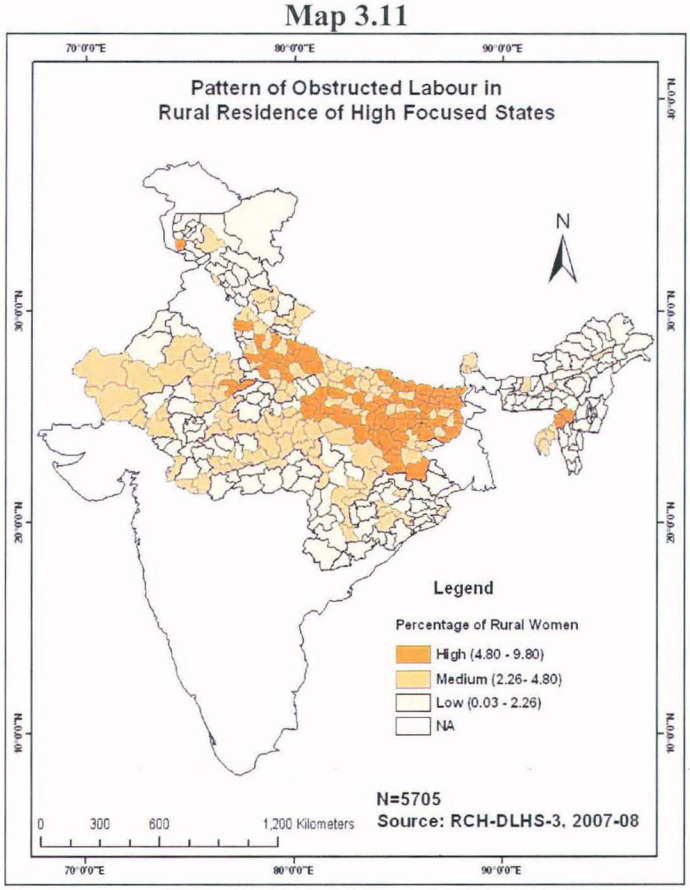
Under medium category, 43 districts have shown medium level reporting and the range varied from 3.20 in Dehradun, Gautam Budhha Nagar, Muzaffarnagar, to 6.38 percent in Jyotiba Phule Nagar. Under the low category, 15 districts have shown absence of reporting while the remaining 29 districts of the states namely, Odisha, Chhattisgarh, Rajasthan, Himachal Pradesh, Uttar Pradesh, Uttarakhand have been observed with the range varied from 0.1 percent to 3.2 percent in Jaipur of Rajasthan. The northeastern

region has also been observed largely under low level of reporting except few districts of Arunachal Pradesh, Meghalaya and Mizoram which have shown medium level of reporting.

3.3(c) Obstructed Labour

The **Map 3.11** of **obstructed labour** during delivery was one of highest reported morbidities by the **rural** as well as the urban women. Overall, 1.5 percent of the total currently married women have reported obstructed labour across the districts of the study area.

Map 3.11

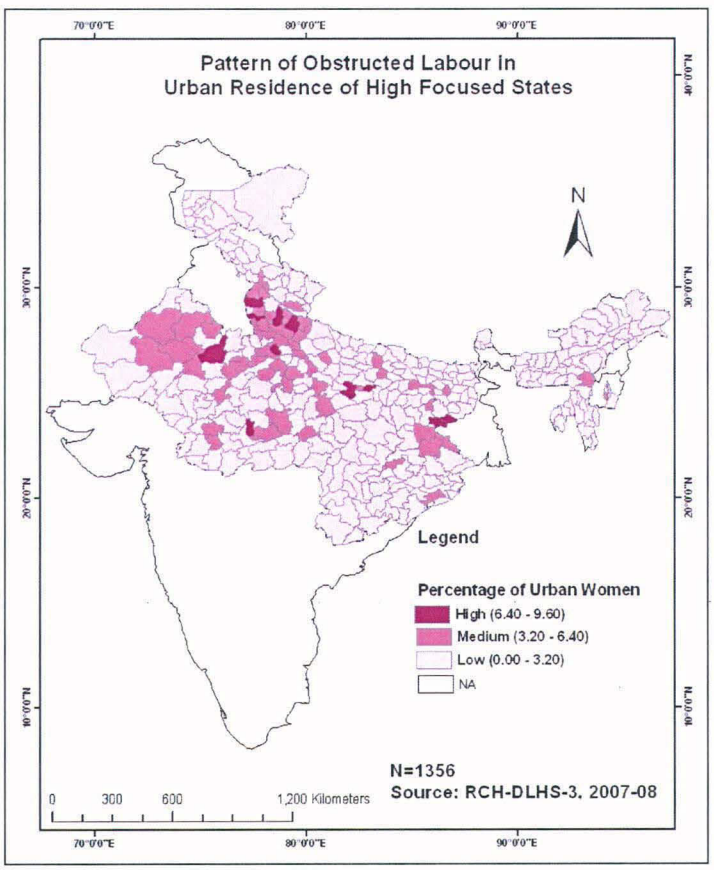


The map has shown that largely women responded moderate and high across the states. Out of 366 districts, 76 districts have been observed under the category of high level of reporting and largely been concentrated in Uttar Pradesh, Bihar and Jharkhand of the north and central region. The highest 9.8 percent of women have reported in Madhepura followed by 9.6 percent of women in Samastipur of Uttar Pradesh. Under the medium

level category, the range varied from 2.26 percent in districts such as Bargarh, Mandla, Tehri Garhwal, West Nimar, Kadhmal, Damoh, Nayagarh to 4.9 percent of women reported in Nawada of Madhya Pradesh followed by 4.8 percent of women in Mau, Dausa, Jaiselmer, Bahraich and others. The range in the low category varied from 0 to 2.26 percent of women across 165 districts. The low category has largely been observed in the northeastern region. Sporadic distribution has also been observed in Jammu and Kashmir, Uttarakhand, Odisha and others.

The **Map 3.12** has displayed reporting of **obstructed labour** in **urban** residence. The pattern of the reporting has confirmed that women have reported low as compared to women from rural residence.

Map 3.12



Overall, 0.35 percent of women have reported for obstructed labour in urban residence. Our of 354 districts, 11 districts such as Allahabad, Muzaffarrnagar, Varanasi,

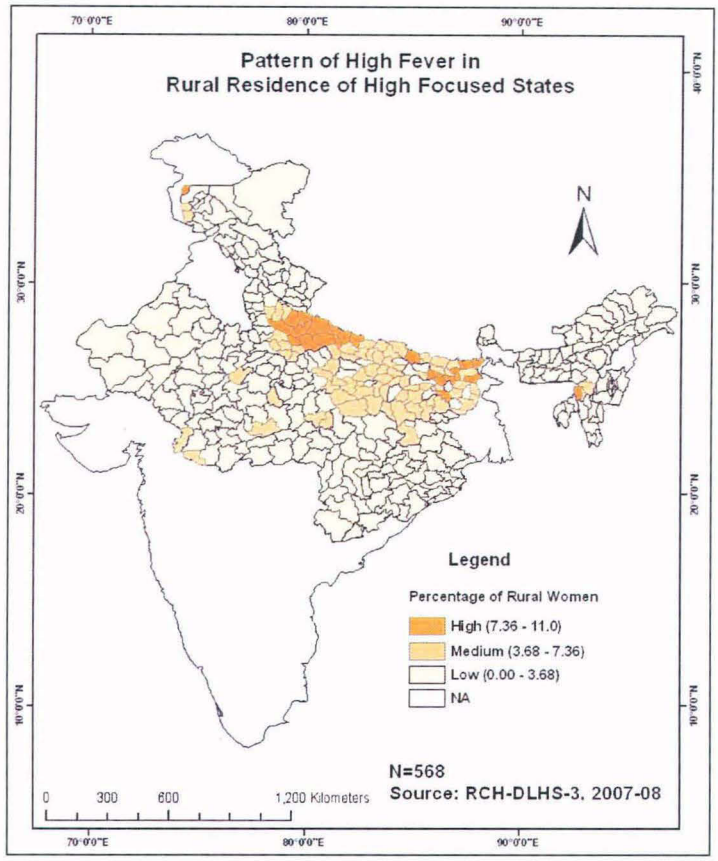
Moradabad, Bokaro, Jaipur, Dhanbad and others have been observed under high category with a range varied from 6.4 percent to 9.6 percent of women. Under the medium category, the range varied from 3.2 percent to 6.4 percent of women reported for the morbidity and covers states like Rajasthan and Uttar Pradesh. Sporadic distribution has been observed in Madhya Pradesh, Bihar, Jharkhand and Odisha. North Cachar Hills in Assam has been only the district that has shown medium level of reporting. The low level of reporting has been observed in 287 districts out of which five districts had shown absence of reporting by the women and highest 3.1 percent has been observed in Lakhisarai and Bilaspur. Noticeably the northeastern region has shown largely low level of reporting by the women for the morbidity.

3.4 POST PARTUM MORBIDITY

3.4(a) High Fever

The **Map 3.13** has shown reporting of **high fever** by the women in the rural residence. Noticeable, only 0.14 percent of the total currently married women have reported for the morbidity across the rural district. Under the high category, the range varied from seven percent to 11 percent and covered 22 districts such as Bareilly, Pilibhit, Hardoi, Shahjahanpur, Balrampur, Kupwara, Madhepura, Begusarai, Araria, Karimganj and others. Under the category of medium level of reporting, the range of reporting varied from 3.7 percent to 7.4 percent of women across 90 districts from states like Uttar Pradesh, Bihar and Jharkhand. Sporadic coverage has also been observed in Madhya Pradesh. In the northeastern region, only Cachar with 5.4 percent of women has shown medium level of reporting. Under low level of category, 254 districts covering states like Uttarakhand, Himachal Pradesh, Rajasthan, Odisha, Chhattisgarh and Madhya Pradesh have been observed where the range varied from absence of reporting in two districts namely Tawang and Tirap to 3.3 percent of women in Bharatpur, Badgam, Bharatpur, Aligarh, Dindori and Jamtara.

Map 3.13

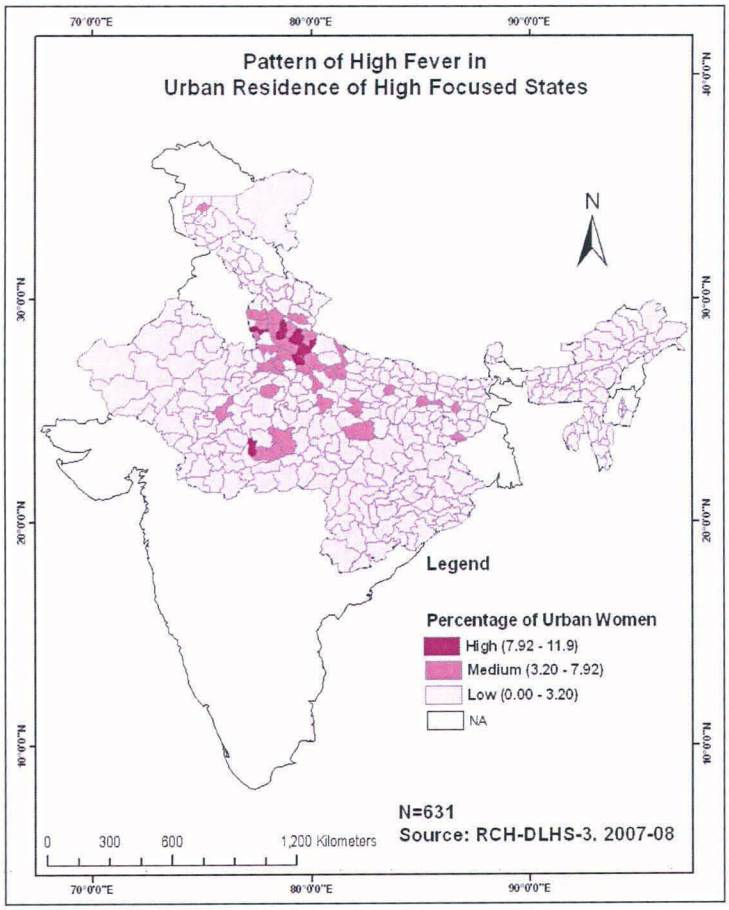


In the northeastern region, all the districts have been observed under low level of reporting by the women.

The **Map 3.14** has shown the pattern of **high fever** in **urban** residence. The map has shown that largely the women have responded low across the districts of the study area. Overall, 0.5 percent of total currently married women have reported for the morbidity. Under high category, the range varied from eight percent to 12 percent of women observed in six districts namely Ghaziabad, Farrukkabad, Moradabad, Shahjahanpur, Bareilly in Uttar Pradesh and Bhopal in Madhya Pradesh. Under the medium level category the range varied from 3.2 percent to eight percent of women and covered 47 districts of states namely Uttar Pradesh and Uttarakhand. Sporadic distribution has also been observed in Bihar, Madhya Pradesh, Jammu and Kashmir and Jharkhand. Out of the

total, 307 districts have been observed under the low category, out of which, 15 had been observed with absence of reporting. In remaining of the districts, the range varied from 0.2 percent in districts such as Chamba, Kangra, Kullu, Una, Solan and others in Himachal Pradesh to 3.2 percent in Chhindwara, Jhansi, Varanasi and Unnao in Uttar Pradesh of the north and central region. Moreover, entire northeastern region has shown low level of reporting by the women.

Map 3.14

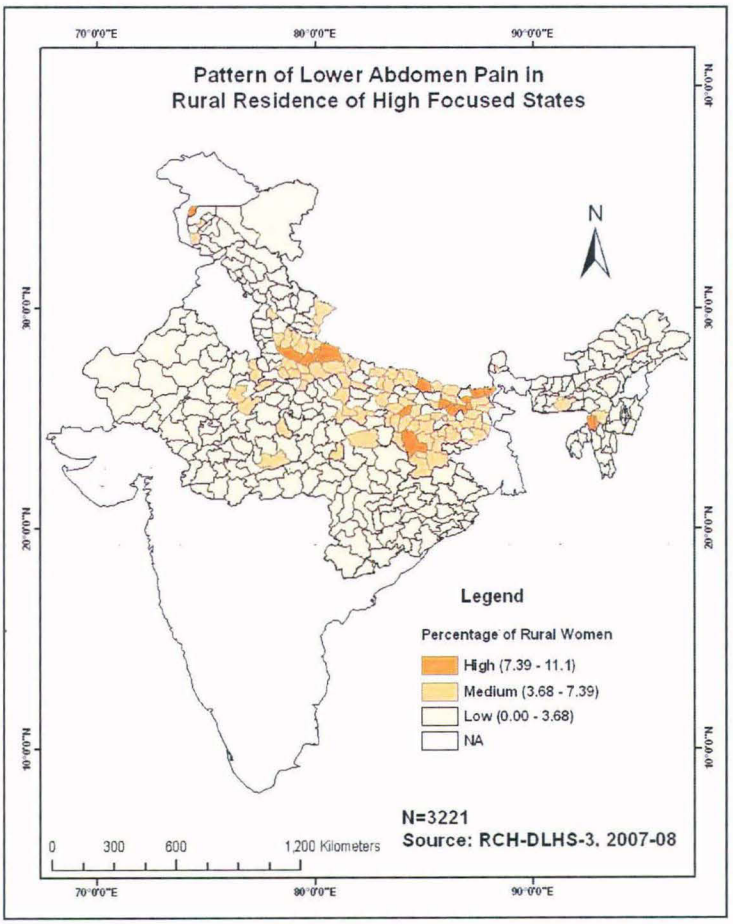


3.4(b) Lower Abdomen Pain

The Map **3.15** has depicted pattern of **lower abdomen pain** in **rural** residence. Only 0.83 percent out of the total currently married women had reported for the morbidity during the survey. Out of total, only 16 districts such as Shahjahanpur, Budaun, Samastipur in Uttar Pradesh, Madhepura in Bihar, Palamu in Jharkhand and

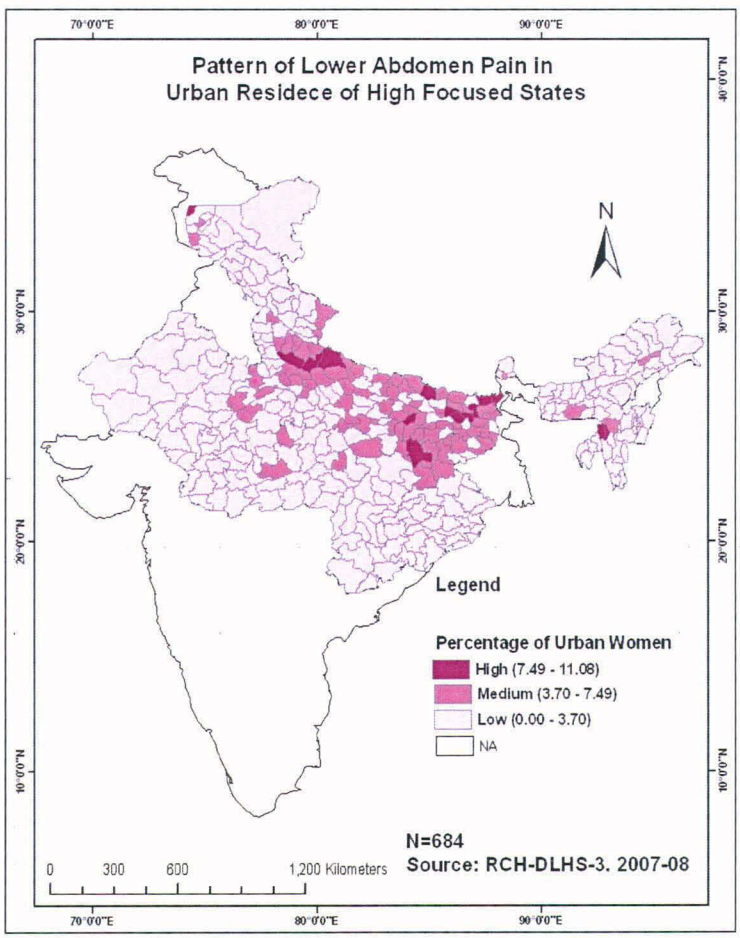
others have shown high level reporting by the women while in the northeastern region only Karimganj in Assam have been found under high category. In Jammu and Kashmir, only one district, that is, Kupwara showed high reporting by the rural women. The medium level of reporting had been found with a range vary from 3.7 percent 7.4 percent of women in Kannauj in Bihar. Around 104 districts have been under the category of medium level of reporting by the women. Noticeably, three districts namely, Changlang, Tirap and Kurung Valley have shown absence of reporting. However, 244 districts out of the total districts have shown low level of reporting by the women. The low level of reporting covered the states like Odisha, Rajasthan, Jammu and Kashmir, Himachal Pradesh, Chhattisgarh and others. The northeastern region has largely been observed under low reporting of the women.

Map 3.15



The **Map 3.16** has shown **Lower abdomen pain** in **urban** residence. Out of the total currently married women, only 0.17 percent of women have reported the morbidity. Generally, low reporting has largely been observed in the study area. Around 10 districts namely Farrukkabad, Ghaziabad, Moradabad, Bareilly, in Uttar Pradesh, Gwalior and Bhopal in Madhya Pradesh, Srinagar in Jammu and Kashmir and others have shown high reporting of the morbidity in the north and central region while Kolasib in Mizoram has shown high morbidity in the northeastern region. Around 28 districts have shown medium level of reporting and covered states like Uttar Pradesh, Bihar and Jharkhand. Sporadic distribution has been observed in Madhya Pradesh, Uttarakhand and Jammu and Kashmir. In the northeastern region, medium level of reporting has been seen in Meghalaya, Tripura and Assam.

Map 3.16

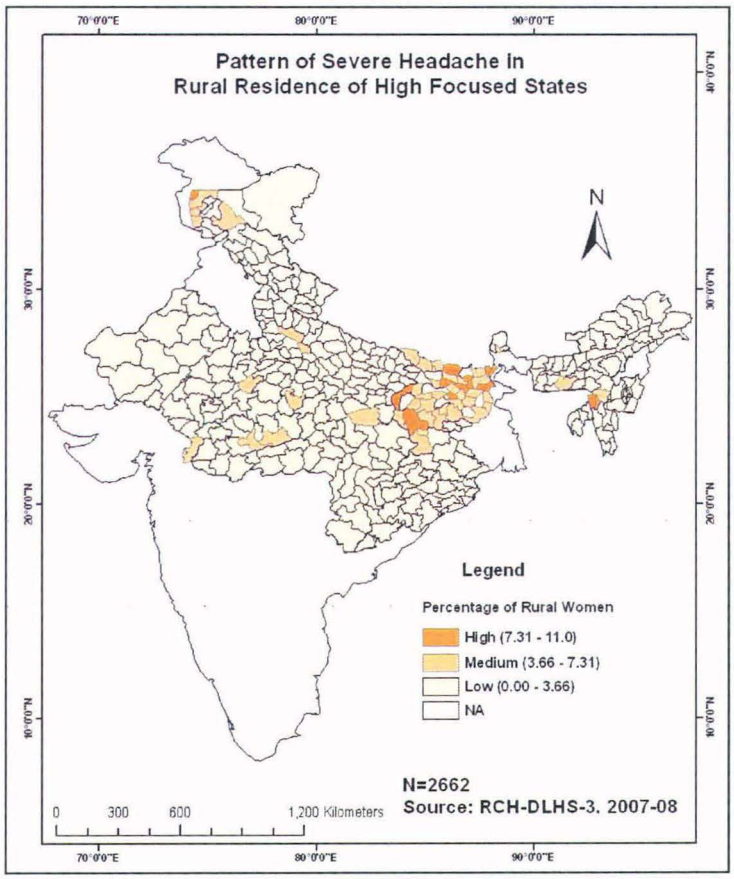


Around 315 districts out of the total 354 districts have shown low level of reporting. The range varied from absence of reporting in 22 districts to 3.7 percent of women in Kodarma, Umaria, Nalanda in Bihar and Bharatpur in Rajasthan. Moreover, low reporting has clearly been visible in all the districts of Odisha, Chhattisgarh and Himachal Pradesh. In the northeastern region, almost all the states have shown low level of reporting by the urban women.

3.4(c) Severe headache

The **Map 3.17** depicting **severe headache** in **rural** residence has shown that largely women have reported low in the study region. Overall, 0.7 percent of women out of the total currently married women have reported severe headache after delivery in puerperium period.

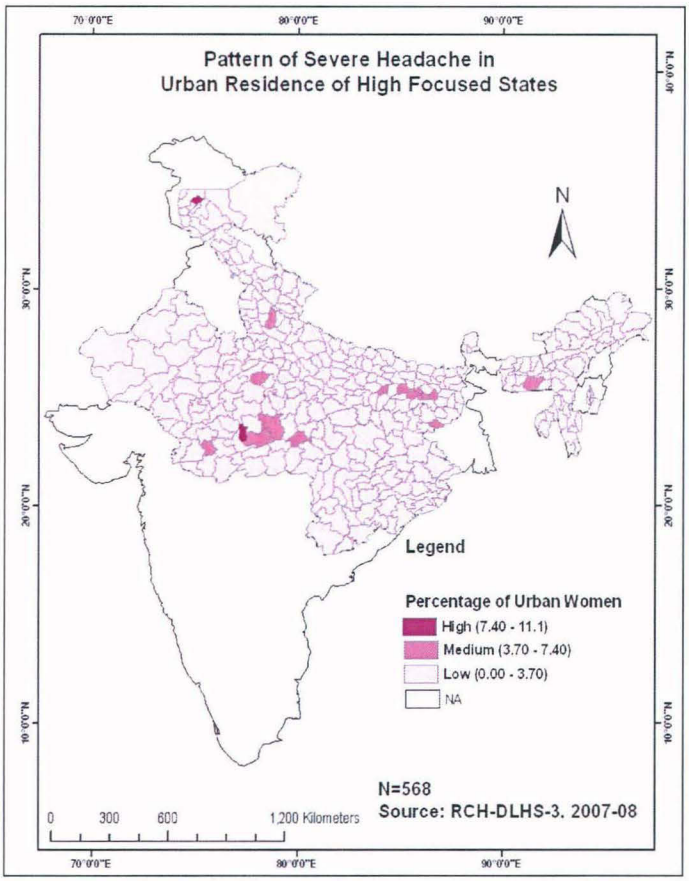
Map 3.17



Around 12 districts have been observed under the high level of reporting and have largely been found in districts namely Khagaria, Buxar, Kaimur Bhabua, Madhubani in Bihar, Palamu, Hailakandi, Katihar in Jharkhand, Kupwara in Jammu and Kashmir and others from the north and central region. In the northeastern region, only Karimganj of Assam has shown high reporting by the women. A group of 49 districts has been observed in the medium level of reporting and the range varied from 3.7 percent in Sehore, Sheopur, Lohardaga to 7.3 percent in Madhepura and Pakaur of Bihar. Notably the medium level reporting has been observed encircling the districts of high category in Bihar and Jharkhand. In the northeastern region, the medium level reporting has been observed in West Khasi Hills (4 percent) of Meghalaya and Cachar (6.7 percent) of Assam. The remaining districts from the states like Himachal Pradesh, Uttarakhand, Uttar Pradesh, Rajasthan, Odisha, Chhattisgarh and Madhya Pradesh have been observed under low category in the north and central region. Moreover, in the northeastern region, all the states have been observed under low level of reporting by the rural women.

