# A COMPARATIVE STUDY OF PERFORMANCE OF HIGH-FOCUS AND NON-HIGH FOCUS STATES IN PROVIDING MATERNAL HEALTHCARE SERVICES UNDER NRHM, DURING THE PERIOD 2008-2010.

**A dissertation submitted in partial fulfillment of the requirements**

**for the award of**

**Post-Graduate Diploma in Health and Hospital Management**

**By**

**Mahima Sethi**




**International Institute of Health Management Research**

**New Delhi -110075**

**May, 2010**

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# Certificate of Approval

The following dissertation titled "**A comparative study of performance of high-focus and non-high focus states in providing maternal healthcare services under NRHM, during the period 2008-2010** " is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post- Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation

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# Certificate from Dissertation Advisory Committee

This is to certify that **Ms Mahima Sethi**, a participant of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. He/She is submitting this dissertation titled " **A comparative study of performance of high-focus and non-high focus states in providing maternal healthcare services under NRHM, during the period 2008-2010.**" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management**.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

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Last but not the least I would like to thank my parents for their continuous support, the almighty for making me what I am.

# ABSTRACT

Each year in India, roughly 30 million women experience pregnancy and 27 million have a live birth (MoHFW, 2003c). Of these, an estimated 136,000 maternal deaths and one million newborn deaths occur each year. In addition, millions more women and newborns suffer pregnancy and birth-related ill health. Thus, pregnancy-related mortality and morbidity continues to take a huge toll on the lives of Indian women and their newborns. NRHM has taken several initiatives to improve maternal health situation in India and to reach the MDG of improving the maternal health.

To evaluate these initiatives, this study has been conducted to compare the performance of a high focus state (Jharkhand) with a non-high focus state (Gujarat), in providing maternal healthcare services, during the period 2008-09, 09-10.

OBJECTIVE

1. To analyse district-wise performance of Gujarat and Jharkhand in providing maternal healthcare services, under NRHM, over two years-2008-09, 2009-10.
2. To compare the performance of Gujarat (non-high focus) and Jharkhand (high focus) in providing maternal healthcare services, under NRHM.

METHOD

A retrospective secondary study was conducted, using data available on the HMIS web portal of NRHM. Data of maternal health indicators were taken for all districts of Gujarat and Jharkhand for the period of two years (2008-2010). Various proportions were calculated using MS Excel and graphs were plotted for analysis.

KEY FINDINGS

1. Although Gujarat performs well in majority of maternal health indicators and its performance is better than all India average and Jharkhand, but the number of anaemia cases have increased in 2009-10 and distribution of IFA tablets is low in comparison to Jharkhand and Indian average. Also, women who are paid JSY incentive less in proportions.
2. Jharkhand shows a poor performance in almost all maternal health indicators when compared to Gujarat and India on an average, but it has shown a good improvement when compared to its performance in 2008-09. Also, the distribution of 100 IFA tablets is very good, above the performance of Gujarat and India on an average. The institutional deliveries have shown a

good improvement and hence proportions of unsafe deliveries have reduced and post-partum checkups within 48hrs have increased.

3. Data quality is poor especially for the state of Jharkhand in the year 2008-09.

KEY TERMS - **Maternal healthcare, ante-natal care, delivery care, institutional delivery, post-partum care**.