The **Map 3.18** has shown pattern of reporting for **severe headache** in **urban** residence. Overall, 0.14 percent out of total currently married women has responded for the morbidity across the urban districts of the study area. The urban women of Bhopal in Madhya Pradesh have been accounted for the highest reporting of severe headache followed by Srinagar in Jammu and Kashmir. Notably, the medium level of reporting has been observed sporadically distributed in a total of 14 districts located in Madhya Pradesh, Bihar, and Uttar Pradesh in the north and central region while only one district namely West Khasi Hills in Meghalaya. The remaining 337 districts have been observed under low level of reporting. Around 65 districts have been observed with absence of reporting significantly from Odisha, Himachal Pradesh and Rajasthan. Notably, several districts of Uttar Pradesh have also shown absence of reporting by the women. In the northeastern region, several districts of Assam and Meghalaya accounted for absence of reporting. However, more than three percent of women reported for the morbidity have been observed in districts such as Baramula in Jammu and Kashmir, Nainital in Uttarakhand, Bhagalpur in Bihar, Sidhi in Madhya Pradesh, Kolasib and Aizawl in Mizoram, Cachar in Assam and Ghaziabad in Uttar Pradesh.

Map 3.18



Conclusion

From the district level analysis, it is clear that largely the morbidity reporting by the rural as well as the urban women had remained low. The highest reporting of the morbidities has been found in Uttar Pradesh followed by Bihar, Madhya Pradesh, and Jharkhand. However high to moderate reporting has been observed in Jammu and Kashmir, Uttarakhand, Rajasthan in the north and central region. Mizoram and Assam have shown high to moderated reporting by the women within the northeastern region of the study area. The district wise findings have shown that Budaun, Moradabad, Muzaffarnagar, Ghaziabad, Shahjahanpur, Samastipur and several others in Uttar Prades; Madhepura, Madhubani, Katihar and Patna in Bihar; Palamu and Giridih in Jharkhand have shown consistent high reporting by women in the north and central region. On the

other side, Karimganj, Cachar and North Cachar hills in Assam, Kolasib and Aizawl in Mizoram, West Khasi Hills and others in Meghalaya have shown consistent high reporting by the women among the northeastern region.

Some of the probable reasons for low level of reporting of morbidity have been succinctly presented below. According to the survey report, women who had suffered from any complications during, pregnancy, delivery and post delivery had sought one or another type of treatment. Their choices of treatment exhibited strong correlation with their demographic characteristics. In addition, one significant result needed to be mentioned is that Odisha and Chhattisgarh have shown low reporting in all the three categories of morbidity. The underlying reason could be that the populace residing in the states has their own traditional way of tackling the health problems of the women occurring in three periods. As proven by many research studies, women give high level of preference to traditional healing and herbal remedies and this has been evident in the tribal region of any part of the world or in the country.

In reference to spatiality, urban women were more likely to seek treatment with the onset of pregnancy related complications than the rural women. This differential behaviour pattern can be attributed to availability of various kinds of health facilities in urban areas. With reference to state level reports, it is notable that the concerted efforts of spreading safe deliveries in these backward states have resulted in increased institutional deliveries. However, the findings proliferates an opportunity to put a check on the implementation of the guidelines and services under MCH programs provided at the district level. A set of standard guidelines and services are anticipated to be deployed at district level for which MoHFW assists the state level government resourcefully. Despite such a meticulous strategy, several districts evince dearth of poor and shortage of MCH services. Therefore, these districts owe a due focus by the local governing bodies and special attention from the governing body at central to curb the complications for the women.

CHAPTER FOUR

DIFFERENTIALS IN DISTRIBUTION OF MATERNAL MORBIDITY AND MATERNAL MORBIDITY RATE (MMR) AT NATIONAL AND STATE LEVEL

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DIFFERENTIALS IN DISTRIBUTION OF MATERNAL MORBIDITY AND MATERNAL MORBIDITY RATE (MMR) AT NATIONAL AND STATE LEVEL

4.1 Introduction

The chapter deals examines the epidemiology of the morbidities in the study area. The focus of the chapter is to identify the Period Prevalence Rate (PPR) of the selected morbidities during three periods. The Period Prevalence Rate is defined as the proportion of population who suffer from the morbidity over a specified period. The numerator includes the cases who suffer from the morbidity and the denominator is the total population of that same geographical area. The period prevalence rate is used to identify the rate of the selected morbidities. The equation is as follows:

$$\mathbf{PPR_x} = \frac{\sum_R^x CMW}{\sum_R CMW} * K$$

Where,

PPR_x = Period Prevalence Rate of specific Morbidity

$\sum_R^x CMW$ = Total currently married women reported specific morbidity in a given period in a given geographical area

$\sum_R CMW$ = Total Currently Married Women in a given period in a given geographical area

K = Constant, considered as 10000

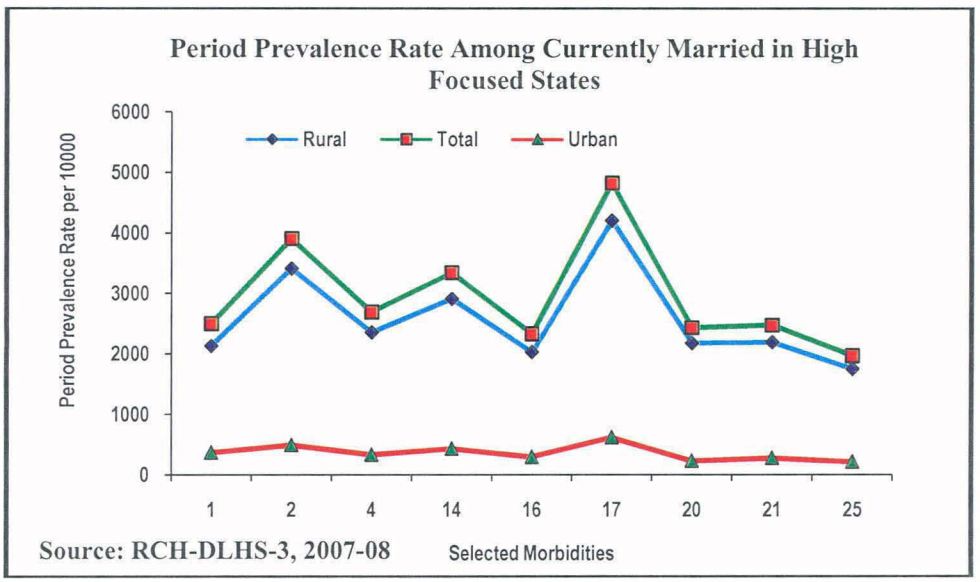
4.2 Period Prevalence Rate (PPR) of Selected Morbidities

The line graph shows the period prevalence rate of rural, urban, and total currently married women who have reported for the symptoms of the morbidities during three periods- ante, intra, and post. The selected morbidities are as follows:

	Morbidities	Code
1.	Swelling of hands, feet, and face	1
2.	Paleness/Giddiness/Weakness	2
3.	Excessive fatigue	4
4.	Premature labour	14
5.	Prolonged labour	16
6.	Obstructed labour	17
7.	High fever	20
8.	Lower abdomen pain	21
9.	Severe headache	25

The line graph (**Fig 4.1**) has shown the PPR per 10000 women and interestingly reflected the perilous conditions during pregnancy, delivery and after delivery. The rise and fall of the morbidities in these three stages can be clearly observed from the graph. In the early stages, the swelling of hands, feet, and face reported, often observed in the ninth month has been reported high, after which paleness/giddiness/weakness has increased. Excessive fatigue begins to reduce among the women as they reach the period of delivery. This marks the beginning of the second stage where they experience premature labour and prolonged labour (usually irregular before the delivery). Obstructed labour, the most critical state, has been higher than all the other morbidities, observed during delivery and have, significant impact on maternal and child health. In the post partum period, the morbidities had been reducing gradually, ranging from high fever to severe headache.

Fig 4.1



The line showing the PPR among total currently married women has been above the rural and urban PPR. As expected logically and empirically, the rural PPR laid near to the total PPR as the cases of morbidities has remained high in rural residence as compared to its urban counterpart. In addition, the background or demographic factors, which have been discussed throughout the study, support the results of PPR in rural residence. However, the line of each category of PPR has shown the same pattern of rise and fall. The highest PPR has been of obstructed labour i.e. 4204, 620, and 4824 followed by giddiness/paleness/weakness, that is, 3412, 494, and 3906 as observed in rural, urban, and total currently married women respectively. Evidence proves that more than half of maternal mortality is caused due to obstructed labour. In addition, when obstruction remains untreated for a long period it affects the maternal health as well as the next higher birth order. On the other hand, PPR of severe headache has been observed to be the lowest, that is, 1747, 215, and 1962 followed by high fever, that is, 2175, 252, and 2428 in rural, urban, and total currently married women respectively.

4.3 Maternal Morbidity Rate (MMR) at National and State Level

Maternal Morbidity Rate (MMR) is the term used when the combined morbidity was calculated. It consists of selected morbidities from three periods, that is, ante, intra and post partum. The rate is calculated keeping numerator as the number of currently

married women who have reported maternal morbidity in a given time period of a given geographical area and denominator considered as the total number of currently married women in the given time period of the given geographical area. The calculation was done with the help of following equation:

$$\mathbf{MMR} = \frac{\sum_R^x CMW}{\sum_R CMW} * K$$

Where,

MMR = Maternal Morbidity Rate of combined Morbidity (ante + intra + post partum morbidity)

$\sum_R^x CMW$ = Total currently married women reported for combined morbidity in a given period in a given geographical area

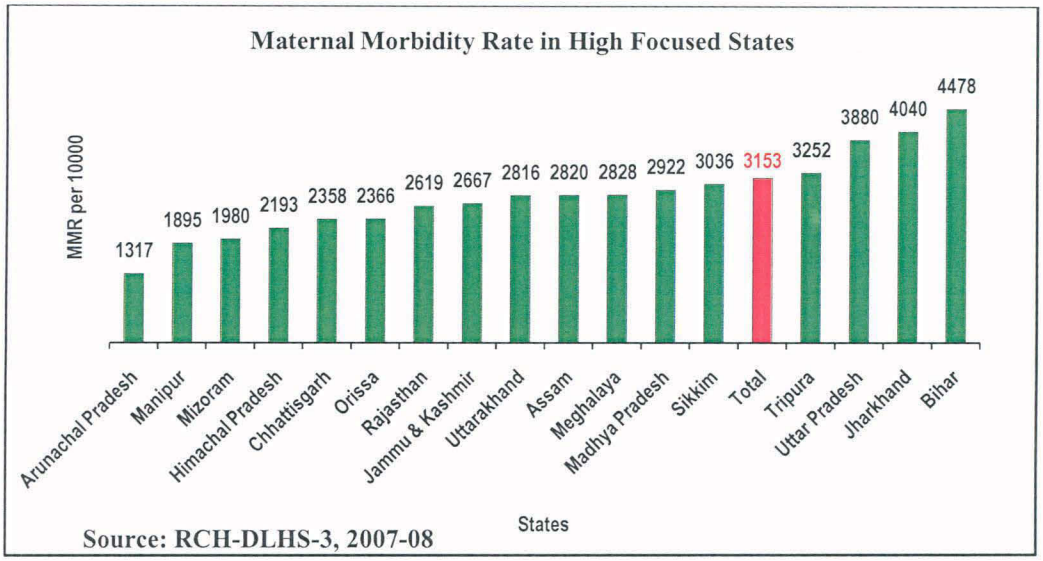
$\sum_R CMW$= Total Currently Married Women in a given period in a given geographical area

K= Constant, considered as 10000

It is calculated in order to show the rate at which women are on risk of getting maternal morbidity in given geographical area (the study area). Since the reporting of the morbidity has shown significant deviation between rural and urban residence, as has been observed in the earlier chapters, the MMR was calculated separately for rural and urban residence. Later, MMR has been mapped separately to show the spatial pattern in rural as well urban residence.

The gradually rising bar (**Fig 4.2**) graph of maternal morbidity among total currently married women unveils the rate at which women are on high risk of suffering from maternal morbidity in the study area. The lowest MMR, that is, 1317 per 10000 women has been observed in Arunachal Pradesh significantly less than the national MMR, that is, 3153 per 10000 women. The pregnant women in four states, namely Tripura (3252), Uttar Pradesh (3880), Jharkhand (4040), and Bihar (4478) have the highest risk of getting maternal morbidity as compared to other states of the country. This indirectly explains quality and accessibility of the health care services available in the high focused states under NRHM (2005).

Fig 4.2: Maternal Morbidity Rate at national and state level



Source: RCH-DLHS-3, 2007-08

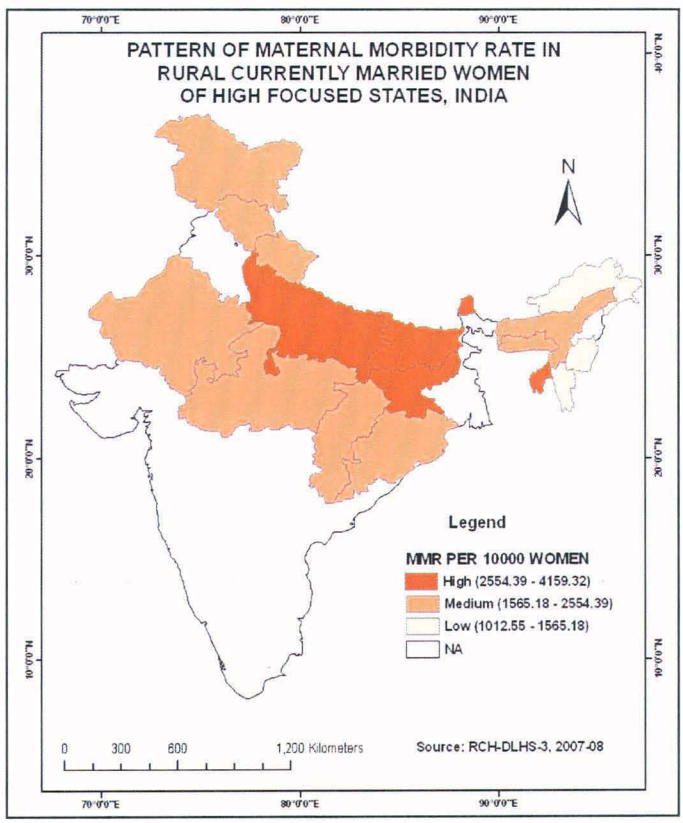
The findings of earlier chapters complement the results of the graph. The MMR of states like Himachal Pradesh, Chhattisgarh, Odisha, Rajasthan, Jammu and Kashmir, Uttarakhand, Assam, Meghalaya, and Madhya Pradesh fall within the range of 2000 to less than 3000 per 10000 women who have the risk of maternal morbidity. The MMR of Sikkim has been recorded near to the national the MMR. While explaining the relationship between women autonomy and utilisation of health care services in a district of Uttar Pradesh, which has shown one of the highest MMR in the graph, **Bloom (2001)** emphasised the importance of socio-demographic factors which /play a vital role and exert a vital influence on the utilisation of services. The socio-demographic predictors influencing utilisation of health care services in less developed countries include, residence or distance to heath services (**Abbas and Walker 1986; Becker et.al 1993**), age (**Gertler et al, 1993**), parity (**McCaw-Binns, La Grenade, and Ashley, 1995**), economic status (**Obermeyer and Potter 1991; Pebley, Goldman, and Rodriguez 1996**), and problems during pregnancy and birth (**McCaw-Binns et al. 1995**), have also been observed in India (**Bhatia and Cleland 1995**). As these predictors strongly control utilisation of health care services, they latently show significant influence on the MMR among the women.

4.3 Regionalisation of Maternal Morbidity- Rural and Urban Differential

The Maternal Morbidity Rate (MMR) in rural residence has been displayed in **Map 4.1.** The map has shown the actual rate at which women are at a risk of suffering from morbidity during ante, intra and post partum period. The map drawn at state level has shown a clear distribution of morbidity risk into low, medium, and high categories.

In Bihar, the currently married women are at the highest risk as the maternal morbidity rate recorded to be 4159 per 10000 followed by 3649 per 1000 in Jharkhand and 3303 per 10000 women in Uttar Pradesh. In the backdrop of demographic indicators and state profile in high focused states (HFS), Bihar has emerged as one of the most backward states. With inadequate equipment, poor services in health care centres and deep-rooted social barriers, the women are deprived of seeking health care facilities.

Map 4.1



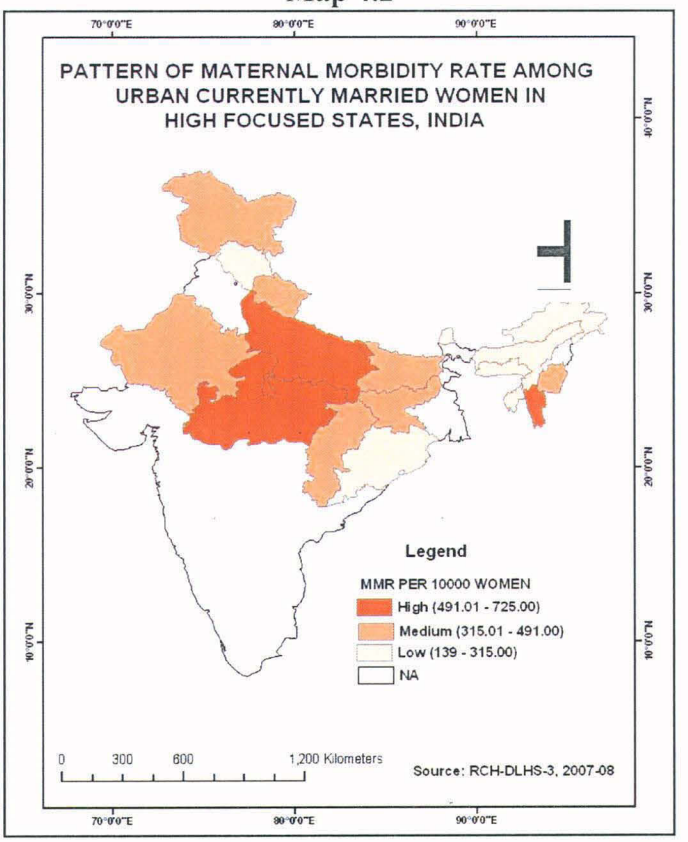
In addition, the states have high incidences of important control variables of child marriage and low age at first birth, which in turn affects the health of the women. Uttar

Pradesh and Jharkhand too have been found to be such states where such traditional barriers act as big impediments in the advancement of women's health.

In the **north and central states**, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Rajasthan, Madhya Pradesh, Chhattisgarh, and Odisha have shown moderate pattern of MMR. In the **northeastern states**, the lowest MMR has been observed in Arunachal Pradesh, Manipur, and Mizoram. Assam and Meghalaya reflected moderate MMR whereas Sikkim and Tripura exhibited high MMR.

The **Map 4.2** of MMR in urban residence reveals that the MMR of Uttar Pradesh has superseded that of Bihar and Jharkhand from the **north and central region**. The reason behind such a change is that the proportion of women in urban residence to the total population in Uttar Pradesh has been high as compared to Bihar and Jharkhand. Hence, Madhya Pradesh has also shown a higher rate of MMR followed by Uttar Pradesh.

Map 4.2



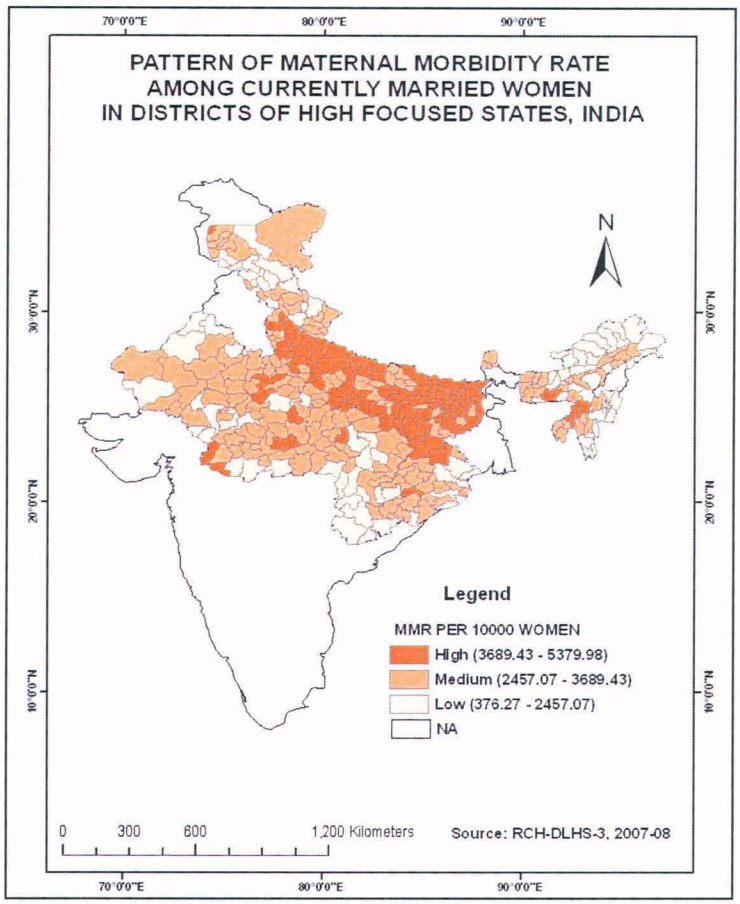
In the **northeastern region**, albeit, Mizoram is a small state in the northeastern state region, throughout the analysis of various morbidities it has shown higher percentage of reporting by the women and hence, at aggregate level, has fallen into high MMR category.

Seven of the total 17 states in the study area have fallen into the moderate category, with a range varying between 315 and 491 per 10000 women. In the moderate category, the highest MMR has been observed in Rajasthan at 474. Various empirical studies done in the state have revealed the poor maternal health conditions of the state. The state has also been recognised for child marriage and unmet needs of contraception. There is an inverse relation between unmet need and higher birth orders. The unmet need of contraception leads to higher risk of conception (undesired pregnancy) among the women, which eventually results in induced abortion or a live birth. Bihar, Jharkhand, Uttarakhand and Jammu and Kashmir were other states that have shown the MMR of moderate category.

In the **north and central region**, lowest MMR has been observed in Himachal Pradesh and Odisha. In the northeastern region, it has been observed in Sikkim, Assam, Arunachal Pradesh, Meghalaya and Tripura. The proportion of urban population, except in Himachal Pradesh, has been less in all other states under this category.

Finally, it was imperative to show the pattern of MMR at the district level. The district level indirectly has presented a far clear picture of functioning of government supported health care facilities and others as well. In addition, it has also elicited stringent and intricate gamut of traditional practices and barriers, which modify the behavior of the mother. The **Map 4.3** has shown the distribution of MMR among total currently married women, divided into three categories- low (376-2457 per 10000), medium (2057-3689 per 10000), and high (3689-5380 per 10000) in the districts of high focused states of the present study.

Map 4.3



On one hand, the MMR is significantly less than 500 in some districts while on the other, there are districts showing MMR of more than 5000 which has inferred that more than 5000 women in districts are at risk of the maternal morbidity, if the conditions continued to exist. Moreover, the map has clearly shown that highest MMR has largely been concentrated in districts of Bihar, Uttar Pradesh, and Jharkhand. Sporadic distribution has also been observed in Madhya Pradesh, Uttarakhand, Jammu and Kashmir and Odisha. According to the calculation done for each district, **Khagaria (5380 per 10000) in Bihar** emerged as the district with the **highest MMR** among all the 366 districts of 17 states. Several other districts such as Sheohar (5258), Samastipur (5206), Kishanganj (5129), Madhepura (5115), Paschim Champaran (5049) and Sitamarhi (5008) have shown highest MMR. It is notable that all of them are located in Bihar. Moreover, Pakaur (5022) in Jharkhand has also indicated highest MMR in the north and central

region. In the northeastern region, Karimganj (5126) in Assam has shown highest MMR which fell within the range of high category.

Another series within the category of high MMR has been above 4000 per 10000 women. Around 72 districts have been observed from both the regions. In **the north and central region**, specifically, only one district namely Kupwara (4666) in Jammu and Kashmir has been observed from the northern states. However, Cluster of districts have been observed in Jharkhand such as Sahibganj (4003), Dumka (4224), Garhwa (4239), Giridih (4305), Chatra (4350), Lohardaga (4583), Latehar (4636), Gumla (4644), Palamu (4672), and Simdega (4752). In Madhya Pradesh only one district, namely Sheopur (4094) has been observed in this category. Moreover, Supaul (4073), Katihar (4693), Begusarai (4928), Saharsa (4857), Purnia (4843), Bhagalpur (4815), Sheikhpura (4799), Jamui (4764), and Madhubani (4705) have been seen in Bihar.
Lastly, cluster of districts namely Budaun (4952), Chitrakoot (4883), Shahjahanpur (4819), Etah (4772), Bahraich (4698), Kaushambi (4662), Kannauj (4647), Sitapur (4629), Allahabad, (4159) and Kanpur Dehat have been observed in Uttar Pradesh.
In northeastern region, few districts namely, West Khasi Hills (4187) in Meghalaya, Cachar (4677) and Hailakandi (4678) in Assam have been observed.