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# LIST OF ABBREVIATIONS

| SR. NO. | ABBREVIATION | FULL FORM |
|---|---|---|
| 1 | **AYUSH** | Ayurveda Yoga Unani Sidhha Homeopathy |
| 2 | **HMIS** | Health Management Information System |
| 3 | **M & E** | Monitoring and Evaluation |
| 4 | **PRC** | Population Research Centre |
| 5 | **NIHFW** | National Institute Of Health and Family Welfare |
| 6 | **SIHFW** | State Institute Of Health and Family Welfare |
| 7 | **NHSRC** | National Health System Resource Centre |
| 8 | **MOHFW** | Ministry of Health and Family Welfare |
| 9 | **JSY** | Janani Suraksha Yojna |
| 10 | **JSK** | Jansankhya Sthirtha Kosh |
| 11 | **TBA** | Traditional Birth Attentand |
| 12 | **ASHA** | Accredited Social Health Activist |
| 13 | **ANM** | Auxillary Nursing and midwifery |
| 14 | **EmOC** | Emergency obstetric care |
| 15 | **NFHS** | National Family Health Survey |
| 16 | **DLHS** | District level Household Survey |
| 17 | **NRHM** | National Rural Health Mission |
| 18 | **IFA** | Iron and Folic Acid Tablets |
| 19 | **PIP** | Programme Implementation Plan |
| 20 | **RTI/STI** | Reproductive Tract Infection/ Sexually Transmitted Infections |
| 21 | **CHC** | Community Health Centre |
| 24 | **MMR** | Maternal Mortality Ratio |
| 25 | **SRS** | Sample Registration System |
| 26 | **ANC** | Ante-Natal Care |
| 27 | **RCH** | Reproductive and Child Healthcare |
| 28 | **RHS** | Rural Health Statistics |
| 29 | **MDG** | Millenium Development Goals |
| 30 | **TT** | Tetanus Toxoid |

# PART-A INTERNSHIP REPORT

I have been working as an intern recruited by National Health System Resource Centre which is a technical body to support NRHM. I was posted in the Monitoring and Evaluation division (stats division) in Nirman Bhawan, mainly to enhance the reporting of data by various states and union territories, on the HMIS portal launched under NRHM in 2000.

## BRIEF ABOUT ORGANIZATION AND DEPARTMENT

The **National Rural Health Mission (2005-12)** is a flagship programme of the Government of India and seeks to provide effective healthcare to the rural population throughout the country with special focus on 18 states, namely, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Jammu & Kashmir, Manipur, Mizoram, Meghalaya , Madhya Pradesh, Nagaland, Orissa, Rajasthan, Sikkim, Tripura, Uttarakhand and Uttar Pradesh. The Mission aims to rise public spending on the health sector to 2-3% of the Gross Domestic Product (GDP), by undertaking architectural correction of the health system and promote policies that strengthen public health management and service delivery in the country. It has, as its key components, provision of a female health activist in each village (known as ASHA); a village health plan prepared through a local team headed by the Health & Sanitation Committee of the Panchayat; strengthening of the rural hospital for effective curative care and made accountable to the community through Indian Public Health Standards (IPHS); integration of vertical Health & Family Welfare Programmes and Funds for optimal utilization of funds and infrastructure and strengthening delivery of primary healthcare.

The Statistics (Monitoring & Evaluation) Division in the Ministry of Health & Family Welfare is responsible for monitoring and evaluation of the National Family Welfare Programmes in the country. The information flows from the primary levels and is consolidated at the State level on a monthly basis before the information is sent to the centre for the national level consolidation. The system for capturing information on Family Welfare programmes has evolved over the years based on the changing needs of the Ministry. Similarly, for the National Health programmes like TB, Malaria, Leprosy etc, the respective Divisions in the Ministry have evolved their data reporting system. The Department of AYUSH and National AIDS Control Organisation also have their own reporting system

To monitor the performance and quality of the health services being provided under the NRHM, the

Ministry of Health & Family Welfare, Government of India, is putting in place several mechanisms that would strengthen the monitoring and evaluation systems, through performance statistics, surveys, community monitoring, quality assurance etc.

The Health Statistics Information Portal facilitates the flow of physical and financial performance from the District level to the State HQ and the Centre using a web based Health Management Information System (HMIS) interface. The portal will provide periodic reports on the status of the health sector.

Being an intern in the initial week , I was oriented about the HMIS portal , various type of reporting formats, generation of various reports, types of analysis done etc.