Since high category starts from 3712, 24 districts have been observed with the MMR more than 3712 but less than 4000. Notably, the districts are located sporadically across the study area. In the north and central states, districts namely, Hardwar (3815) in Uttarakhand, Dhaulpur (3931) and Karauli (3977) in Rajasthan, Pratapgarh (3731), Sant Kabir Nagar (3742), Auraiya (3797), Bulandshahar (3840), Ballia (3869), Basti (3876), and Balrampur (3962) in Uttar Pradesh have been observed. Moreover, Munger (3807), Muzaffarpur (3906), and Patna (3962) in Bihar, Dhanbad (3726), Ranchi (3953), and Paschim Singhbhum (3973) in Jharkhand, Baudh (3920) in Odisha, and Raisen (3754), West Nimar (3810) and others in Madhya Pradesh have also fallen into the category. In the northeastern region, North Tripura (3724) in Tripura has been observed.

Here, in the present discussion, the moderate category has been divided into two series in order to understand the distribution lucidly, that is, MMR **more than 2044 but less than 3000** and **more than 3000 per 10000 women**. The districts having MMR less

than 3000 per 10000 women are concentrated in Odisha, Madhya Pradesh, Himachal Pradesh, Uttarakhand, and Assam. In northern states, districts such as Kargil (2402), Leh Ladakh (2511), Srinagar (2619), Anantnag (2682), Pulwama (2969) and others in Jammu and Kashmir and almost all districts of Himachal Pradesh were observed with an average MMR of 2504 except Kullu and Hamirpur. Cluster of districts such as Baran (2981), Nagaur (2967), Jaipur (2961), Jalore (2538), Alwar (2568), Jaisalmer (2610), and Udaipur (2618) have been observed in Rajasthan where the women at risk have fallen within this category. Several districts of Uttar Pradesh such as Mahoba (2967), Agra (2881), Kanpur Nagar (2723), Lucknow (2620), and Jhansi (2085) followed by Purbi Singhbum (2873) in Jharkhand, Mahasamund (2893), Bilaspur (2848), Raigarh (2532), Koriya (2411) and so on in Chhattisgarh have also been observed in this category. Another cluster of 14 has been observed in Odisha with an average of 2627 per 10000 women. A very prominent large sized cluster of 26 districts has been observed in Madhya Pradesh with an average of 2639 per 10000 women.

In the **northeastern region**, sporadic distribution has been observed such as East (2881) district of Sikkim, East Siang (2124) in Arunachal Pradesh, Thoubal (2064) and Imphal East (2121), Senapati (2370), Bishnupur (2421), and Tamenglong (2520) in Manipur. Two districts namely Champai (2103), and Mamit (2985) in Mizoram have also fallen into this category. A cluster of four districts namely, East Garo Hills (2921), Ri Bhoi (2810), Jaintia Hills (2595), and East Khasi Hills (2390) has been prominent in Meghalaya. A large cluster of 12 districts has been visible in Assam with an average of 2544.

In **northern states**, the second series can be seen in districts such as Baramula (3076), Badgam (3083), Doda (3164), Punch (3192), Rajauri (3263) in Jammu and Kashmir, Dehradun (3058) and Champawat (3355) in Uttarakhand. A group of districts namely, Bharatpur (3547), Sawai Madhopur (3240), Dausa (3239), Sirohi (3214), Jodhpur (3115), Pali (3101) and Bundi (3012) have been observed from Rajasthan. Moreover, 22 districts of Uttar Pradesh with an average of 3444 include districts like Gorakhpur, Hathras, Sultanpur, Kushinagar, Ghaziabad, Etawah, Jaunpur, Mathua and others have also been fallen into this category. Likewise, Gopalaganj (3689), Nawada (3653), Jehanabad (3595), and Siwan (3528) in Bihar have shown MMR of the second category. In

Jharkhand, a cluster of several districts have also been demarcated into this category such as Jamtara (3683), Godda (3609), Bokaro (3592), Hazaribaugh (3441), Deoghar (3385) and Seraikela (3067). A cluster of 13 districts has been prominent visible in Madhya Pradesh with an average of 3359 covering districts like Bhopal, Sehore, Sagar, Dewas, Tikamgarh, Katni and others.

Interestingly, districts from Odisha such as, Sonapur (3670), Kadhamal (3527), Debagarh (3458), Ganjam (3288), Jharsuguda (3148) Sambhalpur (3147), and Bargarh (3007) have been observed in this category. Three districts namely, Jashpur (3584), Surguja (3311), and Kawardha (3157) have been prominent in Chhattisgarh.

In the **northeastern region**, Sikkim has shown three districts namely, North (3207), West (3177) and South (3118) in this category. The two main districts of Mizoram namely, Aizawl (31330 and Kolasib (3011) have also shown moderate MMR. The small states of this region have also shown significant MMR such as Dhalai (3476) and South Tripura (3152) in Tripura, West Garo Hills (3446) in Meghalaya. On the other hand, the largest states of the region has shown a cluster of several districts such as, Kokrajhar (3436), Dhemaji (3388), Lakhimpur (3223), Golaghat (2313), Dibrugarh (3206), Dhubri (3139), Tinsukia (3075) and Barpeta (3025).

The low category of MMR lies between 376 and 2044 and has covered fewer districts. In the **north and central states**, the districts which have fallen in this category are Udhampur (1769), and Kathua (1371) in Jammu and Kashmir, Hamirpur (1671) and Kullu in Himachal Pradesh, Chittaurgarh (1185), Ganganagar (1851), Dungarpur (1613), Hanumangarh (1456), and Banswara (1234) in Rajasthan. In central region, several districts of Odisha have shown low MMR such as Jagatsinghpur (1921), Baleshwar (1775), Kendujhar (1537), Nuapada (1490), Gajapati (1218), Koratpur (1200), Malkangiri (819), and Balangir (376). Similarly, a cluster of districts namely, Bastar (2024), Durg (1994), Raipur (1972), Korba (1943), Janjgir-Champa (1686), Dantewada (1676) and Balaghat (2055) have been observed in Chhattisgarh.

In the **northeastern states**, almost all districts with a range varied from 1702 per 10000 women in East Kameng to 910 per 10000 women in Changlang of Arunachal Pradesh have shown low MMR. Another cluster of districts has been visible in Imphal West

(1969), Ukhrul (1568), Churchandpur (1366), and Chandel (1275) in Manipur. A cluster of three districts has been observed in Lunglei (2017), Saiha (1805), Serchip (1537), and Lawangtlai (1326) of Mizoram. In addition, South Garo Hills (2071) in Meghalaya has also fallen into this category. In Assam, few districts namely, North Cachar Hills (2034), Kamrup (1779), Baska (1700), and Karbi Anglong (1117) have shown low MMR.

Conclusion

The pattern of Period Prevalence Rate and Maternal Morbidity rate in the study area explained the reported morbidity among the currently married women prior to three years of the survey. The line graph of PPR has shown the prevalence of obstructed labour to be the highest among women, which is strongly related to delivery practices, especially emergency obstetric care. **Bacci (1999)** suggested that emergency care is important if adolescents experience obstructed labour, pregnancy-included hypertension, eclampsia or severe untreated anemia. Obstructed or prolonged labour emerged as the most serious complication in the present analysis that cause maternal morbidity and death. The adolescents appear to be at a higher risk than older women because their pelvic bones and birth canals are not completely developed. In addition, when obstructed labour is not treated medically, it leads to uterine rupture or tearing of vaginal wall. Not surprisingly, since tribal population predominantly characterise the states namely Odisha and Chhattisgarh, they have shown low PPR and MMR. For all women, use of health care services is a key proximate determinant of maternal and infant outcomes (**Das Gupta M 1990**). According to **McCarthy (1992)**, determinants of poor maternal and infant outcomes include poverty; cultural factors that restrict women's autonomy, promote early marriage, or support harmful traditional practices; nutritional deficiencies; reproductive factors such as young age at first birth; distance to health services and inadequate health care behaviour or use of services. However, the benefits of utilisation of health care services are seen to be relative with the settings and subgroups where socio-economic and public health is restrained (**Pebley AR 1996**).

Over all, two reasons simultaneously worked together to influence both the rates in the study area, that are, under reporting of the morbidity which might be due to - women sought treatment for their illnesses; or they are not willing to disclose such morbidities considering them as excessively private. Secondly, although the government health facilities were inadequate and poor in quality women sought treatment during all three periods because of low cost of services. Ironically, rural women bore negative feelings towards providers of maternal services at government health care centres and expressed doubts about the efficacy of specific therapies (**Grace B K 2003**). In addition, some very interesting practices together play an important role in the health status of the mother. The woman who delivers herself is highly respected whereas those who need assistance during delivery are said to be weaker (**Grace B K 2003**). The frequent problems reported by the women include high fever, lower abdominal pain, giddiness, excessive fatigue, prolonged labour, premature labour and obstructed labour during the periods. Most women sought treatment when symptoms become clearly manifest, persistent, or severe, to avoid public ridicule of being weak.

The traditional practices include abdominal palpations, gentle back massages for relaxation, sitting in a container of herbal medicine mixed with water to clean, disinfect and widen birth canal; drinking various types of herbal medicines for protection; smearing or insertion of certain herbs in vagina; drinking herbal concoctions to enhance contractions or expel placenta and abdominal massage. Such perilous practices leave wider likelihood of women getting morbid especially during delivery and post partum period (**Grace B K 2003**). The morbidity conditions become grimmer as these customary practices remain firmly established, unchallenged and most importantly perpetuated by women themselves.

The distribution of women in urban as well as rural residence largely determined the prevalence of PPR and MMR, as PPR as well as the MMR has been observed to be slightly higher in rural residence as compared to urban residence. The PPR and MMR have been observed to be low in the northeastern states, with exceptions in certain districts. Jammu and Kashmir, Himachal Pradesh, and Uttarakhand in the north and Odisha, Chhattisgarh and Madhya Pradesh and Rajasthan in the central region have recorded low PPR and MMR.

Bihar has topped in the spatial distribution of MMR which inferred that women from the state are at highest risk. A cluster of seven districts from the state has shown MMR more than 5000 per 10000 women which is a matter of serious concern. Moreover, large clusters of MMR more than 4000 per 10000 women have also been recorded in Bihar. Several districts from Uttar Pradesh and Jharkhand have also depicted similar picture where more than 4000 per 10000 women are at risk. Fewer districts from Assam and Meghalaya in the northeastern region have shown MMR more than 4000 per 10000 women.

On the other hand, the lowest MMR of 376 per 10000 women has been observed in Balangir district of Odisha. Such a finding has provided a very clear picture about why the state has been observed under low reporting throughout the analyses of the present study. Since, tribal population characterizes the district, therefore, the reporting from them itself provided an answer to the mystery of low reporting. Hence, it perfectly fits with the assumption considered for the states. Likewise, the reporting had been found low in the northeastern region where the tribal population inhabit the forest and hilly region and thus have minimal access to health care facilities.

Although, the current evidence and analysis is not robust enough to make clear remarks, therefore differences at micro/grass root level have remained unresolved. Yet, it can be concluded that entire period of pregnancy is a web of daedal and rudimentary practices which a woman has to undergo. The questions relating to the management of women with intra and post partum complications largely remain unanswered. In the absence of proper clinical or medical support, the condition of women would continue to remain critical. Therefore, every effort should to be made to ensure the administration of standard treatment so that women at not placed at additional risk.

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CHAPTER FIVE

CLOSELY ASSOCIATED PREDICTORS OF MATERNAL MORBIDITY

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CLOSELY ASSOCIATED PREDICTORS OF MATERNAL MORBIDITY

5.1 Introduction

In various studies related to the morbidity among the women during three periods, background characteristics such as age at conjugal union, age at first birth, age at first induced abortion, education, religion, caste, standard of living of the women have been considered important determining factors. Some other studies have also emphasized the factors related to pregnancy such as the place of delivery, type of delivery, place of induced abortion, assisted induced abortions and alike have also been observed significant in affecting the maternal health. In certain studies, the utilisation of antenatal care and postnatal care has been frequently highlighted in the analyses of the channels through which the maternal health gets affected.

The present chapter has taken into account various such factors that play an indispensable role in determining the health of the women in related to her pregnancy and delivery attributes. Throughout the chapter, the analyses had been carried out with the help of bi-variate technique.

5.2 Background factors

5.2.1 Number of pregnancies

The importance of pregnancy is consistently discussed throughout in the study and its influential role in the occurrence of the morbidity among women cannot be ignored. The **Table 5.1** showed the pattern of two or less than two pregnancies in the high focused states. Overall, the pattern depicted an inverted 'U' shape curve depicting the fertility transition over the ages. The pattern in **rural residence** of the **north and central states** showed that the women decreased in number as the age of women crossed 25-29 years of age groups. Overall, except Jammu and Kashmir and Himachal Pradesh, the number of women who attained two pregnancies has remained less than 20 percent.

The pattern illustrated that the childbearing in these states started at early ages while other states stood on the other side of the prevailing trend. Prominently, the age groups of 20-24 years, considered the ideal age for pregnancy, accounted for the highest number of women who had at least two pregnancies followed by the women observed in the age group of 25-29 years. The pattern also illustrated that by the time women reached to the middle ages, they have at least two pregnancies in their reproductive span. However, the highest performance of fertility remained at its peak in middle age groups after which it stagnated. A sharp decline in the pattern is observed as the women entered into the age group of 30-34 years after which the decline is gradual. The age group of 40-44 years showed only two percent of women that indirectly depicted that few women could hardly control her family size by controlling the number of pregnancies upto two only.

Table 5.1 Number of pregnancies (Two or less than two) in the High Focused States

Two or less than two Pregnancies	15-19		20-24		25-29		30-34		35-39		40-44	
North and Central	R	U	R	U	R	U	R	U	R	U	R	U
Bihar	6.9	2.2	38.5	21.1	28.9	29.5	13	21	8	16	4.7	10.3
Chhattisgarh	16.2	8.1	41.8	33.2	23	26.9	10	16	6	10	3.3	6.2
Himachal Pradesh	25.6	13	44.8	38.5	17.5	24.5	7	12	3	7	2.1	4.2
Jammu and Kashmir	30.3	18.6	43.3	36.4	15.7	22.2	6	11	3	7	2.1	4.5
Jharkhand	7.6	4.3	28.5	18.5	27.9	24.1	18	30	12	14	6.4	9.3
Madhya Pradesh	3.9	5	26.7	22.4	36.6	31.7	14	18	13	15	5.9	7.7
Odisha	11.3	4.7	33.5	22.8	30.1	31.4	12	18	9	16	3.3	7.8
Rajasthan	11.5	5.1	30.9	20.2	28	26.5	16	22	10	17	4	9.1
Uttar Pradesh	17	7.4	41.1	32.5	20.2	22.5	10	17	7	14	4.8	6.7
Uttarakhand	17.2	7.3	43.5	33.6	21.3	27.7	9	16	6	10	3.6	5.8
Northeastern												
Arunachal Pradesh	5.1	1.1	32.5	15	35.5	34	15	26	8	16	4.1	8.1
Assam	2.1	1.6	23.1	18.5	27.8	30.6	21	22	15	16	10.9	11.7
Manipur	4	3.1	27.1	19.9	34.2	29.7	17	23	12	16	5.6	8.5
Meghalaya	9.3	6.2	37.1	28.6	29.5	29.5	13	17	8	11	3.8	7.5
Mizoram	15.6	6.3	33.6	20.9	24.4	25.4	14	18	8	18	4.5	11.5
Sikkim	17.7	6.5	39.7	27.5	22.9	27.5	11	21	6	11	3.1	6.7
Tripura	10.8	5.3	32.3	27.1	27.2	27.2	15	18	9	14	5.5	7.8

Source: RCH-DLHS-3, 2007-08

The analysis of **urban residence** in the **north and central states** showed that the overall, values have remained low as compared to rural counterparts. However, the analysis of the pattern revealed that the urban women in Himchal Pradesh and Jammu

and Kashmir geared up for pregnancy at early ages. However, with a sharp increase, the number of women has raised significantly in the middle ranges. The age group of 25-29 years accounted for the highest number of women who had at least two pregnancies while the other two age groups showed more or less similar values. Interestingly, the age groups of 35-39 years and 40-44 years have shown a considerable number of women which depicted that urban areas largely limit the number of children. Another important feature of the pattern needed to be mentioned is that urban women in Himachal Pradesh and Jammu Pradesh accounted for the early start and end of fertility. With low values compared to these two states, few other north and central states showed the similar pattern of fertility.

The data of **rural women,** who reported two or less than two pregnancies in the **northeastern states,** have shown an inverted 'U' shaped pattern of pregnancy. The traces of pregnancy at early ages have been observed in Mizoram, Sikkim and Tripura with a score of more than 20 percent of women. More than two pregnancies in early ages had given the opportunity to limit their children and therefore the values of percentages have been observed low in the higher ages. However, the major proportion of women showed similar pattern with that of the north and central states where they had at least two pregnancies in the middle ages. Overall, more than 20 percent of women had at least two pregnancies in the age group of 20-24 years and 15-19 years. The highest score of 40 percent of rural women was observed in Sikkim as compared to remaining of the states.

The values for **urban women** in **the northeastern states** showed invariably inverted 'U' shaped pattern of fertility among the women in different age groups. In addition, since the concentration of urban population is low in the northeastern states, the overall scores have been observed low across the age groups and states. However, the lowest values of urban women in the age group of 15-19 years exerted better position to withhold the number of pregnancies as compared to other age groups. Significantly, a shift in the pattern is reflected in the middle ages as the highest concentration of women shifted from 20-24 years of age group to 25-29 years of age group as compared to the entire results regarding pregnancy. The age group accounted for more than 25 percent of women who had at least two pregnancies. A natural decline in the scores is significantly

observed in the succeeding age groups. The last age group showed that less than 15 percent of the total women could retain the pregnancy upto two.

The **second** category of the number of pregnancies attained by currently married women of high focused states in the country has been shown in **Table 5.2**. The table has displayed more than two pregnancies among rural as well urban women in different age groups. The pattern of fertility in the high focused states has shown an inverted 'J' shaped curve which shows that as the age increases the fertility or number of pregnancies also increases upto a certain extent after which it stagnates.

Table 5.2 Number of Pregnancies (More than Two) By Age Groups of Currently Married Women in the High Focused States

More than two Pregnancies	15-19		20-24		25-29		30-34		35-39		40-44	
North and Central	R	U	R	U	R	U	R	U	R	U	R	U
Bihar	0.0	0.1	3.6	1.9	17.4	14.4	27.2	27.3	29.9	32.3	22.0	23.9
Chhattisgarh	0.1	0.0	5.2	4.0	20.7	17.3	27.5	25.5	26.7	29.1	19.8	24.1
Himachal Pradesh	0.4	0.2	10.0	6.4	23.2	20.2	25.8	26.6	22.9	25.2	17.7	21.5
Jammu and Kashmir	0.4	0.3	10.4	7.3	24.7	21.6	25.0	24.1	21.8	25.6	17.6	21.0
Jharkhand	0.1	0.0	4.0	5.7	17.8	17.1	24.1	28.6	27.5	27.1	26.5	21.4
Odisha	0.1	0.0	5.5	3.0	21.9	22.5	23.4	21.0	31.5	29.9	17.6	23.7
Rajasthan	0.2	0.2	5.8	3.1	20.4	17.8	25.3	22.3	28.4	32.5	19.8	24.1
Madhya Pradesh	0.0	0.3	1.7	2.3	14.2	17.5	23.5	24.2	35.4	34.7	25.2	21.0
Uttar Pradesh	0.3	0.0	7.7	5.4	22.7	17.5	25.5	24.9	23.9	27.9	19.9	24.4
Uttarakhand	0.2	0.1	7.7	4.8	22.3	18.7	25.8	23.9	24.8	28.4	19.1	24.1
Northeastern												
Arunachal Pradesh	0.1	0.0	3.4	1.6	17.5	12.5	25.6	24.3	28.8	31.8	24.7	29.9
Assam	0.0	0.0	2.0	2.0	13.6	12.4	25.9	28.9	29.2	30.1	29.4	26.5
Manipur	0.0	0.0	2.9	2.7	18.4	15.0	24.0	19.9	30.0	30.8	24.8	31.6
Meghalaya	0.0	0.1	4.5	2.5	23.6	16.3	24.1	27.6	26.2	28.3	21.6	25.2
Mizoram	0.4	0.0	8.2	6.0	21.2	18.1	22.9	21.6	26.3	26.7	20.9	27.6
Sikkim	0.2	0.1	6.9	4.9	23.8	16.4	28.9	26.6	24.6	29.0	15.6	23.0
Tripura	0.2	0.2	5.4	5.1	18.9	17.4	26.8	22.2	27.5	29.1	21.3	26.1

Source: RCH-DLHS-3, 2007-08

The pattern of pregnancy in the **rural residence** of the high focused has shown low levels of percentages in the age group of **15-19 years**. Bihar and Madhya Pradesh have shown an absence of women who have had more than two pregnancies in this age group, which significantly contradicts the general statements established in the states. Overall, the levels of percentages have been less than 0.5 percent across all the **north and central states**. In the age group of **20-24 years**, the highest 10.4 percent has been

observed in Jammu and Kashmir followed by 10 percent in Himachal Pradesh. The lowest value, on the other hand, has been accounted in Bihar (3.6 percent) followed by four percent in Jharkhand. All the other states have shown values of percentages less than six percent. The age group of **25-29 years** has shown a wide variation within the two levels i.e. more than 10 percent and 20 percent. The percentages of women have been observed to be in a kind of series. The lowest value of 14 percent has been observed in Madhya Pradesh, followed by 17 percent in Bihar, 18 percent in Jharkhand and 20 percent in Rajasthan. The higher values of percentages have been seen in states namely, Jammu and Kashmir (25 percent), Himachal Pradesh and Uttar Pradesh (23 percent), Odisha (22 percent) and Chhattisgarh (21 percent). Likewise, in the age group of **30-34 years,** significant variations have been observed between 20 and 27 percent. Two states namely, Odisha and Madhya Pradesh have shown value of 23 percent followed by 24 percent in Jharkhand, 25 percent in three states namely, Jammu and Kashmir, Rajasthan and Uttar Pradesh. Himachal Pradesh and Uttarakhand have shown common value, that is, 26 percent. The highest percentage value has been observed in Chhattisgarh and Bihar, that is, 27 percent. The age group of **35-39 years** has been another age group where the variation of values has been observed to be between 22 and 35 percent. Jammu Kashmir has shown 22 percent of women who have had more than two pregnancies followed by 23 percent in Himachal Pradesh, 24 percent in Uttar Pradesh and 25 percent in Uttarakhand. The highest value of 35 percent has been observed in Madhya Pradesh followed by 31 percent in Odisha, 30 percent in Bihar and 28 percent in Rajasthan. Two states namely, Chhattisgarh and Jharkhand have shown common value, that is, 27 percent women. The similar such variation has been observed in the last age group of **40-44 years** as well. The region has shown a decline in the percentages of women as compared to earlier age groups who have had more than two pregnancies. The levels of percentages vary between 19 and 26 percent. The lowest value of 18 percent has been observed in three states namely, Himachal Pradesh, Jammu and Kashmir and Odisha followed by 19 percent in Uttarakhand. Another three states namely, Chhattisgarh, Rajasthan and Uttar Pradesh have shown common value, that is, 20 percent. The highest score of 26 percent has been observed in Jharkhand followed by 25 percent in Madhya Pradesh and 22 percent in Bihar.

In the **north and central states**, an inverted 'J' shaped pattern for women with more than two pregnancies has also been observed. However, the pattern has shown comparatively lower values than in rural residence. The variation has not been very distinctive in the age group of **15-19 years**. Few states namely, Chhattisgarh, Jharkhand, Odisha and Uttar Pradesh have shown an absence of women with more than two pregnancies in this age group, while Jammu and Kashmir and Madhya Pradesh have accounted for 0.3 percent. Overall, the level of percentage has been less than 0.5 percent across the states. In the age group of **20-24 years**, the highest value has been observed in Jammu and Kashmir, that is, 7.3 percent, followed by 6.4 percent in Himachal Pradesh and six percent in Jharkhand. The lowest percentage of 1.9 percent has been observed in Bihar followed by 2.3 percent women in Madhya Pradesh. Two states namely Odisha and Rajasthan have shown the same result, that is, three percent of women. In the age group of **25-29 years**, the highest value of 22.5 percent has been observed in Odisha followed by 22 percent in Jammu and Kashmir and 20 percent in Himachal Pradesh while the lowest value of 14.4 percent women has been observed in Bihar. Few states namely, Chhattisgarh, Jharkhand, Madhya Pradesh and Uttar Pradesh have shown a common value of slightly more than 17 percent women followed by 18 percent women in Rajasthan and 19 percent in Uttarakhand. Significantly, a slightly higher percentage value has been observed in the age group of **30-34 years**. Another noticeable fact is that the variation has been observed to be within the range of 21 and 29 percent.

Lowest value of 21 percent has been observed in Odisha followed by 22 percent in Rajasthan while the highest value of 29 percent has been observed in Jharkhand followed by 27 percent in Himachal Pradesh. Three states namely, Jammu and Kashmir, Madhya Pradesh and Uttar Pradesh have shown the common value of 24 percent. In the age group of **35-39 years**, the variation lies between 35 and 25 percent. Madhya Pradesh has shown the highest value of 35 percent followed by 32 percent women in Bihar, as well as, in Rajasthan. Few states have shown a response of less than 30 percent but more than 25 percent i.e. almost 30 percent in Odisha followed by 29 percent in Chhattisgarh and others. In the last age group of **40-44 years**, the state of stable fertility has clearly been visible. Significantly, all the percentage values have been observed to be less than 25 percent. Moreover, the percentage value has been seen mostly near to 24 percent and

21 percent. Lowest value of 21 percent has been observed in Madhya Pradesh while the highest value of 24.4 percent has been observed in Uttar Pradesh.

The rural women in the **northeastern states**, largely, have shown lower percentages of women who have had more than two pregnancies across different age groups as compared to the north and central states. However, the 'J' shaped pattern of fertility has continued to be observed in these states. The older ages have wide variations across the states as well as within age groups. Nevertheless, the age group of **15-19 years** has shown an absence of women having had more than two pregnancies in the states namely, Assam, Manipur and Meghalaya. However, two states namely Sikkim and Tripura, have shown merely 0.2 percent women who have had more than two pregnancies, followed by only 0.1 percent in Arunachal Pradesh, while Mizoram has shown a result of 0.4 percent. In the age group of 20-24 years, a higher value of 8.2 percent has been observed in Mizoram followed by 7.7 percent in Uttarakhand and seven percent women in Sikkim while the lowest result of three percent has been observed in Manipur. The rest of the states have shown values of less than six percent. The fertility has been found to be low in these two age groups, but a sudden increase has been observed in the 25-29 years age group onwards. In the age group of **25-29 years**, the highest value of 24 percent has been observed in Sikkim followed by 23.6 percent in Meghalaya whereas the lowest value of 13.6 percent has been observed in Assam followed by 17.5 percent in Arunachal Pradesh. Manipur and Tripura have shown values close to 18 percent. Notably, in the age group of **30-34 years**, all the states have shown scores more than 20 percent. The highest value of 29 percent has been observed in Sikkim followed by 27 percent in Tripura and 26 percent in Arunachal Pradesh and Assam. Two states, namely Manipur as well as Meghalaya has shown 24 percent women who have had more than two pregnancies in this age group. The lowest value of 23 percent has been seen in Mizoram. The peaking of fertility among women in the age group of **35-39 years** aptly describes the curve beyond which it becomes stable. Notably, the level of percentage has been observed to be more than 25 percent across all the states. The highest value of 30 percent has been observed in Manipur followed by 29 percent in Assam and Arunachal Pradesh while the lowest value of 25 percent has been seen in Sikkim followed by 26 percent in Meghalaya and Mizoram. The last age group of **40-44 years** has shown substantial decline in the

percentages of women who have reported more than two pregnancies. Assam has shown the highest value of 29 percent of women followed by 25 percent in Arunachal Pradesh while the lowest score of 16 percent has been observed in Sikkim followed by 21 percent in Mizoram. The rest of the states have shown scores of less than 25 percent.

Largely women in **urban residence** of the **northeastern states** have shown similar responses as that of women in rural residential. The variation across different age groups has depicted the inverted 'J' shaped curve. However, the percentage of women have been found to be slightly less than in rural residence. In the age group of **15-19 years,** except Meghalaya, Sikkim and Tripura, all states have shown the absence of women who have had more than two pregnancies. Apparently, in this age group, women could not have more than two pregnancies and hence the percentage is low. The age group of **20-24 years** has shown a minor, but significant, increase in percentages. Highest value of six percent has been observed in Mizoram while the lowest 1.6 percent has been observed in Arunachal Pradesh. Three states namely Assam, Manipur and Meghalaya have shown response of slightly greater than or equal to two percent. Sikkim and Tripura have shown almost five percent of women in this age group. The age group of **25-29 years** has shown results which are three times the percentage observed in the previous age groups. As a woman reaches the age of 29, the desired number of children has been achieved and hence the percentages rise considerably. In this age group, the highest score has been seen in Mizoram, that is, 18 percent followed by 17 percent in Tripura and16 percent in Meghalaya as well as in Sikkim. Two states namely Arunachal Pradesh and Assam have shown the same percentage value of 12 percent while Manipur has shown 15 percent. In the age group of **30-34 years**, all the states have shown percentage values of 20 percent or more than 20 percent. The highest value of 29 percent has been observed in Assam followed by 28 percent in Meghalaya and 27 percent in Sikkim. The age group of **35-39 years** has represented the peak of the curve where the pregnancy is assumed to be the highest. Arunachal Pradesh has shown the highest score of 32 percent women with more than two pregnancies followed by Assam and Manipur that have shown values which cluster around 31 percent. Sikkim as well as Tripura has shown 29 percent of women with more than two pregnancies. In the last age group of **40-44 years** a considerable decline in percentage of women who have had more than two pregnancies

has been observed in all the states, except Manipur which has shown the highest percent value of 32 percent. The rest of the states have shown levels of percentages of women less than 30 percent. The lowest value of 25 percent has been observed in Meghalaya. Two states namely Assam and Tripura have shown values around 26 percent with a slight variation while 30 percent of women who have had more than two pregnancies have been accounted for in Arunachal Pradesh.

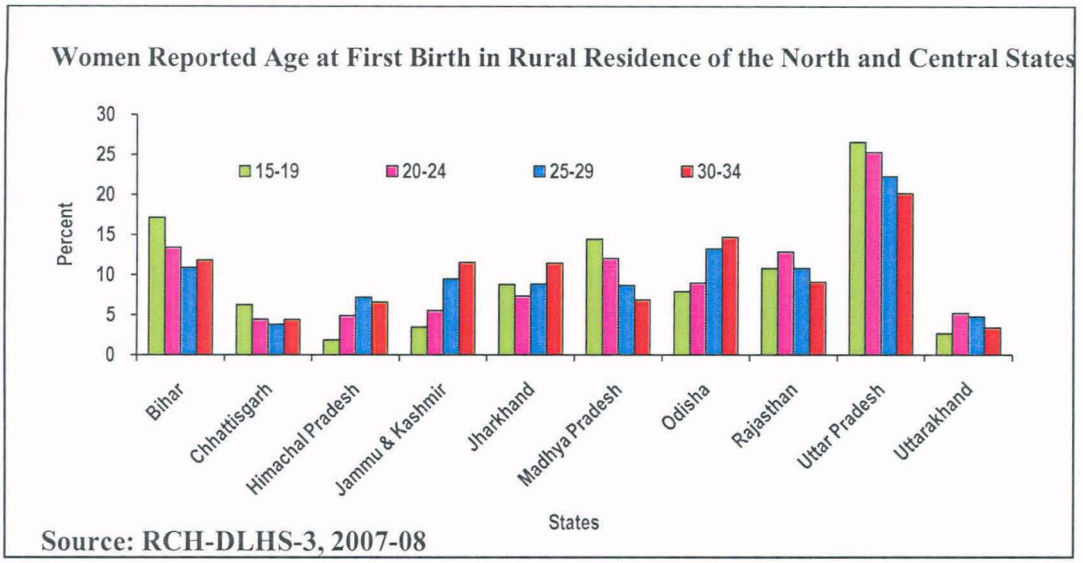
5.2.2 Age at first birth

The age at first birth is an important variable which determines the occurrence of morbidity among women. At younger ages, it has been medically proven that women have weaker and immature pelvis, which gets damaged due to repeated and frequent pregnancies. Therefore for such age groups, obstetric labour is observed to be the most common complication associated with a contracted pelvis which leads to increased maternal morbidity as wells as mortality. In addition, a large set of women have reported that multiple pregnancies within a short interval cause complications that endanger the life of mother and at times can cause lifelong morbidity (**Bhonsale: 2010 and Mukopadhyay: 2004**). The bar graph has shown the age at first birth of the currently married women in percentages. The four bars depict the different age groups which determine the age at first birth. The base has shown the states while 'y' axis showed the percentage of women.

The state of age at first birth among currently married women in **rural residence** has shown a wide variation over the **north and central** high focused states in India. To assess age at first birth, age groups of 15-19 years, 20-24 years, 25-29 years and 30-34 years have been taken into consideration. The bar graph shows that Uttar Pradesh has accounted for the highest value of 27 percent in the age group of 15-19 years followed by 17 percent in Bihar, 14 percent in Madhya Pradesh and 11 percent in Rajasthan. Among the smaller states, Himachal Pradesh has shown the lowest value of two percent followed by three percent in Uttarakhand and Jammu and Kashmir. Significantly, data has shown that the BIMARU states have been witnessing child marriage and hence have shown the highest percentage in the age group of 15-19 years. Nevertheless, gradual decrease has been observed in percentages in Uttar Pradesh in all the other age groups i.e. 25 percent

in 20-24 years followed by 22 percent in 25-29 years and 20 percent in 30-34 years. Likewise, Bihar has also shown a smooth decline in the scores of the percentage of women with an increase in age. The states which have shown value less than 10 percent are Chhattisgarh, Himachal Pradesh and Uttarakhand and their percentage values range from two percent to six percent.

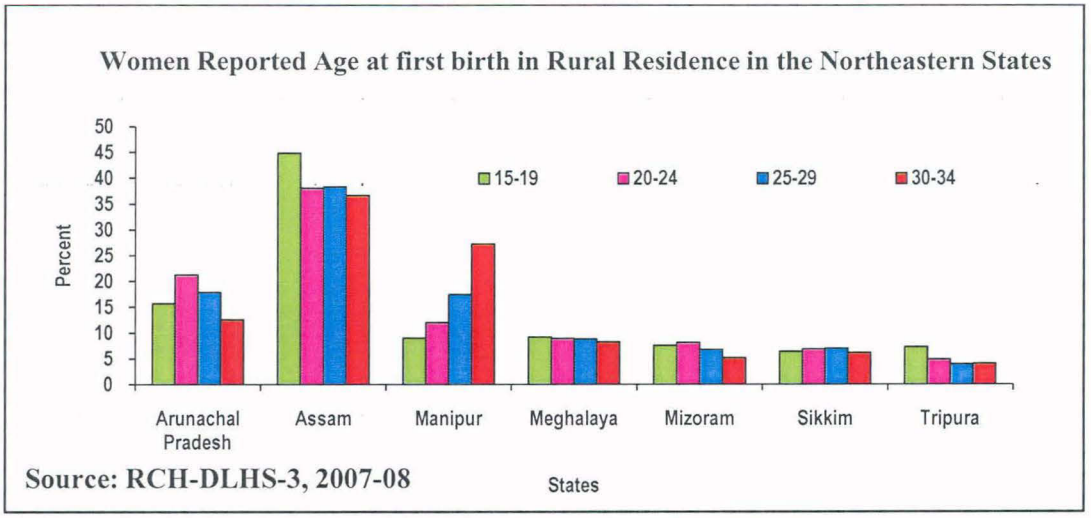
Figure 5.1



Source: RCH-DLHS-3, 2007-08

The pattern of age at first birth in **rural residence** of **northeastern states** has shown that four states namely Sikkim, Tripura, Mizoram and Meghalaya have a very low proportion of women in total women who have reported their first age at birth whereas Assam, Arunachal Pradesh and Manipur have shown higher percentages.

Figure 5.2

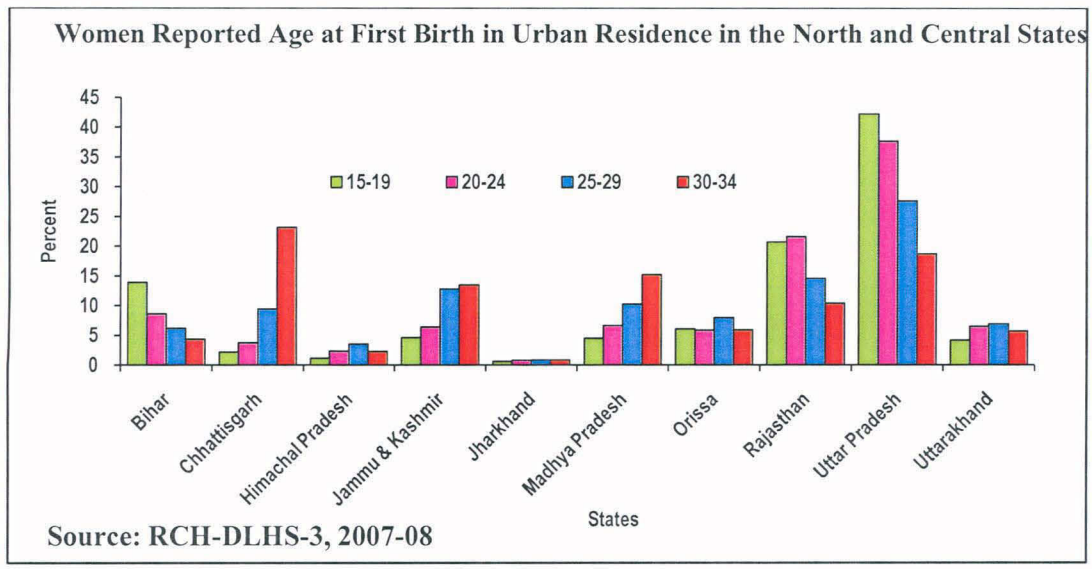


Source: RCH-DLHS-3, 2007-08

An increasing trend in the percentages has been observed only in Manipur. While Arunachal Pradesh has shown fluctuations in the distribution, Tripura, has shown a declining trend with low values of percentage in all age groups. In the age group of **15-19** years, the highest value of 45 percent has been observed in Assam followed by 16 percent in Arunachal Pradesh. In all other states, less than 10 percent women have been observed who have reported their age at first birth to be in the 15-19 years age group. Likewise, in the age group of **20-24** years, highest 38 percent has been observed in Assam followed by 21 percent in Arunachal Pradesh and 12 percent in Manipur while less than 10 percent women has been seen in other states. The lowest value of five percent has been observed in Tripura for this age group. In Assam, 38 percent women have reported their age at first birth to be in the age group of **25-29** years, while 18 percent women has been observed in Arunachal Pradesh followed by 17 percent in Manipur. Tripura, in this age group as well, has shown a low score, that is, four percent while less than 10 percent of women have been observed in other states. In the last age group of **30-34** years, Assam has shown 37 percent of women while 13 percent has been observed in Arunachal Pradesh and 27 percent in Manipur. All other states have shown less than 10 percent of women who have reported their age at first birth to be in the 30-34 years age group. Overall, in the northeastern states, the age at first birth has been observed to be in the age group of 20-24 years.

The state-wise analysis of **urban residence** in **the north and central states** has presented a wide and significant variation over the states. As an overview, the most striking feature of the graph is that the highest value of percentages has been observed in Uttar Pradesh for all the age groups. Secondly, in Jharkhand, the percentage of women who have reported their ages at first birth has consistently been one percent across the age groups. On one hand, Chhattisgarh, Jammu and Kashmir and Madhya Pradesh have shown a gradual increase in percentages across the age groups while on the other hand, Bihar, Rajasthan and Uttar Pradesh have shown a declining pattern throughout the age groups. Moreover, with a declining trend, Rajasthan has been observed as the state with the second highest value of percentages across the age groups.

Figure 5.3



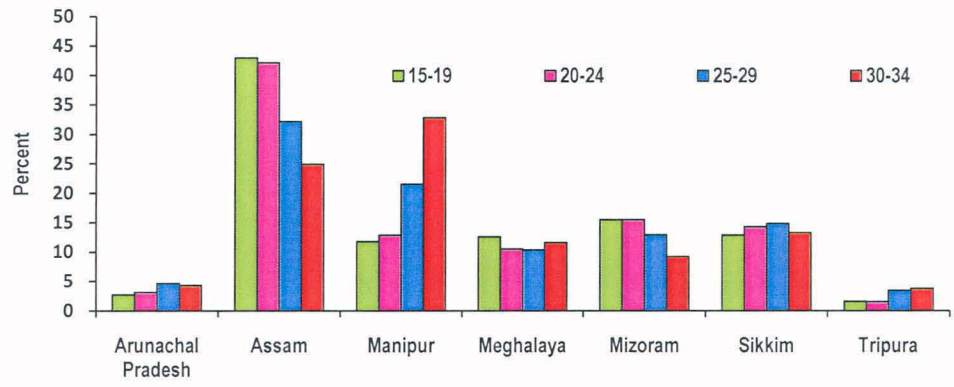
The analysis of percentage of urban women in the **north and central states** who have reported age at first birth has shown 42 percent of women in Uttar Pradesh in the age group of 15-19 years of age group followed by 21 percent women in Rajasthan and 14 percent women in Bihar. Smaller namely, Himachal Pradesh, Chhattisgarh, Jharkhand and Odisha have shown scores less than 10 percent. Lowest one percent of women who have reported their age at first birth to be in the age group of 15-19 years has been observed in to be Himachal Pradesh and Jharkhand. In the age group of 20-24 years, the highest value of 38 percent has been observed in Uttar Pradesh followed by 22 percent in Rajasthan. Significantly, Bihar (9 percent) has shown a low score, in spite of the state being associated with child marriage and being a BIMARU state. The lowest percentages have been observed in Jharkhand and Himachal Pradesh, that is, one percent and two percent respectively. In all the other states, the scores have been found to be less than 10 percent. In the age group of 25-29 years, the highest value has been 28 percent in Uttar Pradesh followed by 15 percent in Rajasthan and 13 percent in Jammu and Kashmir while the lowest score of one percent has been observed in Jharkhand followed by two percent in Himachal Pradesh and four percent in Chhattisgarh. The scores are less than 10 percent in the rest of the states. On one hand, Uttar Pradesh has shown a declining trend with 19 percent women reporting age at first birth to be in the 30-34 years age group, followed by 15 percent of women in Madhya Pradesh while on the other hand, Chhattisgarh has shown an increasing trend with a score of 23 percent. The lowest score

of one percent has been observed in Jharkhand followed by two percent in Himachal Pradesh.

The figure shows the distribution by age at first birth in **urban residence** of the **northeastern states**. As an overview, Assam and Mizoram have shown a declining trend while Manipur has shown an increasing trend. Arunachal Pradesh and Tripura have also shown increasing trends, albeit with lower percentage values across age groups.

Figure 5.4

Women Reported Age at First Birth in Urban Residence in the Northeastern States



Source: RCH-DLHS-3, 2007-08

On one hand, Meghalaya has shown high percentages in the lower age groups compared to the older age groups whereas Sikkim has shown slightly higher percentage of women in the middle age groups compared to lower age and the highest age group i.e. 15-19 years and 30-34 years. While observing the percentage distribution in the age group of 15-19 years, it has been seen that Assam scores the highest value of 43 percent followed by 16 percent of women in Mizoram, 13 percent women in Meghalaya and Sikkim and 12 percent women in Manipur. This has revealed that 15-19 years is the most common age group across the northeastern states in urban residence when women tend to have their first birth. In the age group of 20-24 years, Assam has accounted for 42 percent of women who reported their age at first birth followed by 16 percent in Mizoram, 14 percent in Sikkim and 13 percent in Manipur. A value of 10 percent women has been observed in Meghalaya. The rest of the states namely, Arunachal Pradesh and Tripura has shown scores of less than five percent. In Assam, 32 percent women have reported their age at first birth lies within the age group of 25-29 years. Significantly, a trend of higher

percentages has been observed in this age group in states like Manipur (22 percent) and Sikkim (15 percent). However, a decline has been observed in Mizoram (13 percent). Two states namely Arunachal Pradesh and Tripura have shown values of less than 10 percent while Meghalaya has shown stagnation at 10 percent in the age group. Notably, for the last age group of 30-34 years, 33 percent of women in Manipur have reported this age group as their age at first birth. Likewise, an increase of two percent has been observed in Meghalaya. The states namely, Assam (25 percent), Mizoram (9 percent) and Sikkim (13 percent) have shown a declining trend of age at first birth. The rest of the two states has shown scores of less than five percent.

Although the legal age at marriage in the country is 18 years, many states hitherto witness child marriage and this influences the morbidity pattern among younger women. In the north and central states, child marriage has been visibly greater than in any other part of the country. Moreover, according to NFHS-3 (2007) report, women have reported high unrealised demand for effective contraception which strongly correlates with early age at birth. At a younger age, women are obliged to prove their fertility and hence are barred from using contraception (modern methods) by her in-laws and relatives. The situation has been observed to be even worse where sex preferences have been rooted deeply. Repeated pregnancies within a shorter birth interval tend to deteriorate the health of the mother and her reproductive organs.

5.2.3 State of Induced Abortion

Over the years, the facet of induced abortion has been continuously changing. The practice of abortion had witnessed an impetus to rise during the late 1990s. Medical advancement and new technology have made abortion, a more convenient operation than earlier methods. With the introduction of amniocentesis, the sex detective techniques have been available in India since 1975 (**Santhya: 2004**). However, expansion of the technique has led to a large number of sex selective abortions across the country. Recent evidence from the Census 2011 has also highlighted the skewed child sex ratio (914 females per 1000 males) which is lowest since Indian independence. Sex selective abortions were earlier observed to be higher in states like Punjab and Haryana, but it has expanded its reach even upto Jammu and Kashmir which has seen a drastic reduction in

its child sex ratio. Sex selective abortions have been found to have a strong relation to the family building strategy of achieving the conflicting goals of limited family size and desired family composition.

Empirical studies have shown a sex selective induced abortion is a way to save a girl child from an unhappy life and as a means of preventing dowry payments in the future. However, the reliability of information on induced abortion remains a question in front of researchers. According to NFHS reports, a wide variation has been observed while citing reasons for the same. Moreover, induced abortion itself has been under-reported by the women across the states in the country.

Worldwide, 46 million pregnancies each year end in abortion, with 19 million taking place under unsafe conditions; nearly all unsafe abortions (95 percent) occur in developing countries (**WHO 2004**). **Duggal and Ramachandran (2004)** in their report estimated that 6.4 million abortions were performed in India in 2002 and 2003, out of which 3.6 million (56 percent) were unsafe. All abortion related deaths are preventable when performed by a qualified provider using correct techniques under sanitary conditions (**WHO 2003**). Yet globally 68,000 women die each year due to lack of access to safe abortion services and treatment for abortion-related complications (**WHO 2004**). In India, there are 12,000 deaths each year due to abortion-related complications (**Banerjee 2007**).

Apparently, not all induced abortions augment maternal morbidity, rather a bulk of factors play vital roles. The nature and severity of abortion complications are determined by such factors as method of induced abortion, the skill of the provider, the duration of pregnancy, and the accessibility and quality of medical facilities to treat abortion complications (**Okonofua: 1991**). Largely, needless to say, the termination of pregnancy is performed secretly. The unsafe induced abortion carried out by untrained health personnels, often, carries harmful impacts on female genitals. Moreover, the termination of unwanted pregnancy carried out in unhygienic environment and insertion with inappropriate tools such as coat hangers, bicycle spokes, tree branches, knitting needles etc leads to severe injuries. Undoubtedly, insertion and incision by unsterilised equipments in the vagina, cervix as and uterus affects female genitals severely and develops risk for next pregnancy. Most common complications after induced abortions

are haemorrhage, sepsis and injuries to pelvic and intra-abdominal organs. The complications are mostly caused to due to infections which stem from the use of unsterilized instruments by unskilled abortion providers.

5.2.3(a) Induced Abortion in Different Age Groups

The following table has been drawn to show the state of induced abortion among the currently married women in high focused states of the country. The Bi-variate technique has been applied to show number of induced abortions the women have undergone in different age groups in rural as well as in urban residence. The dependent variable induced abortion had been categorised into 0-None and 1- One and above and number of pregnancies had been categorised into 1-Two or less than two and 2-More than two. The table has shown the percentage of those women only who have undergone one and above induced abortion in both the residences.

Table 5.3 Induced Abortion by Age Groups of Currently Married Women in the High Focused States

Age (In Years) Groups	Induced Abortion (One and Above)				
	Number of pregnancies	Percent	Number of Women (Rural)	Percent	Number of Women (Urban)
15-19	Two or less than 2	0.9	62	0.6	14
	More Than 2	0.3	19	0.2	4
20-24	Two or less than 2	3.6	261	2.8	68
	More Than 2	7.1	520	4.1	101
25-29	Two or less than 2	2.6	187	3.1	75
	More Than 2	19.9	1451	18.3	447
30-34	Two or less than 2	1.1	83	1.8	45
	More Than 2	25.8	1878	23.9	585
35-39	More Than 2	0.5	39	0.8	20
	Two or less than 2	23.9	1736	25.6	626
40-44	More Than 2	0.2	12	0.5	13
	Two or less than 2	14.2	1030	18.3	447
Total			**7278**		**2445**

Source: RCH-DLHS-3, 2007-08

The pattern of induced abortion in **rural residence** has shown inverted 'U' shaped curve depicting that women in the middle ages are highly affected. Overall,

induced abortion has been observed to be low in the category of two or less than two pregnancies as compared to more than two pregnancies. Currently Married Women in the age group of 15-19 years has been observed to be distinctive from the rest of the age groups, as there have been only 0.3 percent women who have undergone induced abortion when the pregnancy has been two or less than two. Highest value has been significant in the age group of 35-39 years where 24 percent women have undergone one and above induced abortion followed by 26 percent women in the age group of 30-34 years and 20 percent women in 25-29 years of age group. The underlying reason for such a variation could be that in the age group of 15-19 years, women have not conceived more than two or three pregnancies and hence induced abortion has also been found less.