Later, I was completely involved in trainings and data quality improvement procedures carried out at various levels. Major Contributions were:

| **Date** | **Work allotted** | **Remarks** |
|---|---|---|
| Initial week (1st feb-7th Feb) | Basic orientation about HMIS portal and working of M & E division | |
| 10th -11th Feb. | Online HMIS Web Portal Training in Central District (Delhi) | Assisted in Facility level training of Central district of Delhi |
| 22nd and 23rd Feb. | Refresher training on HMIS to districts of Chhattisgarh | Conducted training of 18 districts of Chhattisgarh on revised formats and data analysis by HMIS |
| 27th Feb. | Meeting with PRCs on revision of various data forms used for data collection. | Analysis of data of few states to show quality of data reported |
| 1st march to 22nd march | State meetings to improve data quality | Assisted by highlighting the errors the states frequently make in reporting and making state and qualitative and quantitative analysis of data |

| | | |
|---|---|---|
| | | reported by various states. |
| 26-28th march | Online HMIS Web Portal Training in West District (Delhi) | Conducted facility level training of west districts at Guru Gobind Singh District hospital, |
| 1st- 5th April | HMIS performance evaluation report formulation 2009-10 | Assisted in preparing document of HMIS performance evaluation report, 2009-10, by doing district-wise analysis and depicting by graphs |
| 8th April- 16th April | Preparing documents for commemoration of NRHM | |
| 14th April | Training at UNICEF | Assisted in training of 4 UNICEF headquarters – Kolkata, Jaipur, Bhopal, and Hyderabad through video-conferencing. |
| 18th April- 28th April | Preparation for training of PRCs, NIHFW, SIHFW, Regional Directors of state, for conduction of HMIS training in their respective states. | Data analysis of specific states, making reports of state data containing outliers and validation errors in the data. . |
| 1st May- 19th May | Conduction of PRC training | |

# PART-B

# A COMPARATIVE STUDY OF PERFORMANCE OF A HIGH-FOCUS AND A NON-HIGH FOCUS STATE IN PROVIDING MATERNAL HEALTHCARE SERVICES UNDER NRHM, DURING THE PERIOD 2008-2010.

# CHAPTER-1 INTRODUCTION

## About NRHM

Recognizing the importance of Health in the process of economic and social development and improving the quality of life of our citizens, the Government of India resolved to launch the National Rural Health Mission to carry out necessary architectural correction in the basic health care delivery system. The Mission adopts a synergistic approach by relating health to determinants of good health viz. segments of nutrition, sanitation, hygiene and safe drinking water. It also aims at mainstreaming the Indian systems of medicine to facilitate health care. The Plan of Action includes increasing public expenditure on health, reducing regional imbalance in health infrastructure, pooling resources, integration of organizational structures, optimization of health manpower, decentralization and district management of health programmes, community participation and ownership of assets, induction of management and financial personnel into district health system, and operationalizing community health centres into functional hospitals meeting Indian Public Health Standards in each Block of the Country.

The Goal of the Mission is to improve the availability of and access to quality health care by people, especially for those residing in rural areas, the poor, women and children.(1)

NRHM is an umbrella programme encompassing the various health and family welfare Initiatives and programmes of the Ministry of Health & Family Welfare, Government of India. These include the Reproductive and Child Health Programme – Phase II (RCH II), Universal Immunisation Programme, and the various National Disease Control Programme. With the launch of NRHM, there was an urgent need for a centralized health information division covering all the programme specific data needs and also routine RCH and public health related information so as to meet all information needs of MOHFW for NRHM and related programmes on a single platform.

Hence the HMIS (Health Management Information System) web portal was launched by the Ministry of Health and Family Welfare (MoHFW) on 21st October, 2008 to enable capturing of public health data from both public and private institutions in rural and urban areas across the country. The portal is envisaged as a “Single Window” for all public health data for the Ministry of Health and Family Welfare. The web portal also has data from NFHS, DLHS etc. and will subsequently have data from Concurrent Evaluation and other such surveys as and when the data is available.