The induced abortion in women of **urban residence** has shown significant variation as compared to women from rural residence. Lowest value of 0.2 percent of urban women undergoing induced abortion has been observed in the age group of 15-19 years while the highest value of 26 percent of women has been found in the age group of 35-39 years. As compared to rural areas, induced abortion has been pushed forward to age group of 35-39 years in urban residence. Urban women have been found to have had a lower number of pregnancies in both the categories and hence induced abortion has been observed to be low.

5.2.3(b) Induced Abortion with Background Characteristics

The following table reveals the situation of induced abortion with several background characteristics which play a vital role during decision making for it. Induced abortion has been observed to be as high as 2.9 percent among Hindus as compared to Muslims and others religious groups. In the category of other religious groups, only 1.24 percent women have been victims of induced abortion. The underlying reason for this is that according to Islamic beliefs, killing of fetus in the womb is considered a sinful act and hence the low number of Muslim women have reported. The data could, however, be misleading as the information on induced abortion suffers from underreporting as it is performed by local and unskilled practitioners secretly and could be a source of disgrace to the mothers.

When classified according to Castes, the general category has shown 4.34 percent women who have undergone one or more than one abortions while the SC/ST categories have shown almost 2.7 percent which is roughly equal to that of total percentage of abortions.

The wealth index is an important and indispensable factor affecting induced abortion. As the wealth index has shown an increase, likewise the percentage of women undergone induced abortion have also increased. Abortions which poor women have undergone have hardly ever been reported and hence only 1.3 percent women have been observed to belong to the poorest class. On the other hand, women who are better off could go to any health facility providers equipped with proper techniques and sterilised instruments, hence reporting is higher. Middle-income groups have shown 2.7 percent of women who have undergone induced abortion in their entire reproductive span.

Table 5.4 Induced Abortion with Background Characteristics

Currently Married Women undergone Induced Abortion		
Background Characteristics	**One and Above**	**Number of Women****
Religion		
Hindu	2.89	299668
Muslim	2.83	46420
Others	1.24	32383
Total	**2.74**	**378471**
Caste		
SC/ST	2.69	378536
General	4.34	6828
Total	**2.72**	**385364**
Wealth Index		
Poorest	1.26	84516
Second	1.77	87533
Middle	2.69	79931
Fourth	3.61	73799
Richest	5.01	62124
Total	**2.72**	**387903**
Education		
None	4.17	815
Primary	2.82	59656
Higher Secondary	3.95	91773
Secondary	4.76	29879
Total	**3.71**	**182123**

Source: RCH-DLHS-3, 2007-08

Education is another very important factor which has been selected in the table. The women who have no education have shown value of 4.2 percent while on contrary, women who are highly educated, have also shown score more than 4 percent. This has revealed that among highly educated women, induced abortion has been done willingly in order to limit the family size and achieving a desired family composition. Such practice has been observed often in urban areas of metropolitan cities and women from a rich background.

5.2.3(c) Induced abortion in the High Focused States

The following table shows the percentage of women in rural and urban residence of the high focused states who had reported induced abortions in the country. Overall, it has been observed that 2.4 percent women have undergone induced abortion in rural residence while 4.35 percent women have been observed in urban residence.

Table 5.5 Induced Abortion in High Focused States

States	One and Above (in Rural)	N	One and Above (in Urban)	N
North and central				
Bihar	2	40461	4	3877
Chhattisgarh	1	14158	4	2761
Himachal Pradesh	1	8877	1	745
Jammu and Kashmir	3	12227	4	2446
Jharkhand	1	22167	3	3604
Madhya Pradesh	1	34256	3	9933
Odisha	4	23080	7	3285
Rajasthan	1	31046	2	7751
Uttar Pradesh	4	68348	7	14459
Uttarakhand	2	10009	2	2098
Northeastern				
Arunachal Pradesh	0	11478	0	2388
Assam	6	25180	7	3408
Manipur	6	7132	11	1621
Meghalaya	1	5405	2	765
Mizoram	0	4456	0	2389
Sikkim	2	3910	1	266
Tripura	5	3473	11	448
Total	2	325663	4	62244

Source: RCH-DLHS-3, 2007-08

From the analysis of **rural women who have undergone more than one abortion,** it has been observed that Odisha and Uttar Pradesh have topped the list with four percent each from the north and central states. These results are similar to the established estimates of various research organisations. Odisha is a state where the traditional birth and abortion practices are followed. In order to seek treatment, rural women often visit *Bhuiya* who are identified as traditional healers. Research studies have shown that these traditional healers are unskilled and untrained practitioners who provide herbal treatments to the women. Such herbal concoctions and tablets often lead to an incomplete abortion and heavy bleeding resulting in the deterioration of health of the women. Interestingly Jammu and Kashmir has also emerged to have a high percentage of women who have undergone more than one induced abortion with a value of three percent, which aptly matches with the recent estimates of Census 2011. Two states namely Bihar and Uttarakhand have shown two percent of women. The remaining states have been observed with one percent women who have experienced induced abortion.

The figures from **urban residence** have also shown a very interesting picture. The data have rightly unveiled the present situation of the country where induced abortion is emerging as a serious problem among the educated population. All the states have shown considerably high percentages among currently married women. The highest value of seven percent has been accounted for in Odisha and Uttar Pradesh followed by four percent in Bihar, Chhattisgarh and Jammu and Kashmir. Two states namely Madhya Pradesh and Jharkhand have shown three percent of women while the lowest score of one percent has been observed in Himachal Pradesh.

5.3 Medical factors

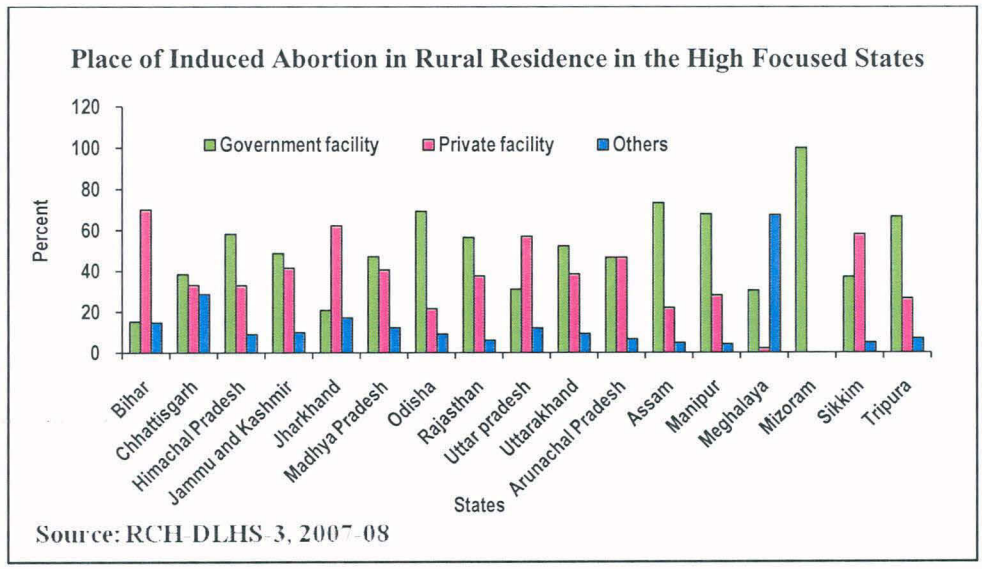
5.3.1 Place of Induced Abortion

The place of Induced Abortion has been another key factor which affects health of women after abortion through various post abortion complications. Often, it has been seen that the facilities provided by the government are plagued by problems of inadequate technology and skilled abortion providers. According to the findings of the third round of the RCH survey, maternity wards have been found to be either absent or in very dilapidated conditions. It is well established from research studies that women

often undergo abortion secretly by local or traditional healers. Moreover, at initial stages, unsafe tablets of unknown brands are given to the women either by her husband or elder female members of the family to terminate unwanted pregnancies. Findings from a research study explained that the abortion technique generally used by traditional healers is the extensive massaging of the abdomen which results in heavy bleeding and the women suffer from severe pain in abdomen and other genital organs. Such malpractices lead to sepsis, severe haemorrhage, anaemia, jaundice with high fever, infections of the vagina and cervix (due to insertion of herbal concoctions and pulp made from leaves etc.) and so on. The women are seen to seek treatment from specialized health personnel only if the abortion remains incomplete or the condition of the woman gets critical.

The places of abortion can be classified into- government health facilities, private health facilities and others (Community Based Organisations, NGO's, Charity hospitals etc.). Overall, the women from **rural residence** in the **north and central region** have shown that they have had induced abortions from mostly from the government health facilities.

Figure 5.5



The highest value of 69 percent women who have the government facilities has been observed in Odisha. More than 50 percent women in states like Himachal Pradesh, Rajasthan and Uttarakhand have also got their abortion done at government health centres. The remaining states have shown less than 50 percent of women whose abortion

had been done at government health centres. In the **northeastern region**, utilisation of **government health facilities** in carrying out the induced abortion has been observed highest in Mizoram (100 percent) followed by 73 percent of women in Assam. More than 60 percent of women from Manipur and Tripura have also opted for government health facilities. However, Arunachal Pradesh, Sikkim and Meghalaya have shown that less than 50 percent women in these states have undergone abortion at government health centres.

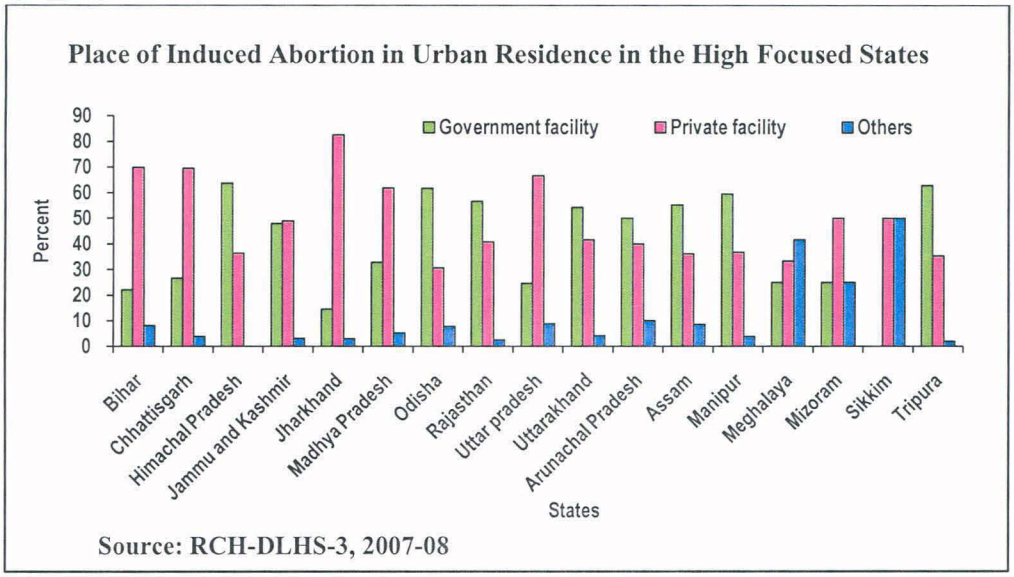
From the bar diagrams, it has been observed that 70 percent of women from Bihar sought abortions at **private health** care centres followed by 62 percent women in Jharkhand. More than 50 percent of women from Uttar Pradesh have also been aborted in private health care centres. Likewise, the facility has been availed by more than 40 percent of women from Madhya Pradesh and Jammu and Kashmir. More than 30 percent of women have opted for private health care facilities in four states namely, Chhattisgarh, Rajasthan, Himachal Pradesh and Odisha. The lowest value of 21 percent of women has been observed in Odisha. In the **northeastern region**, more than 50 percent of women from Sikkim have used private health care facilities and this state thereby has shown the highest utilisation of private facilities. The other states have accounted for less than 50 percent of women.

The abortion facility provided by the **others** category has been found less in both the regions. In the **north and central region**, 29 percent of women have been observed to be from Chhattisgarh in this category. The rest of the states has shown percentages of women less than 20 percent. In the **northeastern region**, 67 percent women in Meghalaya have accounted for this category while the remaining of the states has shown percentages of women less than 10 percent.

The bar diagram (**Fig 5.6**) of urban residence has shown that women have preferred private health care centres as compared to government health care facilities for induced abortion. Nevertheless, in the **north and central region**, more than 60 percent women from Himachal Pradesh and Odisha have opted government health care centres. Similarly, more than 50 percent of women have accounted abortion at government health care facilities from Uttarakhand and Rajasthan. The remaining states have shown

less than 50 percent of women who had been aborted at government health care facilities. In the **northeastern region**, 63 percent of women from Tripura have shown utilisation of government health care facilities. Likewise, three states namely, Manipur, Assam and Arunachal Pradesh have accounted for more than 50 percent of women while remaining states have shown 50 percent of women.

Figure 5.6



Source: RCH-DLHS-3, 2007-08

In the **north and central region**, more than 80 percent women from Jharkhand had preferred **private health care facility** for an abortion followed by 70 percent women from two states namely Bihar and Chhattisgarh. Two bigger states namely Madhya Pradesh and Uttar Pradesh have shown more than 60 percent of women who had visited the private health care facility for abortion. In the rest of the states of this region, the range varied from 49 percent of women from Jammu and Kashmir to 31 percent of women from Odisha. In the **northeastern region**, Mizoram and Sikkim have shown 50 percent of women have preferred private health care facilities for abortion while 40 percent has been observed in Arunachal Pradesh. The remaining states have shown scores of less than 40 percent.

The last category of health care facility (**others**) showed minimal preference in most of the states. However, it has been found to be significant in a few states of the northeastern region. In the **north and central region**, none of the women from Himachal

Pradesh had visited other forms of health facility provider while in other states; the range varies from nine percent in Uttar Pradesh to two percent in Rajasthan. In the northeastern **region**, Sikkim has shown 50 percent women followed by 42 percent in Meghalaya and 10 percent in Arunachal Pradesh. The remaining states have shown scores of less than 10 percent.

5.3.2 Place of delivery and Assistance

This part of the chapter has described delivery related various factors, which lead to delivery and post pregnancy complications. The place of delivery is an important factor which affects the health of the delivering mother. Largely, in the country, hitherto, delivery has been conducted at home under the guidance of elder women and support of friends and relatives. At the most, *dai*, usually the local, uneducated, unskilled and untrained women who conduct deliveries, are summoned in rural parts to assist the delivery in some cases. At times, assistance of these women has not been found to be very satisfactory because they cannot help in deliveries with obstructed labour skillfully. In such circumstances, the case becomes fatal.

5.3.2(a) Assisted delivery

The following **Table 5.4** has shown the assisted delivery by various categories of assistance provided to the rural, urban and total women during delivery period. In order to minimise and control distortion of results, the percentages have been calculated out of the total currently married women (98856) who have responded to the question of how their last pregnancy was conducted. The distribution of the women in rural and urban residence has influenced the results of the bi-variate analysis.

Table 5.6: Assisted Delivery in the High Focused States

Assistance Providers	RURAL		URBAN		Total	
	Percent	N	Percent	N	Percent	Total
Doctor	2	2226	0.3	297	3	2523
ANM/Nurse/Midwife	5	4562	1	1077	6	5639
Other Health Personnel	0.5	457	0.1	55	1	512
Dai	54	53093	5	5042	59	58135
Relatives/Friends	29	28667	2	1707	31	30374
Other	2	1583	0.1	90	2	1673
N						98856

Source: RCH-DLHS-3, 2007-08

The analysis of the results has shown that 59 percent of the total women had been assisted by *dai* in rural as well as urban residence followed by 31 percent of women who had been assisted by relatives and friends during delivery. Notably, only one percent delivery from both the residences had been carried out by other health professions followed by merely three percent of women who had been supported by doctors. Government appointed ANMs or midwives had assisted only six percent of women from both the residences.

The results from **rural residence** have shown that *dai* had assisted 54 percent of the women followed by assistance given by relatives and friends to 29 percent women. As expected, notably, doctors have assisted only two percent of the women followed by ANM/Nurse/Midwife who had assisted five percent of the total currently married women in their delivery. The remaining categories of assistance providers have shown negligible proportion of assistance to the women.

However, results from urban residence have also shown significant assistance by *dai* provided to five percent of women followed by two percent of women who were provided with help from her relatives and friends. The assistance to be provided by skilled health personnels has been found less than two percent. It is to be noted that results had been affected by a higher proportion of women in rural residence.

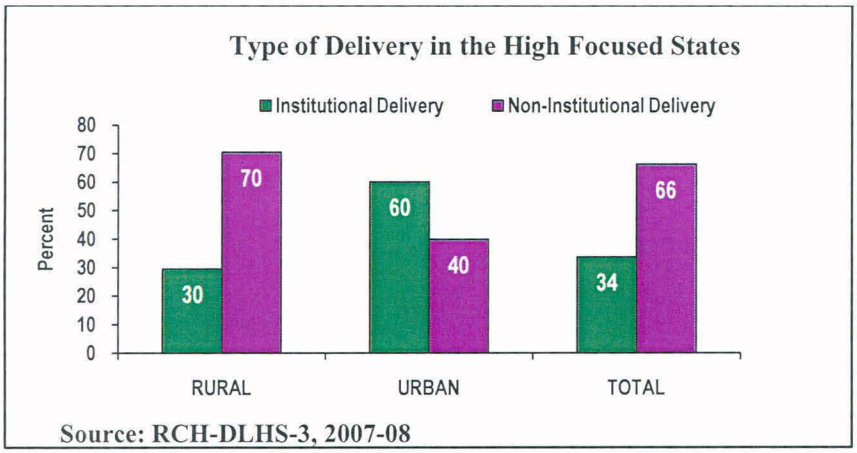
5.3.2(b) Type of Delivery

The type of delivery is closely associated with the kind of assistance provided to pregnant women. Typically, the better is the assistance provided, the better would be the delivery process and the health of the mother. Usually, the delivery is considered to be safe when assisted by skilled health personnels who are trained in performing delivery and use sterilised instruments. However, in spite of great efforts, loopholes of the government-supported programmes have been reflected in the results of the type of delivery. Institutional delivery has not been able to penetrate the rural parts of the country extensively.

The **Figure 5.7** has amply shown the type of delivery existing in rural and urban residence of the high focused states. At national **(total)** level, 66 percent of currently married women have undergone non-institutional delivery while only 34 percent of

women have had such an opportunity as to have an institutional delivery. In the **rural** parts, 70 percent of women have undergone non-institutional delivery as opposed to merely 30 percent women who had an institutional delivery. The results from rural residence bear resemblance to the results of assisted delivery discussed above. The responses for urban residence have shown that 60 percent of women had an institutional delivery while 40 percent of women had a non-institutional delivery.

Figure 5.7

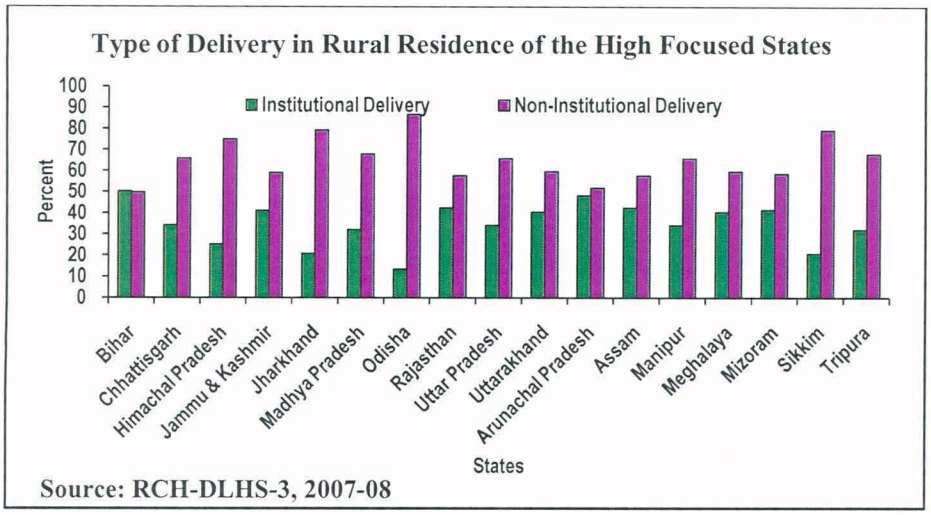


Source: RCH-DLHS-3, 2007-08

The following **Figure 5.8** has further simplified the results obtained in earlier analyses. One of the important factors affecting morbidity has been displayed in the following bar diagram. The figure has shown the type of delivery women had undergone from the rural residence of the high focused states in the study area. Type of delivery has been bifurcated into- institutional and non-institutional delivery.

In the **north and central region**, on an average more than 65 percent of women had a non-institutional delivery. The lowest value of 13 percent of women who underwent institutional delivery has been observed in Odisha followed by 21 percent of women in Jharkhand. The rural women from Bihar (50 percent), Jammu and Kashmir (41 percent) and Uttarakhand (40 percent) have shown quite high utilization of institutional delivery methods. The remaining states have shown less than 40 percent of women who had institutional deliveries in the region.

Figure 5.8

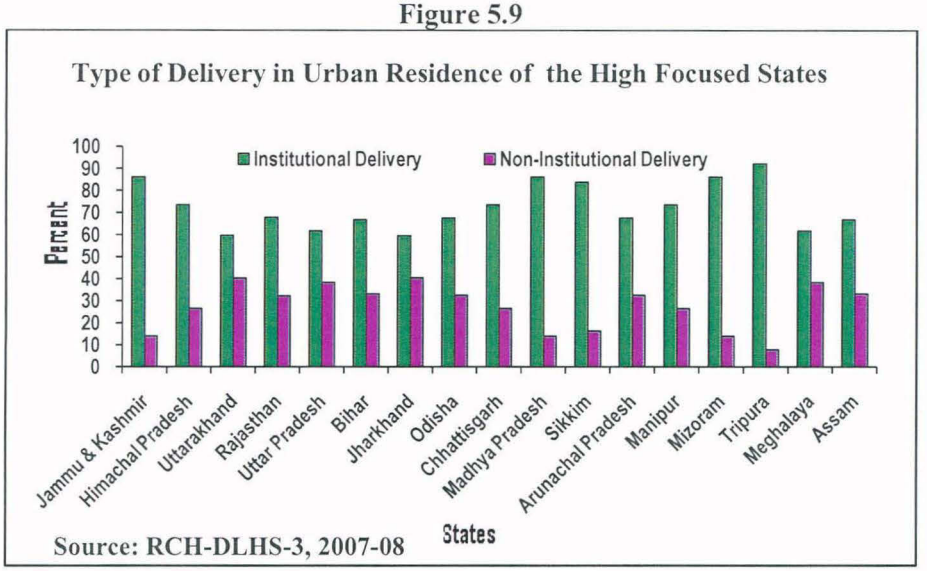


Source: RCH-DLHS-3, 2007-08

In the **northeastern region**, 48 percent of women from Arunachal Pradesh, 42 percent from Assam and 40 percent from Meghalaya have undergone institutional delivery while more than 50 percent of women have been devoid of it. The remaining states have shown more than 60 percent of women who have had non-institutional delivery from this region.

The **Figure 5.9** has shown the type of delivery in **urban residence** of the high focused states. The results have shown contrasting pattern compared to the rural residence. Earlier exaggeration in the percentages has been overcome in the present figure. However, distortions within the category could not be avoided because of the proportion of women in the states. The bar diagrams have shown greater institutional delivery than non-institutional delivery across the states from both the regions. In the **north and central region**, more than 80 percent of women have had institutional delivery in Jammu and Kashmir and Madhya Pradesh. Moreover, more than 70 percent of women have shown institutional delivery in Chhattisgarh and Himachal Pradesh. In the rest of the states more than 60 percent of the women have had an institutional delivery. Notably, 40 percent of women in Jharkhand and Uttarakhand have had non-institutional delivery.

Figure 5.9



While in the **northeastern region**, more than 90 percent of women from Tripura had an institutional delivery followed by more than 80 percent of women from Mizoram and Sikkim. Non-institutional delivery has been less than 40 percent overall in this region.

5.3.3 Ante Natal Care

The utilisation of antenatal care reduces the chances of morbidity among the women. In DLHS-3, all the eligible women whose last pregnancy was terminated in live/still birth since January 2004 had been asked about the utilisation of the ANC during the gestation period. The women were asked where they had received antenatal care for the last pregnancy. Information on antenatal care in the survey data has been provided in two categories- mother received any antenatal care and mother received full antenatal care.

The information on the mother receiving any antenatal care has been observed to be higher among women in higher parities, sufficiently educated and having a better standard of living. However, the percentages of women who had received full antenatal care have been observed to be far less than even 20 percent in the study area. Often, the women have been observed to have sought antenatal care only in the first trimester and a

significantly the low percentage of women have been observed to have sought antenatal care in the second and third trimesters.

Nevertheless, the following **Table 5.7** has shown utilisation of antenatal care categorized by various background characteristics of currently married women who had received full antenatal care for her last pregnancy. The results have shown that more than 90 percent of women from the study area had been deprived of receiving full antenatal care. Only in the age groups of 20-24 years and 25-29 years, 10 percent of women have received full antenatal care. However, in the first trimester, more than 50 percent of women have received antenatal care in the age groups ranging from 20-24 years to 30-34 years. In the second trimester, the utilisation has been less than 50 percent in all the age groups except the last. On the contrary, 40 to 55 percent women have been observed to have paid more than three visits to the heath care centres.

The utilisation of antenatal care has shown a decline when the birth order has increased. More than 10 percent of women have utilized antenatal care when they had had two pregnancies but it has reduced to merely four percent when the birth order has risen above four pregnancies. Similar patterns of utilisation have been observed trimester wise and in number of visits.

Merely eight percent of women out of the total currently married women have received full antenatal care from rural residence while more than 18 percent of women from urban residence has utilised it. Moreover, in rural residence, the utilisation has been found less than 50 percent of women in all trimesters whereas the decline has been observed in second and third trimester in urban residence. More than three visits have also been observed less than the percentages of women from urban residence.

Table 5.7: Utilisation of Antenatal Care (ANC) by Background Characteristics

	Received full ANC			Number of months received ANC				Number of ANC visits			
Background Characteristics	No ANC received	Received Full ANC	N	1st trimester	2nd trimester	3rd trimester	N	1	2	3+	N
Age Group											
15-19	94	6	9190	47	46	7	6105	14	39	48	6119
20-24	90	10	48121	52	42	6	33248	11	35	54	33179
25-29	89	11	49550	53	42	5	33059	10	34	57	32982
30-34	91	9	26321	50	44	6	16167	10	36	54	16114
35-39	93	7	11972	47	47	6	6571	10	37	53	6559
40-44	95	6	3794	40	52	8	1793	12	41	47	1797

Total	90	10	148948	51	43	6	96943	10	35	54	96750
Number of pregnancies											
2	87	13	69607	57	39	4	50901	9	31	60	50700
4	92	8	46376	48	46	6	29286	11	38	51	29251
Above 4	96	4	33976	39	53	9	17177	14	45	42	17214
Total	90	10	149959	51	43	6	97364	10	35	54	97165
Residence											
Rural	92	8	129329	48	46	6	80967	11	38	51	80845
Urban	82	18	20630	65	31	4	16397	7	25	68	16320
Total	90	10	149959	51	43	6	97364	10	35	54	97165
Education											
None	96	4	369	37	52	12	248	13	43	45	244
Primary	92	9	22083	48	46	6	14836	11	36	53	14785
Higher Secondary	85	16	36543	59	37	4	29165	8	29	64	28982
Secondary	69	32	11891	73	25	2	10945	4	18	78	10838
Total	84	16	70886	59	37	4	55194	8	29	63	54849
Religion											
Hindu	91	9	112827	51	44	6	73328	11	37	52	73516
Muslim	91	9	22004	50	43	8	14184	9	35	56	14085
Others	84	16	11704	55	42	3	8011	7	20	73	7716
Total	90	10	146535	51	43	6	95523	10	36	54	95317
Caste											
SC/ST	90	10	146370	51	43	6	94659	10	36	54	94470
General	89	11	2429	59	37	4	1784	8	27	65	1778
Total	90	10	148799	51	43	6	96443	10	35	54	96248
Wealth index											
Poorest	96	4	38383	38	54	7	19149	15	44	41	19289
Second	95	5	36918	43	50	7	21364	13	42	46	21379
Middle	91	9	30259	50	44	6	20291	11	36	54	20219
Fourth	85	15	25917	58	38	4	20183	8	30	62	20021
Richest	75	25	18479	70	27	3	16375	5	22	73	16255
Total	90	10	149956	51	43	6	97362	10	35	54	97163

Source: RCH-DLHS-3, 2007-08

The characteristic of education has shown that only four percent of women who had no education have utilised antenatal care services but it has increased to 32 percent of women among those who have completed their secondary education. Trimester wise also the women who are educated have utilised antenatal care services more than other categories of women. Numbers of visits to antenatal care service providers have also shown similar pattern.

Significantly, nine percent of women among the Hindu and Muslim religious groups have utilised antenatal care while 16 percent of women who were followers of

other religions have utilised antenatal care services. However, more than one and two visits have been observed to be more among Hindu women. The trimester wise analysis has shown that the utilisation of antenatal care services has been more than 50 percent of women in Hindu and others category of religion.

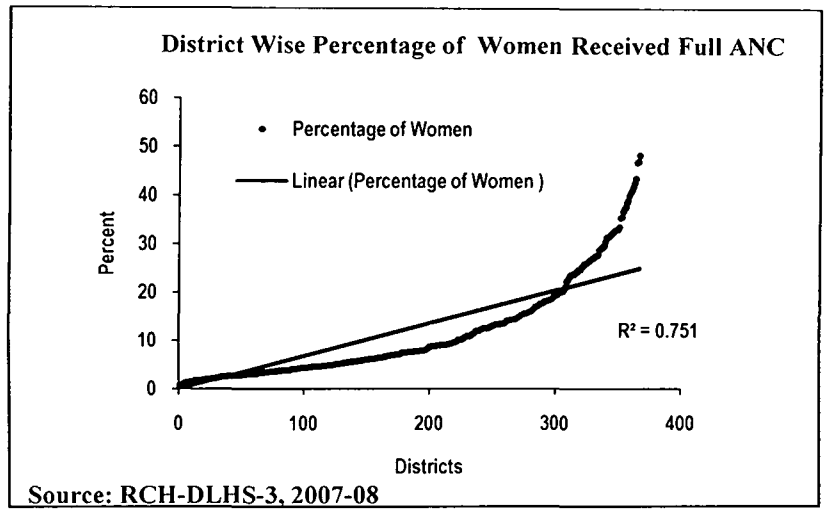
The utilisation of antenatal care has been 11 percent among women who belonged to general category while 10 percent of women from the SC/ST category have utilised antenatal care services. However, more than 50 percent of SC/ST women have utilised the services in first semester and they have been utilised these services more in the third trimester than general women have. Similarly more than one and two visits have been observed to be greater among SC/ST women than among the women from the general category. Nevertheless, more than 65 percent of women from the general category have been observed to have visited the health care centres more than three times.

Lastly, the wealth index has shown growing curve of utilisation of antenatal care services. More than 25 percent of women who belonged to the richest class have utilised the services highest as compared to other classes. The results of trimesters have shown 27 percent of women from the richest class who had utilised the services while less than 40 percent of women from poorest category have completed the first trimester. However, in the third trimester, significant decline has been observed in all the categories. More than three numbers of visits have been observed to be merely 41 percent among women from poorest category. However, more than three numbers of visits have continued to increase as the wealth categories have raised.

5.3.3(a) District wise Full ANC in High Focused States

The following scatter diagram (**Figure 5.10**) has shown the district wise distribution of utilisation of antenatal care services in the study area. The percentages at district level range from merely one percent to 48 percent of women.

Figure 5.10



Source: RCH-DLHS-3, 2007-08

On an average, only 11 percent of women had utilised antenatal care services at the district level. A total of 273 districts has shown the percentage of women to be 15 or less than 15 followed by 65 districts which have shown value less than 20 percent of women and only 28 districts have shown scores of more than 20 percent and up to 48 percent. Almost all the districts of Uttar Pradesh, Bihar, Jharkhand, Rajasthan and Chhattisgarh have been observed to have fallen in the low category while the medium category has covered districts of Madhya Pradesh, Odisha, Arunachal Pradesh and Assam. Remaining districts from states like Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and northeastern regions have been observed in the high category.

5.3.4 Post Natal Care

Usually, post-natal care is supposed to be provided to women within 48 hours from the delivery. Post-natal care consists of services that minimise the post delivery complications. However, often women do not receive adequate post natal care. Moreover, women themselves ignore the importance of such services once the childbirth is over. The post-natal complications can last upto 42 days. This period is also known as the obstetric period during which women have a higher chance of getting morbid and the case can either turn into a near miss or fatal. The following **Table 5.8** has shown the utilisation of post-natal care services by background characteristics of the currently married women who had answered to the question of utilisation of services after the last

delivery during the survey. The table has been prepared to show the services utilised within 48 hours of delivery and within two weeks.

The age group wise results have shown that out of more than one lakh currently married women; only 35 percent have received post-natal care services. Moreover, the utilisation has shown a declining pattern as the age increased. More than 30 percent of women have received post natal care in the all the age groups between 15-19 and 30-34 years whereas more than 28 percent of women have been observed in remaining age groups. The results of utilisation of services in both categories show a similar pattern.

As expected, the utilisation of services has been observed to be higher among urban women as compared to the rural women. Around 57 percent of women had received services within two weeks of delivery while only 31 percent women from rural residence have utilised the services in the same category. Similarly around 55 percent of women from urban residence have received checkup while only 30 percent of women got the checkup done within 48 hours.

More than 60 percent of the women who are well educated have received services within two weeks while only 35 percent of women have utilised the post-natal care services. The scores have been observed less than 50 percent in other categories of education. Likewise, 67 percent of women who have completed secondary education had undergone checkup within 48 hours followed by less than 50 percent of women in different categories of education.

Table 5.8 Utilisation of Post-natal care by Background Characteristics

Background Characteristics	PNC received within 2 weeks		Checkup done within 48 hours	
	Received	N	Received	N
Age group				
15-19	35.4	9191	33.3	9194
20-24	37.6	48116	35.7	48127
25-29	35.8	49557	34	49561
30-34	32.8	26320	31.1	26325
35-39	28.7	11971	27.3	11976
40-44	24.1	3796	22.6	3795
Total	35	148951	33.2	148978

Residence				
Rural	31.4	129321	29.6	129344
Urban	56.8	20640	54.9	20645
Total	34.9	149961	33.1	149989
Education				
None	34.7	369	32.8	369
Primary	33.5	22081	31.3	22086
Higher Secondary	45.6	36547	43.4	36556
Secondary	68.6	11894	66.6	11895
Total	45.7	70891	43.5	70906
Number of Pregnancies				
≤ 2	42.3	69617	40.3	69629
≥ 2	28.4	80344	26.8	80360
Total	34.9	149961	33.1	149989
Religion				
Hindu	34.7	112825	33	112838
Muslim	35.8	22005	34.3	22015
Others	36.7	11708	33.5	11713
Total	35	146538	33.3	146566
Caste				
SC/ST	34.9	146380	33.1	146402
General	33.2	2423	31.1	2427
Total	34.9	148803	33.1	148829
Wealth Index				
Poorest	20.4	38378	18.9	38383
Second	26.6	36912	25.1	36920
Middle	34.2	30261	32.3	30269
Fourth	45.9	25920	43.9	25923
Richest	66.7	18487	64.5	18491
Total	34.9	149958	33.1	149986

Source: RCH-DLHS-3 (2007-08)

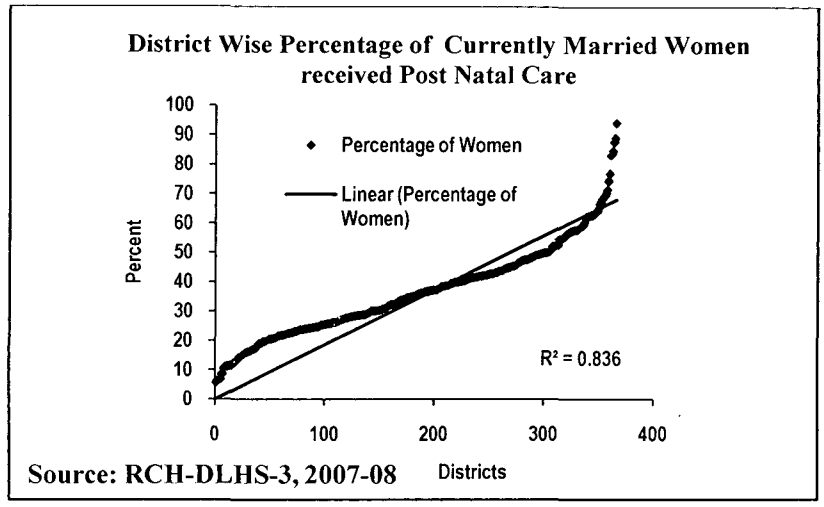
Notably, 42 percent of women have utilised PNC services within two weeks who had two or less than two pregnancies. On the other hand, only 28.4 percent of women who have had more than two pregnancies have utilised the services. In a slight proportion, more than 40 percent of women who had two or less than two pregnancies undergone checkup within 48 hours of delivery. On the other side, only 27 percent of women had received a checkup within 48 hours who had more than two pregnancies. The results have revealed that the percentage of women who availed PNC services falls as the number of pregnancies increase. The underlying reason would be that the women would

have learnt from the first two pregnancies as to how to take care of their own health after delivery and would have been more careful when had been pregnant for the third time.
Different religious groups have shown variation in the utilisation of post-natal care services. The highest utilisation has been observed in the others category followed by Muslim and Hindu women. The post-natal check done within 48 hours has shown similar patterns with that of other services received within two weeks. Significantly, the SC/ST in caste category has shown higher utilisation than the general category in both periods.
On an average, only 11 percent of women had utilised antenatal care services at the district level. A total of 273 districts has shown the percentage of women to be 15 or less than 15 followed by 65 districts which have shown value less than 20 percent of women and only 28 districts have shown scores of more than 20 percent and up to 48 percent.
There has been an increasing trend in the utilisation of PNC services among the classes on the basis of wealth. The richest class has shown more than 60 percent of women who have utilised the services during both the periods. Around 20 percent of women from the poorest category have used PNC services within two weeks while 19 percent of such women have received PNC checkup within 48 hours.

5.3.4(a) District wise utilisation of PNC in High Focused States

The **Figure 5.11** showed the pattern of PNC services utilisation in the districts of selected states. It has been seen from the data that the utilisation of post natal care has been more than the antenatal care services by the women. At the district level, utilisation of post natal care has been categories into three levels- low (6-30 percent), medium (30-60 percent) and high (60- 94 percent). The results clearly showed that utilisation of PNC services is deeply influence by the background characteristics.
The R-squared value (0.836) of utilisation of postnatal checks across districts has shown fairly good the fit of the regression line. The results of PNC services observed to be balanced by those districts where the women sought the services at a greater extent. The gloomy picture of PNC services was covered in the survey reports of these states which highlighted many of the districts where PNC services were completely absent at PHCs and CHCs.

Figure 5.11



Source: RCH-DLHS-3, 2007-08

The **low category** has included districts largely from Odisha, Uttar Pradesh, Bihar, Jharkhand, Jammu and Kashmir, Rajasthan from the **north and central region** and few districts of Arunachal Pradesh and Assam from the **northeastern region.**

A total of 138 districts has been observed in **the medium category** where on an average 43 percent of women had utilised postnatal health care services. Largely, the districts of Madhya Pradesh, several districts of Uttar Pradesh and Bihar have been observed in the category from the **north and central region** and districts of Assam, Manipur, Tripura and Arunachal Pradesh from the **northeastern region.**

On an average, 71 percent of women had utilised postnatal services from the 29 districts observed to be in the **high category**. In this category women who have utilised the postnatal services, largely been observed to be from the **northeastern states** such as Sikkim, Arunachal Pradesh, Mizoram and Jammu and Kashmir, several districts from Himachal Pradesh and two or three districts of Uttar Pradesh from the **north and central region.**

5.3.5 Development of Obstetric Fistula

Obstetric fistula is a hole in the birth canal caused by prolonged labour without prompt medical intervention, usually a cesarean section. The woman is left with chronic incontinence and, in most cases, a stillborn baby. Sometimes women experience a constant leakage of urine or stool from the vagina during the day and night. This problem

usually occurs after a difficult childbirth, but may also occur after a pelvic surgery or after a sexual assault. Fistula is a relatively hidden problem, largely because it affects the most marginalized members of society: young, poor, illiterate women in remote areas[1]. Delivery services, especially emergency obstetric care are also critical for pregnant women. Emergency care is important if adolescents experience obstructed labour, pregnancy induced hypertension, eclampsia or severe untreated anaemia. Obstructed or prolonged labour is one of the serious complications that can cause maternal morbidity and death and adolescents appear to be at higher risk than are older women[2] because their pelvic bones and birth canals are not completely developed. Obstetric care can prevent or treat complications that affect neonate, such as birth asphyxia.[3]

The survey had collected information on the obstetric fistula that was the first time ever collected by any large survey in India. According to the report, merely 1.5 percent of ever-married women (15-49 years) have reported obstetric fistula. Since, the present study has considered 17 high focussed states, 1.8 percent of currently married women (15-44 years) have reported obstetric fistula. The present table has shown four different results that were important to be mentioned. The proportion of women who reported obstetric fistula had been less than one percent across the states. It is needed to note that since the proportion of the women reported for the health problem is very little out of the total currently married women of 17 states, the spatial distribution has not been displayed. However, the table has shown the proportion of women reported obstetric fistula in each state out of total currently women as well as the total number of the women who reported obstetric fistula. The last two columns show the number of women whom, the disease occurred due to pelvic surgery and after delivery.

According to numerous research studies, delivery and pelvic surgery have a strong effect on obstetric fistula. It has been significantly visible that as a total, 85 percent of women (6065) who reported obstetric fistula had developed the problem due to pelvic surgery and after delivery. Out of the two factors, the delivery enhances the disease as 63 percent of women had developed the problem after delivery. Nevertheless, 22 percent of women have developed the health problem due to pelvic surgery.

Across the states, in the **north and central region**, more than 15 percent of women from Madhya Pradesh have reported obstetric fistula. However, in other states,

the range varies from 0.72 percent in Rajasthan to 9 percent in Odisha. In the **northeastern region**, more than 18 percent of women have been observed in Tripura. In the remaining states, the score has been less than two percent.

Table 5.9: Obstetric Fistula among Currently Married Women in the High Focused States

State	Obstetric Fistula Out of Total Currently Married Women (n=387916)	Obstetric Fistula Out of Total Currently Married Women Reported Obstetric Fistula (n=7127)	Obstetric fistula*Pelvic Surgery (n=1545)	Obstetric fistula* After Delivery (n=4520)
North and Central				
Bihar	0.114	6.23	7.21	67.34
Chhattisgarh	0.032	1.75	4.80	84.80
Himachal Pradesh	0.098	5.35	23.36	72.44
Jammu & Kashmir	0.044	2.41	23.84	55.81
Jharkhand	0.011	0.62	4.55	68.18
Madhya Pradesh	0.337	18.35	7.26	73.70
Odisha	0.167	9.09	21.60	66.82
Rajasthan	0.013	0.72	3.92	92.16
Uttar Pradesh	0.032	1.75	4.80	84.80
Uttarakhand	0.006	0.31	4.55	77.27
Northeastern				
Arunachal Pradesh	0.016	0.86	16.39	65.57
Assam	0.013	0.72	3.92	92.16
Manipur	0.032	1.75	4.80	84.80
Meghalaya	0.006	0.31	4.55	77.27
Mizoram	0.002	0.10	28.57	42.86
Sikkim	0.011	0.62	4.55	68.18
Tripura	0.337	18.35	7.26	73.70
Total	**1.837**	**100.00**	**21.68**	**63.42**

Source: RCH-DLHS-3, 2007-08

The distribution from the **north and central states** where the women who experienced obstetric fistula due to pelvic surgery has shown more than 20 percent of women in Himachal Pradesh, Jammu and Kashmir and Odisha. In the remaining states, the level of score varies from four percent to 8 percent. In the **northeastern region**, more

than 28 percent of women in Mizoram have reported obstetric fistula followed by 16 percent women in Arunachal Pradesh. In the remaining states, the score varies from four percent in Assam to eight percent in Tripura.

In the **north and central region**, out of the women who reported the disease caused after delivery, the highest proportion of women has been observed in Rajasthan followed by 85 percent in Uttar Pradesh. In all other states, the levels varied from 50 percent, 60 percent and 70 percent. In the **northeastern region**, more than 90 percent women have been observed in Assam followed by 85 percent women in Manipur. In all the states, the range varies from 43 percent in Mizoram to 74 percent of women in Tripura.

In order to observe the impact of independent factors of the obstetric fistula, following two models had been used. Specifically, **Binary Logistic Regression** has been applied in the **Model 1. Binary Logistic Regression** is a kind of regression, when the dependent variable is dichotomous in nature and is coded as 0,1. Here the dependent variable obstetric fistula is dichotomous in nature i.e. 0-None and 1-Yes. The category 0 showed the women who did not have an obstetric fistula and 1 showed the women who had an obstetric fistula developed after delivery in puerperium period. One category of the dependent variable in binary logistic regression is taken as the reference category. In this model, a relation was observed between the probability of occurrence of events (p) and the independent variables in a form of a logistic function. The following equation explains the function:

$$\mathbf{Z= b_o+b_1X_1+bX_2+.....+b_kX_k}$$

Where,

Z is the log odds of the dependent variable or the logit of P

Hence,

$$Z= \log \{P/(1-P)\}$$

$$\log \{P/(1-P)\}= b_o+b_1X_1+b_2X_2+.....+b_kX_k$$

Where b_o is a constant

$X_1, X_2 \ldots\ldots\ldots X_k$ are the independent variables, and

$b_1, b_2 \ldots\ldots$ are the logistic regression coefficients

The analysis of the odds ratio for logistic regression in the present study has shown the likelihood or probability of obstetric fistula among the currently married women who were exposed to a particular gamut of background factors in the analysis as compared to those who are exposed to the reference category of that particular factor.

Table 5.10

Model 1 Association of *Background Characteristics* associated with Obstetric Fistula among Currently Married Women in the High Focused States (n= 3047)

Background Characteristics	Sig.	Exp(B)
Age Group		
15-19	0.000	0.59***
20-24®		
25-29	0.000	1.405***
30-34	0.000	1.513***
35-39	0.000	1.689***
40-44	0.000	1.644***
Religion		
Hindu®		
Muslim	0.000	1.358***
Others	0.000	0.411***
Education		
Literate®		
Illiterate	0.464	1.03
Place of Residence		
Urban®		
Rural	0.000	1.542***
Caste		
General®		
SC/ST	0.087	0.827*
Wealth Index		
Poor	0.006	1.142***
Medium	0.000	1.182***
Rich®		
Constant	0.000	0.012
® Reference category Significant at p<0.05 p<0.001*** p<0.10***		
-2 Log likelihood= 29874.460 Nagelkerke R Square= .017		

The results have shown that after controlling for all other factors, the women of the higher age groups had been more likely to have an obstetric fistula than to the women of age group of 20-24 years as the reference category. The women of age group 35-39 years have 68 percent more likelihood to have an obstetric fistula as compared to the reference category while the lowest 40 percent likelihood had been observed in the women of age group 25-29 years. However, in the lower age group of 15-19 years, women had 41 percent less likelihood to have an obstetric fistula. The women following Islam religion had 35 percent higher likelihood of obstetric fistula while on the other hand, the women from the category of others had 58 percent less likelihood of having an obstetric fistula. Interestingly, the residence plays an important role that had been evident through the results, that is, as compared to urban women, women had been more likely (1.542) to have an obstetric fistula. Similarly, SC/ST women have 82 percent higher chances of obstetric fistula as compared to women from the general category. The odds ratio of obstetric fistula had likely to be higher among the women who belonged to poor class and a slight increase in the medium class.

The **Model 2** has been applied to observed the association between delivery related variables on obstetric fistula after controlling all the factors.

Table 5.11
Model 2: Association of *Delivery Variables* associated with Obstetric Fistula among Currently Married Women in the High Focused States (n= 2725)

Delivery Variables	Sig.	Exp(B)
Place of Delivery		
Institutional ®		
Non-Institutional	0.082	0.929
Others	0.654	1.094
Age at First Birth		
Below 18 years	0.000	1.178***
Above 18 years®		
Prolonged Labour		
Yes	0.000	1.207***
No ®		
Obstructed Labour		
Yes	0.000	2.068***
No ®		
Place of Residence		

Rural	0.000	1.245***
Urban®		
Constant	0.000	0.011
® Reference category Significant at p<0.05 p<0.001*** -2 Log likelihood= 26802.528 Nagelkerke R Square= .017**		

The results have shown that after controlling for all the factors, the women whose age at first birth has been under 18 years had 17 percent higher likelihood of having an obstetric fistula. Interestingly the main causes of obstetric fistula under the canopy of delivery, have shown a higher likelihood of women having the problem for instance, women who had undergone prolonged labour had 20 percent higher chances of getting an obstetric fistula than those women who delivered her child with shorter labour hours. Significantly, women who suffered from obstructed labour had 2.0 times more likelihood of having an obstetric fistula as compared to the reference category. The women from rural residence, often, suffer from lack of delivery performed by skilled personnel and therefore had 24 percent higher chances of having the problem.

Hence, it can be concluded that obstetric fistula had been one of major health problems among the women of the high focused states. The two morbidities have shown their significant influence, which, otherwise, had also been, reported high among the women from rural as well as urban residence.