The National Rural Health Mission has categorised the States in the following categories on the basis of their health indicators and focus of the Mission.(2)

| **Category** | **Sub-category** | **States** |
|---|---|---|
| High Focus | North East (8) | Arunachal Pradesh (ArP), Assam (AS), Manipur (MN), Meghalaya (MG), Mizoram (MZ), Nagaland (NG), Sikkim (SK), Tripura (TR) |
| | Non-North East (10) | Bihar (BH), Chhattisgarh (CG), Himachal Pradesh (HP), Jammu & Kashmir (JK), Jharkhand (JH), Madhya Pradesh (MP), Orissa (OR), Rajasthan (RJ), Uttar Pradesh (UP),Uttarakhand (UK), |
| Non-High Focus | Large (10) | Andhra Pradesh (AP), Goa (GO), Gujarat (GJ),Haryana (HR), Karnataka (KN), Kerala (KR), Maharashtra (MH), Punjab (PB), Tamil Nadu (TN), West Bengal (WB) |
| | Small and Union Territories (7) | A & N Islands (AN), Chandigarh (CH), Dadra & NH (DNH), Daman & Diu (DD), Delhi (DL), Lakshadweep (LD), Pondicherry (PD) |

NRHM majorly focuses to improve the health needs and conditions of high-focus states through its various initiative like Janani Suraksha Yojna (JSK), Rogi Kaliyan Samiti (RKS) and many more by employing ANMs and ASHAs as they have better reach into the community, hence they are the key personnel to serve community needs appropriately and adequately.

The wealth of information getting captured on the HMIS portal provides an exciting opportunity for analysing the current status and trends on a host of health parameters and to evaluate the interventions of NRHM for their efficiency and efficacy.

## SITUATION OF MATERNAL HEALTH IN ASIA AND INDIA

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

The major direct causes of maternal morbidity and mortality include haemorrhage, infection, high blood pressure, unsafe abortion, and obstructed labour."

--- WHO

At the United Nations Organization (UNO) has set the so-called Millennium Development Goals. 8 goals are to propose that should be corrected by 2015. Among them is the desire to improve maternal health, this being the number five.

It's a bit complicated to think today that complications arise in childbirth, such that it can even cause death of the mother and even the baby. Not only in childbirth but also during pregnancy and the weeks after childbirth, especially the first 6, they are also very important.

Regions such as sub-Saharan Africa and South Asia are the most accuse these complications, since the year 2005, some 426,000 women died in these regions. This may be because there are complications that can be treated, but in these areas is complicated by the lack of existing facilities and if the probability of maternal mortality in a developed country is 1 in 7300, soars to 1 in 22 in these regions discussed.

These reasons are enough to mark as Millennium Goal, improving maternal health, since between 1990 and 2005 was achieved progress has been minimal if not nil, only 1%, a deemed unacceptable.

The major reasons for poor status of maternal health and maternal mortality are:

1. Lack of availability of qualified personnel to assist delivery and reproductive care.

2. Lack of awareness and motivation to attend complete ante-natal check-ups.
3. Increasing rates of adolescent fertility, leading to unsafe pregnancy and higher rates of abortions.

One of the premises to be considered is the availability of qualified personnel, which would greatly reduce this mortality rate. We are not referring to developed countries, since their mortality rate of 9 per 100,000 live births, but to the African and Asian regions previously discussed are those that have higher mortality rates, as their percentage of births attended by skilled qualified less than 50%.

Another important gesture to appreciate the care during pregnancy or prenatal care in women aged 15 to 49 years, recommending at least four checks to assess a correct and healthy pregnancy. Turning to the countries of Africa and Asia, only 42% of women were seen within these 4 checks required minimum.

Another goal is to take account of adolescent fertility (15 to 19 years), which has to be reduced gradually as teenage pregnancy will contribute greatly to maternal and infant mortality.

Finally, the power to motherhood means to prevent, the last reason to value and resolve by the United Nations, is that every woman aged 15-49 who need family planning, get it, a fact not has come to nothing in the countries covered by this paper, sub-Saharan Africa and South Asia.(3)

It is important to focus on those regions that are so unprotected at any level so that in 2015, the goal of the UN, all of these purposes may have come true and mortality during pregnancy, childbirth and the weeks thereafter, not an alarming but a single event.