Conclusion

In a nutshell, it can be summarised that the health situation of currently married women is significantly deplorable in many states of the study area. The women belonging to the north and central region have quite vulnerable maternity compared to other states of the northeastern region in the study area. Concisely, the associated predictors, which had been described in the chapter, have a definite impact on morbidity among currently married women from the high focused states. It needs special mention that the states which are socio-economically backward and poor performers in demographic indicators like the bigger states like Uttar Pradesh, Rajasthan, Bihar, Odisha and Madhya Pradesh from the north and the central region have poor scores more or less in all the as far as the maternal health of the women is concerned. The place of delivery, induced abortion and more than two pregnancies in lower age groups and similar such variables have reflected

the poor status of the maternal in these states. The background factors like education, caste, religion and wealth have also been major contributing characteristics of the women that had played an important role in determining their health. The analysis of obstetric fistula has given an open door opportunity to estimate the level of morbidities among the women. It also suggests that these women tend not to be serious regarding their health particularly after delivery. In addition, lack of awareness and guidance from her peer groups may also augment the disease. Moreover, the reasons certainly are entitled to the factors where the milieu of the socio-economic and cultural norms and institutions restrict them to seek better options for their own pregnancy and delivery. However, several states from both the regions such as Jammu and Kashmir, Himachal Pradesh, Mizoram, Manipur and Meghalaya have shown better scores which inferred the better health status of the women.

Endnotes

[1] India Report, RCH-DLHS-3 (2007-08)

[2]Bacci A. et al. (1993), "Outcome of teenage pregnancy in Maputo, Mozambique," *International Journal of Gynecology and Obstetrics,* 40 (1), 19-23, and Kumbi S and Isehal A (1999),"Obstetric outcome of teenage pregnancy in northwestern Ethiopia", *East African Medical Journal,* (76 (3), 138-140

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CHAPTER SIX

PREDICTORS AND MATERNAL MORBIDITY

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6.1 Introduction

Information on the extent of maternal morbidity in developing countries is extremely limited. In countries like India, women, often remain unaware of morbidities that could lead them to serious health complications. Irrespective of government's promotional activities and campaigns, the utilisation of health care services, hitherto, shows substantial increase. As mentioned in the preceding chapters, maternal morbidity refers to complications that have risen during the pregnancy, delivery and postpartum period. According to WHO estimates, every year 50 million women are affected by maternal morbidity. In addition to the intricate concern of maternal morbidity, defining, interpreting and measurement of maternal morbidity have been a difficulty. In addition, the prevalence of such morbidity has remained poorly described across the globe (**WHO, 1998; Fortney and Smith, 1999**).

However, after the ICPD conference in the year 1994, increased attention has been given to the nature and extent of maternal health and post partum maternal morbidity in particular in developed and developing countries. In India where majority of the population lives in rural parts, morbidity during post partum period, however, never gets sufficient attention by the women themselves and hence remains unreported. Despite being intolerable, severe complications remain untreated when delivery takes place at home under the supervision of untrained and unskilled health personnels.

Discussing about maternal morbidity specifically, **Fortney and Smith (1999)** have described six dimensions to maternal morbidity: etiology, severity, duration, time of onset, accumulation and sequelae. The duration or period of occurrence has clear period but the period of onset of postpartum morbidity has, somehow, remained unclear. The underlying reason behind such uncertainty is that post partum stage quickly onsets as and when the delivery process gets over. "Many of the complications leading to postpartum maternal morbidity arise during labour and delivery and in the first 1-2 weeks following

delivery; for at least 18 million women these morbidities become long term and often debilitating" (**WHO, 1998**). However, **WHO (1998)** defines the postpartum period, or puerperium, as beginning one hour after delivery of the placenta and continuing until 6 weeks (42 days) after the birth of the infant. Since the women revert to her non-pregnant stage after delivery, it is a major shift from her status as well as health conditions.

Based on the literature survey, it can be said that conditions of the women who suffer from maternal morbidity have been critical without diagnosis. Moreover, it is very closely associated with socio-economic, cultural and demographic factors and utilisation of health care services by them. The association between predictors and maternal morbidity has been examined in this chapter. At the end of the chapter, spatial differences of mass media exposure and utilisation of health care services have been discussed.

6.2 Mass Media Exposure

To observe the spatial disparities, bi-variate technique been applied. The mass media exposure has been observed only for antenatal care and institutional delivery in rural and urban residences. The analysis has provided information on the percentage of women who have had awareness regarding the antenatal care and institutional delivery through IEC materials. However, the various research studies have shown that despite having awareness, at times, women are unable to avail the services because of a gamut of factors.

Table 6.1 Mass Media Exposure in rural and urban residence

Mass Media Exposure	Antenatal care				Institutional delivery			
	Rural	N	Urban	N	Rural	N	Urban	N
Heard/Seen (Total)	**81**	**325667**	**94**	**62245**	**71**	**325669**	**86**	**62245**
TV	37	264672	64	58243	27	230767	64	53354
Radio	24	264672	27	58242	24	230757	27	53351
News paper/Books etc.	7	264669	23	58240	7	230746	22	53349
Drama/Song/Dance etc.	1	264661	1	58243	1	230747	1	53350
Exhibition/*Mela*	0	264672	1	58242	0	230763	1	53352
Group meeting/Programmemes	4	264679	3	58243	4	230772	4	53353
Doctor/ANM/AWW/ASHA	65	264682	59	58242	65	230774	60	53354
Friends/relatives	71	264682	66	58244	70	230773	65	53355
Other sources	2	264647	1	58233	2	230747	1	53351

Source: RCH-DLHS-3, 2007-08

The results from the table has shown that overall 81 percent of women from rural residence had heard or seen the promotional campaign of antenatal care through different sources of information while 94 percent of women have similar such exposure. Among different sources of information, 71 percent of **rural** women had received information through their friends and relatives followed by 65 percent of women who received information from doctors/anm/aww/asha. Interestingly, no women were found in the category of exhibition and *mela*. From this finding, the inference drawn was that the women were devoid of receiving information disseminated at public places. The results further get staunch evidence from the category of drama/song/dance where only one percent women had been observed. The exposure pattern is almost similar in **urban** residence as well although with a slightly higher percentage of women in different categories. The results have shown that 66 percent of urban women had received information through her friends and relatives. Since urban women live in comparatively better households that have better amenities, 64 percent of women have received information through television. Moreover, 23 percent of educated women could read newspapers/books etc. and hence could get information. In addition, more than 50 percent of women have received information from doctors/anms/aww/asha. The urban residence has shown less than 10 percent of women who had gathered information delivered at public places.

The data results of mass media exposure on institutional delivery have shown that 71 percent of rural and 86 percent of urban women had received information from different sources. For institutional delivery as well, 70 percent of **rural** women had received information from her friends and relatives while 65 percent of women received information from doctors/anms/aww/asha. More than 20 percent of women have received information from television and radio. In all other categories, the percentage of women had been less than 10 percent. The findings from **urban** residence have shown than 65 percent of women have received information from her friends and relatives while 60 percent received it from doctors/anms/aww/asha. The influence of television and radio had been observed significant as more than 20 percent of women received information through both the sources of media. Less than 10 percent of women had been observed

who gathered information from public places whereas 22 percent of women who certainly were educated, gathered information from print sources.

6.3 Predictors and Maternal Morbidity

The information available on determinants and maternal morbidity from the survey data has been used in the analysis. Since, no direct information has been given on maternal morbidity, a variable (dichotomous) representing the same has been created after combining three morbidities i.e. ante partum morbidity, intra partum morbidity and postpartum morbidity. To examine the impact of the set of all predictors, multi-variate technique has been applied. Two models were applied to investigate the impact on maternal morbidity. The first model consisted of the socio-economic independent variables and secondly those variables had been selected which were related to three periods and named as pregnancy variables. The dependent variable of maternal morbidity had been categorised into 0-No and 1-Yes. The '0' category represented those women who did not report maternal morbidity and 'Yes' had been the total of number of currently married women who had suffered from the morbidity in any of the three periods.

The **Model 1** revealed that age is an important variable that influence maternal morbidity. Since, the number of pregnancies was found to be less in the lower age group 70 percent of women were less likely to have maternal morbidity. The pattern in higher order ages has shown the increasing percentage of women who have less likelihood of having maternal morbidity as compared to the reference category. Specifically, in the higher ages the currently married women had 99 to 97 percent less chances of maternal morbidity. The women from rural residence had 1.07 times higher likelihood of maternal morbidity. However, Muslim and women who follow other religion have 41 and 31 percent less likely to have maternal morbidity than Hindu Women. Further it can be seen that women who were educated and had exposure to mass media have also shown less chances of having maternal morbidity. The results have recognised the importance of the education and mass media exposure of the women. In plight poor access to sources of information, women tend to remain unaware of the maternal health services provided at affordable prices, specifically in rural parts of the country. The discussed fact gets a token

of proof on the plank of caste results. The women belonging to SC/ST had 44 percent more likely to have maternal morbidity than those belonging to general category. The women in poor and middle wealth index have 27 and 22 percent more likely to have maternal morbidity as compared to those in the rich wealth index.

Table: 6.2

Model 1: Association of *Background Characteristics Variables* associated with Maternal Morbidity among Currently Married Women in the High Focused States (n= 165550)

Background Characteristics	Sig.	Exp(B)
Age group		
20-24		
15-19	.000	.330***
25-29	.000	.790***
30-34	.000	.291***
35-39	.000	.100***
40-44	.000	.029***
Type of Residence		
Rural	.000	1.072***
Urban®		
Caste		
SC/ST	.000	1.441***
General®		
Religion		
Hindu		
Muslims	.000	.510***
Others	.000	.686***
Education		
Literate®		
Illiterate	.004	1.038**
Mass Media Exposure		
No Exposure®		
Exposure	.000	.902***
Wealth Index		
Rich®		
Poor	.000	1.272***
Middle	.000	1.120***
Constant	**.394**	**1.037**
® Reference category Significant at p<0.05 p<0.001*** -2 Log likelihood= 179689.240a Nagelkerke R Square= 0.232**		

The **Model 2** has attempted to examine the impact of pregnancy related variables on maternal morbidity. Overall, the results have reflected the attitude of the women

towards maternal health care services that has been strongly determined by the community and familial elements. As women prefer to deliver her child at home, in rural residence particularly, the results of place of delivery have clearly indicated that, the women who had others and non-institutional place of delivery, had 31 percent more likelihood of having maternal morbidity compared to those women who had an institutional delivery. Nevertheless, the fact cannot be oversight that, at times, the maternal morbidity has been observed high among those women who had institutional delivery because women visit the institutions only at the time of emergencies. The fact provides a platform for further prospective studies in detail.

Table 6.3

Model 2: Association of *Pregnancy Related Variables* associated with Maternal Morbidity among Currently Married Women in the High Focused States (n= 149287)

Pregnancy Related Variables	Sig.	Exp(B)
Place of Delivery		
Institutional®	.000	
Others	.001	1.317
Non-Institutional	.000	1.316
Obstructed Labour		
No®		
Yes	.890	.000
Induced Abortion		
None®		
One and above	.000	1.434***
Obstetric Fistula		
No®		
Yes	.000	3.021***
Age at first birth		
Below 18 Years	.000	.907***
Above 18 Years®		
Type of Residence		
Urban®		
Rural	.000	1.173***
Constant	**.888**	**1.349**
® Reference category	**Significant at p<0.05** p<0.001*** **	
-2 Log likelihood= 100036.98a	**Nagelkerke R Square= 0.404**	

Unsafe induced abortion, undoubtedly, is accompanied with various morbidities. The result of induced abortion in the model has shown that those women who had one or

more than induced abortion, irrespective of age, had 43 percent more likelihood of having maternal morbidity. A very significant result is revealed in the categories of obstetric fistula that is the women who reported obstetric fistula had three times higher chances of having maternal morbidity as compared to women in the reference category. The findings of age at first birth have shown that after controlling for other factors, women under 18 years of age have 9 percent less likelihood of having maternal morbidity. Lastly, it was important to observe the impact of residence in the model. The results have clearly shown that the rural women have 1.7 times higher chances of having maternal morbidity as compared to its counterpart, that is, urban women.

6.4 Utilisation of MCH services

Out of the total currently married women, merely 13 percent of women have responded to the question that inquired the reasons for not availing antenatal health care services while 26 percent of women have responded to the question investigating the reasons for not availing delivery services. It is needed to be mentioned that the information was not available on the reasons for not utilizing the post natal health care services and therefore only two periods had been displayed in the present table.

Table 6.4 Reasons for not availing Health care Services

Reasons	Availing Antenatal services				Availing Delivery Services			
	Rural		Urban		Rural		Urban	
Not necessary	53	47038	63	3979	34	91419	34	8306
Not customary	11	47039	10	3978	7	91413	11	8307
Cost too much	25	47039	22	3978	25	91422	21	8308
Too far/no transport	17	47039	5	3978	12	91415	4	8307
Poor quality service	3	47040	3	3978	5	91416	4	8307
Family did not allow	7	47041	7	3977	7	91412	7	8308
Lack of knowledge	21	47041	15	3978	8	91407	5	8306
No time to go	10	47041	10	3978	22	91420	24	8307
Other	2	46950	3	3974	2	91243	3	8303
Better care at home	*	*	*	*	16	91410	20	8307

*Question not asked Source: RCH-DLHS-3, 2007-08

Out of the total women responded to the question of antenatal services, 53 percent of **rural** women have told it was not necessary to avail antenatal care services. Around 25 percent of women felt that the cost of the services were unaffordable. Moreover, 21 percent have reported they lacked in knowledge regarding antenatal services.

Interestingly, 17 percent of women reported that the services were too far and moreover, on account of, no transport services being available, they could not utilise the services. In addition, 11 percent women had reported that it was not customary to avail antenatal services while 10 percent of women reported they did not have time to go and utilise the services. The findings revealed the negligent attitude of the family and sometimes women themselves towards maternal health. Less than 10 percent of women were observed in categories of reasons for not utilizing maternal health care services. Since, the response rate of the total currently married **urban** women was far less than that of the currently married rural women it has distorted the results. However, the findings have shown that 63 percent of women had opined that maternal health care services were not needed while 22 percent of women acknowledged the utility of the services but expressed reservations on its affordability. Around 10 percent of women reported it had not been customary and they did not have time to go and utilise the health care services. In addition, 15 percent of women reported they were ignorant about antenatal health care services.

Out of the total 26 percent of **rural** women cited numerous reasons for not availing delivery services, more than 30 percent of women stated that delivery services were not needed. Around 25 percent of women said that the services were too costly to afford while 20 percent of women said that they did not have time to go and utilise the services. Significantly, 16 percent of women reported better care at home than availing delivery services from health centres. Less than 10 percent of women had been observed who have cited other reasons such as not customary, familial restrictions, poor quality of services and so on. A little more than 8000 women reported different reasons for not availing delivery services in **urban** residence. It had been observed from the findings of the data analysis that 34 percent of women reported the inutility of the maternal health care services while 24 percent of women cited time constraints for not availing the services. Interestingly 20 percent of women preferred home care over institutional services. However, it must be noted that this preference of home care is the result of deeply entrenched customary practices regarding maternal health care rather than actual institutional experiences of women. Around 20 percent of women believed that the cost of the services was unaffordable. It is also noteworthy that lack of knowledge towards the availability of maternal health care services was attributable to only five percent of

women. Therefore, one of the probable assumptions for this high level of awareness yet low levels of utilisation of the services are the result of robust campaigning of government sponsored health schemes. And finally, around three to seven percent of women fell in the miscellaneous reasons category.

Conclusion

The findings of the various analyses carried out in the chapter have indicated that women living in urban residence have a better health status than the women residing rural parts of the country. Compared with the rural women, the urban women have better access to a variety of sources providing information on maternal health care services. Moreover, the education has been advantageous for them in order to have ability to read the print sources of information. On the contrary, rural women largely rely on the information provided by her peer group that includes her family members and friends. A considerable amount of information regarding antenatal and institutional services has been provided by the ANMs, *anganwadi* workers, doctors and other. The finding revealed a positive image for the government schemes under the MCH programme. The increased deployment of ANMs across the poor districts of the country is worthy, if, the women are made aware of the provision of maternal health care services provided by the government.

The analysis of the background characteristics of the women and pregnancy related in the two models has drawn attention towards the areas where the government needs to put efforts. At the individual level, education and mass media exposure have shown significant results. On the other hand, poor health status of the women were reflected through unsafe and number of induced abortions, non institutional delivery and untreated obstetric fistula. Thus, efforts are required from both the ends to meet the challenges of maternal health.

However, as far as the utilisation of MCH services is concerned, the mere proportions of rural women tend to prefer government services while urban women showed inclination towards private services. Furthermore, in spite of awareness, the women cited bundle of reasons for not utilizing the health care services. Preference of care at home, affordability

and accessibility of the services were some predominating reasons for rural women. In addition, the emphases on customary rituals and family restraints have indicated the attitude of the women as well as the family towards the utilisation of MCH services. In order to ensure cent percent safe MCH services, growing steps from both the ends, are needed.

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CHAPTER SEVEN

CONCLUSIONS

CHAPTER 7

CONCLUSIONS

7.1 Introduction

In the light of MDGs, the National Rural Health Mission (NRHM) was founded on 12 April 2005 for a period of seven years (2005-2012). The national effort was initiated to ensure effective healthcare services, especially to the poor and vulnerable sections of the society in the country with special focus on 18 states viz. Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Jammu and Kashmir, Manipur, Mizoram, Meghalaya, Madhya Pradesh, Nagaland, Orissa, Rajasthan, Sikkim, Tripura, Uttarakhand and Uttar Pradesh. Moreover, the mission has been extended upto far-fetched areas that had remained inaccessible and were deprived of any kind of health care facilities.

Since, only one year left in the completion of NRHM, presently, Ministry of Health and Family Welfare (MoHFW) under the Government of India is working to achieve the dream of improved maternal and child health (MCH) in collaboration with the National Institute of Health and Family Welfare (NIHFW), International Institute for Population Sciences (IIPS) and various other national institutes. With a growth rate of 17.64 percent, the population of the country has grown at an alarming rate, although the growth rate has declined as compared to the growth rate (21.54) in the census year 2001. Unfortunately, on the other hand, the benefits of MCH services under the mission have yet to reach to every woman in the country.

In this backdrop, the present study attempted to investigate various aspects of complications during ante, intra and post-partum period and their impact on currently married women (15-44 years) perpetuated by their socio-economic and cultural determinants. The study used recent data and information on MCH services, collected from ever-married women in the high focused states in the third round of Reproductive and Child Health Survey (RCH). To access the quality of the services delivered,

Reproductive and Child Health Survey was conducted in 1 districts of the country under the Ministry of Health and Family Welfare (MoHFW). Broadly, the survey data provides information on interventions of the mission. Therefore, the focus of the third round has been to provide health care and utilisation of indicators at the district level for the enhancement of the activities under NRHM. The states classified into two regions- the north and central states and the northeastern states. In addition, it attempted to identify the differentials based on spatial patterns of morbidities at different levels. Moreover, it also tried to examine the impact of determinants from varied sections. Lastly, an analysis was carried out based on information related to women's exposure to mass media and attitude towards utilisation of MCH services. Although the post partum complications can neither be predicted nor prevented, maternal deaths can be avoided through effective management of assistance which does not require sophisticated and expensive technologies or medicines.

7.2 SUMMARY OF FINDINGS

The first chapter entitled "***Introduction***" is introductory by nature. In the process of formulating the objectives and research questions, an immense volume of scholarly literature served as a base to articulate the relevance of the issue taken up in the present study and develop a statement of the problem. The conceptual framework provided an explanation of the cause and effect relationship of the determinants and the dependent variable. They also demonstrated the relations that modulate the attitude of the pregnant women. In addition, these determinants cause irreversible impacts on morbidities in their body. The medical facet covered in the chapter delved into the perilous conditions a woman undergoes during the entire period of pregnancy and puerperium in particular. After looking into the vastness of the subject, precise research questions were formulated to meet various objectives of the study. Each chapter, later, addressed the research questions. It was necessary to cite the importance of physiographic features so that the geographical constraints could be highlighted apart from the socio-economic, cultural and other factors. As physiography too determines the accessibility and affordability of the

health care services, a brief description of the physiography of these high focused states was given in the end of the chapter.

The second chapter entitled "***Differentials in Distribution of Total Ante, Intra and Post Partum Morbidity at National Level***" was a step ahead of the proposed work. The available data was transformed into various analyses. The selected demographic characteristics described the composition of the unit of analysis across the states. The findings based on the bi-variate techniques provided patterns of the intense variation in the proportion of the currently married women across the states. Moreover, a significant proportion of women in the lower age groups exposed the custom of child marriage in Indian communities but the proportion was considerably skewed in the EAG states. Interestingly, bigger and poor states namely, Uttar Pradesh, Bihar, Jharkhand and Rajasthan in the north and central region and Assam and Arunachal Pradesh from the northeastern region were identified with high proportions of women in lower age groups. Prominently, Hindu women in the age group of 25-29 years in SC/ST category held highest proportion. The ignorance towards girl child education was revealed in the poor levels of education in Bihar, Rajasthan, Jharkhand and Uttar Pradesh. The data pertaining to women's education clustered around the primary level and particularly in EAG states. Nevertheless, the high fluctuating proportions of high levels of education among were significant in few states. Women's education gives them an opportunity to have a more progressive attitude towards their health and seeking health care services as compared to women with low level of education.

Differentials of morbidity in three periods were calculated at a national level based on rural-urban divide. Later, the variations of the findings helped in portraying morbidities on the maps which in turn depicted the pattern across the study area. The findings were used to draw inferences. Firstly, the patterns depicted high proportions of rural women who have experienced the health problems as compared to their urban counterparts. Secondly, among the three morbidities, complications during the intra partum period have been experienced by most of the women from both the residences as compared to other two periods. The delivery period, as universally known, is the most critical stage of the pregnancy during which she has to undergo severe labour pain and other fatal conditions. Second in rank, experiences of complications in the puerperium or the

postpartum period have also been significantly reported. The post partum morbidities have a strong relationship with the type and place of delivery process. In other words, the various post partum health problems are the result of the way the delivery was carried out. The safe and assisted delivery ensures the safe motherhood in puerperium period and vice-versa. On the other hand, the fact is that rural women are deprived of institutional facilities. Region-wise, Uttar Pradesh, Bihar and Jharkhand in the north and central region, outrightly showed a greater number of women reported these morbidities as compared to the remaining states. Assam, Mizoram, Tripura accounted for the experiences of morbidities among women in the northeastern region. Although, the state of condition was better in urban residence, the response rate was inflated by a considerable amount of women from Madhya Pradesh and Uttarakhand. Similarly, the increased values of morbidities owe a special attention from health care services providers under the government in Assam and Arunachal Pradesh. A significant proportion of women who experienced the complications from Sikkim, Meghalaya and Tripura were deprived of MCH services. Additionally, in the absence of private health care services, women relied on whatever meager amount and poor quality of MCH services provided by the government. In addition, the familial restraints in the form of their perception withheld the right to allow women seeking delivery services at PHCs/CHCs. Moreover, lack of skilled assistance augmented the morbid conditions in the obstetric period. Apart from mentioned lacunas, the attitude of women towards reporting the morbidity needs a special note. The response rate was high for those morbidities that could be answered without any feeling of hesitation. Contrastingly, the health problems that carried a sense of shyness, were poorly reported. For instance, vaginal bleeding and foul smelling vaginal discharge from all the three periods reflected the disgraced feelings in reporting. Moreover, the health complications that needed medical attention or clinical tests were another set of morbidities suffered from poor response. Since, rural women of poor families could not afford the expensive medical examinations; they remained unaware of the severity of the complications. Hence, it can be concluded that such variations need to be addressed by the profound research work to explore the underlying situations.

Without canvassing the spatial differences at district level, the patterns would have remained ambiguous. Therefore, chapter three presented under the heading of *"Differentials of Selected Morbidities at District Level"* has shown district level analysis of selected morbidities from three defined periods. The results based on ordinal scales provided the pattern of morbidity in high, moderate and low levels of reporting. Since, the state is an aggregate of districts, the pattern of reporting in some districts had inflated the state level results. Based on the findings from the district level analysis, it can be inferred that the some districts lack in MCH services. Moreover, the findings also highlighted the behavioural perspective of women regarding the utilisation of the MCH services. Overall, rural women exhibited high levels of reporting as compared to their urban counterparts. Similarly, high response rate had been recorded in the districts of Assam and Mizoram.

However, in the north and central region, districts from a cluster of states namely, Himachal Pradesh, Jammu and Kashmir, Odisha and Uttarakhand showed low reporting throughout the analyses of morbidities. In the northeastern region, women from districts of Sikkim, Manipur, Arunachal Pradesh and Meghalaya depicted moderate to low responses. Surprisingly, the urban districts of Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan and Jharkhand also carried swarthy results of morbidities. In addition, one significant result needed to be mentioned is that Odisha and Chhattisgarh have shown low reporting in all the three categories of morbidity. Another important finding was that there were several districts from the remaining states, fallen above the linear line. Nevertheless, the sporadic distribution of low level of reporting also needs special attention, as these districts were a part of the states that have showed low reporting at aggregate level.

Hence, an inference can be drawn that due to unmanageable conditions at the individual level, morbidity among women received an impetus. Therefore, the web of socio-cultural practices and infrastructural facilities served as propelling factors in determining morbidities and their reporting by women.

Chapter four entitled '*Differentials in Distribution of Maternal Morbidity and Maternal Morbidity Rate (MMR) at National and State Level*' covered the analyses carried out on period prevalence rate and maternal morbidity rate at different levels. The

period prevalence rate iterated the complications among the women. Among selected morbidities, the complication of obstructed labour was highly reported by rural women. The most critical and perilous stage, at times, lead to maternal mortality. Ironically, four states namely Bihar, Jharkhand, Uttar Pradesh and Tripura recorded the higher maternal mortality rate as compared to the national average. Thus, it can be concluded that the women were at a greater risk of maternal morbidity in the high focused states due to the lack of MCH services and their socio-economic and cultural factors.