India is a country of great diversity with its 29 states and 6 union territories, all varying in language, social customs and traditions. There are regions in the country with health profile comparable to developed countries and there are others that lag well behind. Regional disparities in maternal and neonatal mortality are wide. For example, maternal mortality is so low in such states as Kerala and Punjab that indirect estimates for these states could not be attempted. In contrast in as many as 10 of the 15 major states (Assam, Bihar, Gujarat, Haryana, Karnataka, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal) where maternal mortality ratios (MMRs) exceed 400 per 100,000 live births,and three states (Assam, Madhya Pradesh and Uttar Pradesh) where MMRs are as high as 700 or more (Mari Bhat, 2002). (4)

Due to the NRHM initiatives the Maternal Mortality Ratio (MMR) is down to 254 (2004-06) from 301 per 100,000 live births (2001-03) and IMR is down to 55 (2007) from 58 per 1,000 live births (2005). Institutional deliveries have increased to 47% (2007-08) from 40.9% (2002-04)

## STATEMENT OF PROBLEM AND SIGNIFICANCE OF THE STUDY

Each year in India, roughly 30 million women experience pregnancy and 27 million have a live birth (MoHFW, 2003c). Of these, an estimated 136,000 maternal deaths and one million newborn deaths occur each year. In addition, millions more women and newborns suffer pregnancy and birth-related ill health.

An effective pregnancy related care includes medical assistance throughout the gestation (ante-natal), during the delivery and post partum checkups after the delivery. This ensures safe motherhood, decreases chances of both maternal and infant mortality.

The links between pregnancy-related care and maternal mortality are well recognized. Over the last decade national programmes and plans have stressed the need for universal screening of pregnant women and operationalsing essential and emergency obstetric care. Proper antenatal care can help ensure a favourable pregnancy outcome, a healthy mother

and a healthy baby, but the coverage of antenatal care in India remains inadequate.

Antenatal care however, no matter how high the quality, cannot alleviate the major burden of suffering during and around childbirth, for this there is a need of a skilled health professional, a skilled birth attendant (SBA). Non-skilled attendants, TBAs, however continue to conduct over one-third of all births in India. The distribution of skilled attendants and institutional

births by states reveals an inverse relationship with maternal mortality ratios (MMR), neonatal mortality rates (NMR) and infant mortality rates (IMR). Postpartum care, both immediate and late postnatal check-up, is also a major concern in India. Although there has been an increase in institutional births in some states (e.g. Tamil Nadu), around

65% of all births nation-wide still occur at home. Cultural practice of seclusion after birth, practiced in many parts of the country make skilled care to all women and newborns difficult.(5)

Situation has now improved after revision and implementation of reproductive and child health programmes under NRHM. Janani Suraksha Yojana (JSY) plays most vital role for this improvement under which the pregnant mothers are paid incentives under institutional deliveries. Also the ASHAs and ANMs are paid incentive per month based on number of institutional deliveries carried out by them. Consequently the numbers of mother and child deaths have reduced (during and after delivery) mainly due to conduct of safe deliveries by trained personnel in the institutions.

As NRHM majorly functions in improving health standards in 18 high-focus states, this study aims as evaluating these efforts by comparing the interventions to improve maternal health in these high-focus states w.r.t non-high focus states.

# OBJECTIVES

1. To analyse district-wise performance of Gujarat and Jharkhand in providing maternal healthcare services, under NRHM, for the period of two years-2008-09, 2009-10.
2. To compare the performance of Gujarat (non-high focus) and Jharkhand (high focus) in providing maternal healthcare services, under NRHM.

# LITERATURE REVIEW

Maternal health includes the physical, mental and social well-being of women during pregnancy and delivery. Of the 150 million women who become pregnant each year, it has been estimated that more than 600,000 die annually from pregnancy-related causes (Hill, Abou-Zahr, and Wardlaw, 2001). When compared to the women from developed countries, women from developing countries face a 50- to 100-fold greater risk of dying because of pregnancy and childbirth (Venkatesh, 1988).

Among the various stages of women's lives, the childbearing period represents a period of elevated risk, and the care provided is critical for both the woman's and her child's health and survival. The concept of special care during the antenatal period has been traditionally recognized in India, with pregnancy associated with a number of cultural practices, ranging from special diet to special rights (Jejeebhoy and Rama Rao, 1995). After Independence, the Government of India took steps to strengthen maternal and child health services as early as the first and second Five-Year Plans (1951-56 and 1956-61). Promotion of maternal and child health has been a central objective of the Family Welfare Programme in India. The Maternal and Child health Programme was integrated with the Family Welfare Programme during the fourth Five-Year Plan (1969-74), and since then, there have been several changes and developments in the programme. (6)

More than a decade of research has shown that small and affordable measures can significantly reduce the health risks that women face when they become pregnant. Most maternal deaths could be prevented if women had access to appropriate health care during pregnancy, childbirth, and immediately afterwards. Safe motherhood means ensuring that all women receive the care they need to be safe and healthy throughout pregnancy, childbirth and soon after childbirth. (7)The socio-cultural determinants of maternal, newborn and child health have a cumulative effect over a lifetime. A correlation exists between the social inequity and maternal and child health. This is one of the many challenges facing India. Also, it may be stated that there is a wide variation in the maternal health seeking behaviour among the different states of the country. Many studies reveal that some of the factors governed maternal health utilization was education of women, standard of living, and pregnancy related problems and delivery related complications.

Gujarat state, situated on the west coast of India, accounts for 6% of the area of the country and 5% (51 million) of the population of India making it rank tenth in the country. The decadal population growth rate (1991-2001) of the state has been 22.6%, which is higher than that of India (21.5%)

It is one of the most urbanized states in India, with 37% urban population, perhaps because agriculture is highly unstable, leaving small farmers and farm-labourers in poverty. Overall, Gujarat has 25 districts subdivided into 226 blocks, 18,618 villages, and 242 towns. As per the maternal mortality study conducted by the Registrar General of India, based on the Sample Registration System (SRS), the maternal mortality ratio (MMR) for Gujarat was 172 compared to 301 for India for 2001-2003. (8)

According to a case study conducted on maternal healthcare system of Gujarat by Centre for Management of Health Services, Indian Institute of Management, Ahmadabad, Gujarat state of India has come a long way in improving the health indicators since independence, but progress in reducing maternal mortality has been slow and largely unmeasured or documented. This case study identified several challenges for reducing the maternal mortality ratio, including lack of the managerial capacity, shortage of skilled human resources, non-availability of blood in rural areas, and infrastructural and supply bottlenecks. The Gujarat Government has taken several initiatives to improve maternal health services, such as partnership with private obstetricians to provide delivery care to poor women, a relatively-short training of medical officers and nurses to provide emergency obstetric care (EmOC), and an improved emergency transport system. However, several challenges still remain. Recommendations are made for expanding the management capacity for maternal health, operationalization of health facilities, and ensuring EmOC on 24/7 (24 hours a day, seven days a week) basis by posting nurse-midwives and trained medical officers for skilled care, ensuring availability of blood, and improving the registration and auditing of all maternal deaths. (9)

A study on Factors Governing Maternal Health Care Utilization in India:A Cross Cultural Comparison (Harish Srivastava & Arindam Das) shows, higher levels of education and standard of living have been found governing women's utilization of antenatal care. As the level of education increases from illiterate to 9+ years of schooling the utilization of full ANC increased from 26 percent to 62 percent in Gujarat.(7)