Further deep analyses were carried out to examine the relationship between the determinants and maternal morbidity in chapter five under the heading "***Closely Associated Predictors of Maternal Morbidity***". The results showed that lower levels of various factors have significant implications on the health status of women for example, lower age groups of women, primary level or no education, poorest women in wealth scores, and lower ages of first birth. On the other hand, the higher levels of several factors have negated the ill effects on the health status. However, lower levels of few variables have played a positive role also in defining women's health such as less than two pregnancies in lower age groups, less than two induced abortions, mature (ideal) age at first birth and others.

A special description of induced abortion had also been included. The women in the age group of 30-34 have undergone the highest number of induced abortions in the high focused states. The urban residence of entire high focused states showed greater proportion of women who had undergone induced abortion than the women from rural residence. In addition to the discussion, the place of induced abortion was an important aspect in these states. The highlighting feature of the place of induced abortion was that poor women from the rural parts of the states largely preferred government health care services while urban women have undergone induced abortion at private health care facilities. Lack of money and inadequate medical equipments at government health care centres often lead to life-long health problems for instance, infertility. At the individual level, lack of proper knowledge also augments the conditions.

The type of delivery was divided into two categories i.e. institutional and non-institutional. The pattern showed the distinctive difference between the preference of

delivery in rural and urban residence. The rural women delivered at home while urban women had a choice to deliver at institutional places.

Although, women received any ANC services, but full ANC was found considerably low in high focused states. The utilisation was significantly influenced by the background characteristics of the women. The parity, birth order, education and wealth scores also determined the utilisation in rural as well as in urban residence. An important finding was that rural women visited the health care centers more than three times. However, the inflated results were uncovered in the district level analysis. The results evinced that women from a large number of districts which fallen below the linear line represented the under utilisation of ANC services.

Postnatal care (PNC) had been utilised substantially by the women. The results clearly showed that utilisation of PNC services is deeply influence by education, birth order and wealth scores.

Lastly, the analysis of obstetric fistula among the women was complementary to the discussion. The results from socio-cultural model have shown significant impact of education, religion and wealth scores of the women. The model of others included predictors such as total number of pregnancies, age at birth at birth, place of delivery has shown significant impact.

The level of knowledge regarding the ANC and institutional services was tested by observing the pattern of exposure to various sources of information. No or low educational attainment by the women empirically showed low usage of reading materials to gather information while on the other hand, peer group consisting friends and relatives showed major role in providing information. The notable finding is that the information provided by the peer group may not be completely accurate and therefore could dilute the perceptional behaviour of the women towards the services. The proportion of information provided by local trained health personnel remained low.

The sixth chapter entitled "***Predictors and Maternal Morbidity***" showed the statistical significance of all the predictors chosen in the study. The rural residence, SC/ST, Hindus and poor class women showed a higher likelihood of maternal morbidity. Interestingly, the impact of education could easily be related to exposure to mass media. The educated women had wider opportunities to increase and sharpen their knowledge regarding

information on various aspects of health as compared to their uneducated counterparts. The pregnancy related variables reiterated the impact of health complications during pregnancy, childbirth and others on maternal morbidity. Among all, the impact of obstetric fistula emerged out as highly significant for confirming the presence of maternal morbidity among the women. The findings illustrated the role of socio-economic, cultural and pregnancy factors in determining the existence of morbidity that were consistently discussed throughout the study resulting in inhibiting women to utilise the MCH services. At the end, the analysis carried out to examine the reasons for not utilising the MCH services witnessed the behavioural perception of the women and their family. The reasons encrusted the socio-economic factors in themselves that have maintained consistent impact on maternal morbidity. Moreover, the reasons encompassed the perception of the women towards the quality of MCH services provided by the government.

7.3 Conclusions and Policy Imperatives

The tentative conclusions and policy imperatives are canvassed from the analysis carried out in the study. Prior to the formulation of policy imperatives, it is important to discuss whether the objectives are proven or not in the study. To observe the patterns and determinants of the maternal morbidity were the coronet aim of the study. Each of the five research questions were taken up as a separate chapter. The empirical findings were discussed and conclusions were drawn at the end of each chapter. Hence, it can be acclaimed that all the five research questions developed to achieve the aim of the present study were answered.

As an overview, the study provided a better understanding on the occurrence and levels of various morbidities during three periods in rural as well as in urban residences. In addition, the spatial distribution of patterns of morbidities and other factors extended the understanding of the variation across the districts. The results highlighted the states namely Bihar, Jharkhand, Uttar Pradesh, Madhya Pradesh, Sikkim and Tripura as 'problem states' that showed high morbidity. The districts located in north-west, central and eastern parts of Uttar Pradesh; north and eastern parts of Bihar and north, central and

eastern parts of Jharkhand are most backward and poor. Furthermore, the population in these states is considerably high and hence one can estimate the additional burden on the health care services provided by the government.

The prime rationale of policy imperatives is to ensure safe pregnancy in order to achieve, eventually, improved maternal health and reduced maternal mortality rate in the country. With this strong notion, overall, the imperatives highlight the importance of the active role of women, family, community and functioning government in the country. It is to suggest that in order to be effective in improving the maternal health, continuum of care starts from the woman, her family, community to health providers and health services. The education for individual, family and community (IFC) would ensure bridging the gaps and develop health literacy. The literacy would then penetrate the rays among women, men, families and communities with the knowledge and skills to act, maintain, preserve, promote and improve maternal and newborn health. All sections are like a separate bead which are needed to be joined together to form a proper chain of improved maternal health.

The attention begins from the woman herself who should minimise the neglecting and ignorant attitude towards her own health. The first imperative is to ***formulate strategies to upgrade the status of women*** and the best way is to provide a minimum level of ***quality education***. The realisation of the importance of ***girl child education*** should be imparted into the family members and the woman herself. Moreover, the education should not be limited to academics or stereotyped rather it should ensure the quality that would develop and nurture the mindset of the girls regarding wise decision making for her own life.

Investment in women's education ensures to achieve sustained knowledge and awareness regarding MCH services provided by the government. Ensuring ***universal primary education-school enrollment*** would also be helpful. In addition, prime focus on 100 percent attendance of girl pupils surely promises better health in the future. The merits of educating women can be effective in developing ***women's autonomy***, ***self-reliance***, ***empowerment*** and eventually understanding the need of various ways to maintain good health. The education would help the woman to understand the demerits of a large number of pregnancies and eventually would curb the higher fertility as well. The

educational level would be helpful in building up ***positive perception towards the awareness and promotional campaigns of health services*** disseminated by the government. The imperative hereby is complemented by the Alma-Ata declaration where health literacy or education defined as "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions".

In the same process, those women who are uneducated or bear the minimal level of education, the government is expected to be especially attentive. Considering the nature of the family and community, it is essential to develop ***capacity building*** initiatives to assure support from them. The women, obviously, could not attend school at a mature age and hence better ways to make them aware of health schemes are a matter of prospective concern. The capacity building on three levels –individual, family and community (IFC) insights benefits from the sustained improvement in MCH services.

Lastly, the omnipotent education would tremendously ***fight against the social evil of child marriage***. Even after several decades of formulation and implementation of the Child Marriage Act (1929) in the country, several northern states are eclipsed by the custom of marrying the daughter in early ages. Therefore, spending more time in attaining ***higher education would lead to higher ages at birth*** and hence curb the risks of morbidity by limiting the number of pregnancies.

More informative and explanatory ***IEC/BCC materials, flipcharts, images, promotional campaigns, street plays*** etc. are various techniques through which the ignorance of women's could be overcome. The IEC/BCC materials, overall, would develop the ***capacity to stay healthy, take healthy decisions and respond to obstetric pregnancies***. It will also increase the awareness among the women regarding rights, needs and potential problems related to the maternal health. The informative tools ensure the improvement of quality of care and maternal health services and eventually making a positive change in health care delivery system.

Thirdly, women should be encouraged to ***participate in the local mahila mandals*** where they can gather or disseminate information. Such gatherings when supported by ANMs/ASHA/AWW, guarantee the development of knowledge among them. During the

pregnancy period, support from family and the community is required most. Hence, capacity building of the family and community should be done in that way.
Extension of the above mentioned strategy, ***societal or community support*** is also an effective tool in improving the health of the woman. The efforts can cut down the delays excessively and save several lives of the women experiencing complications through communication and transport arrangements. The community composed of educated families' acts as an effective peer groups that could enhance or change the perception of others and could bring positive changes at the community level.

An inevitable imperative step is being suggested to curb unsafe induced abortion especially in states with higher concentrations of tribal population. Due to their social, cultural acceptability, knowledge and experience, the population have firm belief in ***Traditional Birth Attendants (TBAs)***. They provide them local and herbal treatment to terminate the unwanted pregnancies. In addition, they are the perennial source of care during pregnancy, post pregnancy and attend deliveries performed at home. A prospective platform can be developed by ***creating partnerships between TBAs and MCH services rendered by government***. Since they are an important resource of many state's health systems, informative trainings and workshops collaborating their traditional ways (favorable) could ensure to save several lives in the future. TBAs can be included in the "***health team***" that can work together to improve access to and quality of care. The TBAs can play a vital role in the team to make the staff/health workers to understand and respect the local knowledge and traditions.

It's an incomplete effort if imperatives would not be suggested on the government's part. To make the dream come true of improved health status of women, imparting knowledge on various health issues and maternal health specifically is very important. To achieve this, the ***health care services should be made available at grass root level***. A ***good health care delivery system facilitated with basic equipments and drugs*** is needed to locate along with the basic amenities. In addition, regular trainings and workshops should be carried out for the health workers working under government machineries. Such efforts need more expanse and effectiveness in far-flung villages of rural areas.

The lacuna in attaining the goals or targets of the mission and its policies is seen in far-fetched villages, often unreached by the services rendered by the government. The government is liable to provide MCH services to the women but such aims are lagging far behind in reality. The major loopholes of the policies emerge from the ground where women do not receive optimum services, legitimately made free to them. The policies that are imperatives largely suggest that the ***governmental action plans are needed to monitor and evaluated regularly*** in order to maintain the smooth functioning of the policies at grass roots level.

Maternal mortality, at times, occurs due to lack of transport facilities and deplorable conditions of roads. Such conditions lead to delay in reaching to the hospitals during emergencies and thus, maternal mortality could not be avoided. Apart from delivering health care services, it is extremely needed that ***far-flung remote villages should be well connected by roads and adequate transport infrastructures*** made available at affordable costs.

In the context of improving quality and timeless response in managing obstetric complications, ***PHCs and CHCs in rural areas*** can render extremely crucial role. The provision of adequate services can reduce the number of maternal deaths. The chances of recovery and survival in many fatal cases of obstetric complications are high if a quality care could be provided at the time of utmost need. ***ANMs/ASHAs/AWW*** can also play their vital role in maintaining the record of pregnant women on a regular basis. Trainings and workshops covering updates information along with IEC/BCC materials could help them enhance their knowledge and those of other women.

In addition, the role of ***private and public partners*** in extending the health care delivery system promises to improve the maternal health in the future. The services delivered at an exorbitant cost could be reduced to affordable price for the poor women from rural and urban areas. Moreover, the role of non-governmental organisations (NGOs) is a helping hand to achieve the aim of improves maternal health in the country. The free check camps, ANCs, PNCs, delivery services, counseling of pregnant women and her family are the key responsibilities that are performed effectively by the social workers. Spreading awareness, another important role, played by them is the continuous empirical

research work conducted in remote and inaccessible areas to bring out the ground realities and situations, often funded by national and international organisations (WHO, UNFPA, UNICEF, etc.).

Thus, it is concluded that there is an urgent need for undertaking strategies to accomplish the aim at the ground level. Along with it, policies and approaches are required to bring an overall development of the health status of the women. If, their maternal rights under reproductive health are safeguarded completely, then the scenario of maternal health will change remarkably. Such an achievement will enable India to fulfill its commitments under MDGs and thus make her proud as not only economically a superpower but also a socially developed country in the global arena.

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APPENDICES

Appendix I

Medical Terminologies

Disease	Medical Definition
1. Post partum sepsis	Post partum sepsis is defined as an infective process occurring to a pregnant woman within the six weeks following delivery.
2. Coagulopathy	Coagulopathy (also called clotting disorder and bleeding disorder) is a defect in the body's mechanism for blood clotting, causing bleeding diathesis.
3. Puerperium	The time immediately after the delivery of a baby. (In Latin, a "puerpera" is a woman in childbirth since "puer" means child and "parere" means to give birth.) Puerperal fever is childbirth (or childbed) fever due to an infection usually of the placental site within the uterus. If that infection involves the bloodstream, it constitutes puerperal sepsis.
4. Dyspareunia	Dyspareunia is painful sexual intercourse, due to medical or psychological causes. The symptom is reported almost exclusively by women, although the problem can also occur in men. The causes are often reversible, even when long-standing, but self-perpetuating pain is a factor after the original cause has been removed. It is a common condition that affects up to one-fifth of women at some point in their lives.
5. Menorrhagia	Menorrhagia is an abnormally heavy and prolonged menstrual period at regular intervals. Causes may be due to abnormal blood clotting, disruption of

	normal hormonal regulation of periods or disorders of the endometrial lining of the uterus. Depending upon the cause, it may be associated with abnormally painful periods (dysmenorrhea).
6. Episiotomy	An episiotomy is a surgical incision through the perineum made to enlarge the vagina and assist childbirth. The incision can be midline or at an angle from the posterior end of the vulva, is performed under local anesthetic (pudendal anesthesia) and is sutured closed after delivery.
7. Convulsion	A convulsion is a medical condition where body muscles contract and relax rapidly and repeatedly, resulting in an uncontrolled shaking of the body. Because a convulsion is often a symptom of an epileptically seizure, the term *convulsion* is sometimes used as a synonym for *seizure*. However, not all epileptic seizures lead to convulsions, and not all convulsions are caused by epileptic seizures.
8. Lochia	Lochia is post-partum vaginal discharge, containing blood, mucus, and placental tissue. Lochia discharge typically continues for 4 to 6 weeks after childbirth.
9. Cephalo-pelvic disproportion	Cephalo-pelvic disproportion exists when the capacity of the pelvis is inadequate to allow the fetus to negotiate the birth canal. This may be due to a small pelvis, a non gynecoid pelvic formation, a large fetus, or a combination of these factors. Certain medical conditions may distort the pelvic bones, such as rickets or a pelvic fracture, and lead to CPD.

10. Malpresentation	In obstetrics, the presentation of a fetus about to be born refers to which anatomical part of the fetus is leading, that is, is closest to the pelvic inlet of the birth canal. According to the leading part, this can be a cephalic, breech, or shoulder presentation. A malpresentation is any other presentation than a vertex presentation.
11. Eclampsia	Eclampsia is an acute and life-threatening complication of pregnancy, is characterized by the appearance of tonic-clonic seizures, usually in a patient who had developed preeclampsia. (Preeclampsia and eclampsia are collectively called *Hypertensive disorder of pregnancy* and *toxemia of pregnancy*. Eclampsia includes seizures and coma that happen during pregnancy but are due to preexisting or organic brain disorders.
12. Hysterectomy	A hysterectomy is the surgical removal of the uterus. Hysterectomy may be total (removing the body, fundus (uterus), and cervix of the uterus; often called "complete") or partial (removal of the uterine body but leaving the cervical stump, also called "supracervical")
13. Hypovolemic shock	Hypovolemic shock is a particular form of shock in which the heart is unable to supply enough blood to the body. It is caused by blood loss or inadequate blood volume
14. DIC	Disseminated Intra vascular Coagulation (DIC) is a serious disorder in which the proteins that control blood clotting become abnormally active. It leads to heavy bleeding and clotting.

Appendix II

TABLES SHOWING DISTRICTS SELECTED FOR THE STUDY

S tate code	States North	Di strict code	District name
1	**Jammu and Kashmir**	101	Kupwara
		102	Baramula
		103	Srinagar
		104	Badgam
		105	Pulwama
		106	Anantanag
		107	Leh (Ladakh)
		108	Kargil
		109	Doda
		110	Udhampur
		111	Punch
		112	Rajauri
		113	Jammu
		114	Kathua
2	**Himachal Pradesh**	201	Chamba
		202	Kangra
		203	Lahul & Spiti
		204	Kullu
		205	Mandi
		206	Hamirpur
		207	Una
		208	Bilaspur
		209	Solan
		210	Sirmaur
		211	Shimla
		212	Kinnaur
5	**Uttaranchal**	501	Uttarkashi
		502	Chamoli
		503	Rudraprayag
		504	Tehri Garhwal
		505	Dehradun
		506	Garhwal
		507	Pithoragarh
		508	Bageshwar
		509	Almora
		510	Champawat
		511	Nainital
		512	Udham Singh Nagar
		513	Hardwar

State code	State	District code	District name
	Western		
8	Rajasthan	801	Ganganagar
		802	Hamumangarh
		803	Bikaner
		804	Churu
		805	Jhunjhunun
		806	Alwar
		807	Bharatpur
		808	Dhaulpur
		809	Karauli
		810	Sawai Madhopur
		811	Dausa
		812	Jaipur
		813	Sikar
		814	Nagaur
		815	Jodhpur
		816	Jaisalmer
		817	Barmer
		818	Jalore
		819	Sirohi
		820	Pali
		821	Ajmer
		822	Tonk
		823	Bundi
		824	Bhilwara
		825	Rajsamand
		826	Udaipur
		827	Dungarpur
		828	Banswara
		829	Chittaurgarh
		830	Kota
		831	Baran
		832	Jhalawar

State code	State	District code	District name
	Central		
	Uttar Pradesh	901	Saharanpur
		902	Muzaffarnagar
		903	Bijnor
		904	Moradabad
		905	Rampur

		906	Jyotiba Phule Nagar
		907	Meerut
		908	Baghpat
		909	Ghaziabad
		910	Gautam Buddha Nagar
		911	Bulandshahar
		912	Aligarh
		913	Hathras
		914	Mathura
		915	Agra
		916	Firozabad
		917	Etah
		918	Mainpuri
		919	Budaun
		920	Bareilly
		921	Pilibhit
		922	Shahjahanpur
		923	Kheri
		924	Sitapur
		925	Hardoi
		926	Unnao
		927	Lucknow
		928	Rae Bareli
		929	Farrukhabad
		930	Kannauj
		931	Etawah
		932	Auraiya
		933	Kanpur Dehat
		934	Kanpur Nagar
		935	Jalaun
		936	Jhansi
		937	Lalitpur
		938	Hamirpur
		939	Mahoba
		940	Banda
		941	Chitrakoot
		942	Fatehpur
		943	Pratapgarh
		944	Kaushambi
		945	Allahabad
		946	Barabanki
		947	Faizabad
		948	Ambedaker Nagar
		949	Sultanpur
		950	Bahraich
		951	Shrawasti
		952	Balrampur

		953	Gonda
		954	Siddharthnagar
		955	Basti
		956	Sant Kabir Nagar
		957	Maharajganj
		958	Gorakhpur
		959	Kushinagar
		960	Deoria
		961	Azamgarh
		962	Mau
		963	Ballia
		964	Jaunpur
		965	Ghazipur
		966	Chandauli
		967	Varanasi
		968	Sant Ravidas Nagar
		969	Mirzapur
		970	Sonbhadra
0	**Bihar**	1001	Pashchim Champaran
		1002	Purba Champaran
		1003	Sheohar
		1004	Sitamarhi
		1005	Madhubani
		1006	Supaul
		1007	Araria
		1008	Kishanganj
		1009	Purnia
		1010	Katihar
		1011	Madhepura
		1012	Saharsa
		1013	Darbhanga
		1014	Muzaffarpur
		1015	Gopalganj
		1016	Siwan
		1017	Saran
		1018	Vaishali
		1019	Samastipur
		1020	Begusarai
		1021	Khagaria
		1022	Bhagalpur
		1023	Banka
		1024	Munger
		1025	Lakhisarai
		1026	Sheikhpura
		1027	Nalanda
		1028	Patna
		1029	Bhojpur

		1030	Buxar
		1031	Kaimur (Bhabua)
		1032	Rohtas
		1033	Jehanabad
		1034	Aurangabad
		1035	Gaya
		1036	Nawada
		1037	Jamui
0	**Jharkhand**	2001	Garhwa
		2002	Palamu
		2003	Chatra
		2004	Hazaribagh
		2005	Kodarma
		2006	Giridih
		2007	Deoghar
		2008	Godda
		2009	Sahibganj
		2010	Pakaur
		2011	Dumka
		2012	Dhanbad
		2013	Bokaro
		2014	Ranchi
		2015	Lohardaga
		2016	Gumla
		2017	Pashchimi Singhbhum
		2018	Purbi Singhbhum
		2019	Simdega
		2020	Seraikela
		2021	Latehar
		2022	Jamtara
1	**Odisha**	2101	Bargarh
		2102	Jharsuguda
		2103	Sambalpur
		2104	Debagarh
		2105	Sundargarh
		2106	Kendujhar
		2107	Mayurbhanj
		2108	Baleshwar
		2109	Bhadrak
		2110	Kendrapara
		2111	Jagatsinghapur
		2112	Cuttack
		2113	Jajapur
		2114	Dhenkanal
		2115	Anugul
		2116	Nayagarh
		2117	Khordha

		2118	Puri
		2119	Ganjam
		2120	Gajapati
		2121	Kandhamal
		2122	Baudh
		2123	Sonapur
		2124	Balangir
		2125	Nuapada
		2126	Kalahandi
		2127	Rayagada
		2128	Nabarangapur
		2129	Koraput
		2130	Malkangiri
2	**Chhattisgarh**	2201	Koriya
		2202	Surguja
		2203	Jashpur
		2204	Raigarh
		2205	Korba
		2206	Janjgir-Champa
		2207	Bilaspur
		2208	Kawardha
		2209	Rajnandgaon
		2210	Durg
		2211	Raipur
		2212	Mahasamund
		2213	Dhamtari
		2214	Kanker
		2215	Bastar
		2216	Dantewada
3	**Madhya Pradesh**	2301	Sheopur
		2302	Morena
		2303	Bhind
		2304	Gwalior
		2305	Datia
		2306	Shivpuri
		2307	Guna
		2309	Chhatarpur
		2310	Panna
		2311	Sagar
		2312	Damoh
		2313	Satna
		2314	Rewa
		2315	Umaria
		2316	Shahdol
		2317	Sidhi
		2318	Neemuch
		2319	Mandsaur

		2320	Ratlam
		2321	Ujjain
		2322	Shajapur
		2323	Dewas
		2324	Jhabua
		2325	Dhar
		2326	Indore
		2327	West Nimar
		2328	Barwani
		2329	East Nimar
		2330	Rajgarh
		2331	Vidisha
		2332	Bhopal
		2333	Sehore
		2334	Raisen
		2335	Betul
		2336	Harda
		2337	Hoshangabad
		2338	Katni
		2339	Jabalpur
		2340	Narsimhapur
		2341	Dindori
		2342	Mandla
		2343	Chhindwara
		2344	Seoni
		2345	Balaghat

State code	State name Northeastern	District code	District name
11	**Sikkim**	1101	North
		1102	West
		1103	South
		1104	East
12	**Arunachal Pradesh**	1201	Tawang
		1202	West Kameng
		1203	East Kameng
		1204	Papum Pare
		1205	Lower Subansiri
		1206	Upper Subansiri
		1207	West Siang
		1208	East Siang
		1209	Upper Siang
		1210	Dibang Valley
		1211	Lohit

		1212	Changlang
		1213	Tirap
		1214	Kurung Kumey
		1215	Lower Dibang Valley
		1216	Anjaw
14	**Manipur**	1401	Senapati
		1402	Tamenglong
		1403	Churachandpur
		1404	Bishnupur
		1405	Thoubal
		1406	Imphal West
		1407	Imphal East
		1408	Ukhrul
		1409	Chandel
15	**Mizoram**	1501	Mamit
		1502	Kolasib
		1503	Aizawl
		1504	Champhai
		1505	Serchhip
		1506	Lunglei
		1507	Lawngtlai
		1508	Saiha
16	**Tripura**	1601	West Tripura
		1602	South Tripura
		1603	Dhalai
		1604	North Tripura
17	**Meghalaya**	1701	West Garo Hills
		1702	East Garo Hills
		1703	South Garo Hills
		1704	West Khasi Hills
		1705	Ri Bhoi
		1706	East Khasi Hills
		1707	Jaintia Hills
18	**Assam**	1801	Kokrajhar
		1802	Dhubri
		1803	Goalpara
		1804	Bongaigaon
		1805	Barpeta
		1806	Kamrup
		1807	Nalbari
		1808	Darrang
		1809	Marigaon
		1810	Nagaon
		1811	Sonitpur
		1812	Lakhimpur
		1813	Dhemaji
		1814	Tinsukia

		1815	Dibrugarh
		1816	Sibsagar
		1817	Jorhat
		1818	Golaghat
		1819	Karbi Anglong
		1820	North Cachar Hills
		1821	Cachar
		1822	Karimganj
		1823	Hailakandi
		1824	Chirang
		1825	Baska
		1826	Kamrup Metro
		1827	Udalguri