NFHS-3 indicates that early registration of pregnancy within first trimester has been increased to 55 percent. Further, 64.9 % percent mothers who had at least 3 antenatal care visits for their last birth in comparison to 61.2 percent mothers reported in NFHS- 2. NFHS-3 reports 35.7 percent mothers who consumed IFA for 90 days or more when they were pregnant with their last child. Significant

proportion of births i.e. 64.7 percent births were assisted by a doctor/nurse/LHV /ANM/other health personnel in comparison 43.4 percent reported in NFHS-1. Similarly 54 percent mothers who received postnatal care from a doctor/nurse/LHV/ANM/ other health personnel within 2 days of delivery for their last birth which is impressive and in line with the provision of postnatal care to monitor the postnatal recovery of the women and to detect complications early, followed by appropriate referral. It is estimated that 13 lakh deliveries take place out of which 25% are from BPL families. Among these, one fifth of them are in the difficult/ tribal/urban slums where access to public health services is limited. The trends in institutional delivery indicate that it is gradually increasing while home delivery is on decline. In the year 2006-07, about 67.63 % institutional deliveries were conducted, out of which 37.92 percent were conducted in public institution whereas 76 percent institutional delivery has been conducted in the year 2007 as per service statistics. It is noteworthy that 11.96 percent deliveries were conducted under Chiranjeevi Yojna (a special scheme for BPL women described separately) against institutional deliveries in 2007. The increase in the institutional delivery is the success story.

As per PIP of Gujarat 2008-09,

**Maternal Health Objectives were:**

a) Percentage of pregnant women receiving complete ANC*by 2010 - Early registration, increasing ANC and PNC are the core strategies for maternal health grassroots interventions which have been promoted through organizing Mamta Divas and ANC clinics
b) To increase coverage of post partum care (90%)
c) To increase the deliveries attended by Skilled Birth Attendants by 90% and institutional deliveries by 80%
d) To increase access to Emergency Obstetric Care for complicated deliveries
e) To improve access to RTI/ STI services in all PHCs and all CHCs

Multi-pronged strategies have been employed for reaching c, d, e, objectives in terms of capacity development (BEmOC, CEmOC), training to existing staff, hiring of technical staff (HR section), incentive scheme for existing staff for institutional delivery, specialists on call, up-gradation of health facilities etc.(8)

Jharkhand is the 28$^{th}$ state of the Indian Union and was brought into existence by Bihar Reorganisation Act on 15$^{th}$ November 2000. The state has an area of 79,714 sq kms and a population of 26.9 million,

with 24 districts, 35 sub-divisions, 212 blocks and 32615 villages. It has a sex ratio of 961 females per 1000 males and population consists of 26% tribals , 12% schedule casts and 62% others.

According to PIP 2009-10 for Jharkhand, the maternal health indicators are showing slow but steady progress.

| MMR | India | Jharkhand |
|---|---|---|
| 1999 -2001 | 327 | 400 |
| 2001-2003 | 301 | 371 |

(SRS2006)

Despite of numerous geographical challenges, the ANC registrations reached were 70% mainly due to RCH camps held regularly to promote this aspect. Although in overall Ante-natal care services the urban and industrialised areas have shown better performance as compared to tribal areas, hence the state average stands around 31%.

The institutional deliveries have shown poor performance of just around 13.6% for which serious efforts are being put to improve the situation. The major reasons for such low performance are:

1. Geographical inaccessibility
2. Lack of proper infrastructure and qualified human resource.
3. Cultural barriers
4. Blood storage units are non-functional at many places.

The state is taking several steps to improve maternal health indicators like:

1. Mukhya Mantari Janani Shishu Swasthya Abhiyan (MMJSSA)- Similar scheme as that of JSY , mainly to promote institutional deliveries and ante-natal care.
2. Improvement in referral transport services.
3. SBA training activities.(10)

According to a district-wise study conducted in newly formed states of Chhattisgarh, Uttaranchal and Jharkhand in 2004, the ANC coverage in Jharkhand is more than Bihar but still the more than 50% women do not receive ante-natal care services here (42.8% coverage, source RCH/RHS Phase I and II). Here almost, one-fourth of women in every district have availed the ANC facilities mainly because the government health facilities are comparatively better than Bihar. Although the proportion of women receiving full ANC services is less compared to other newly formed states, the proportion of 18.9% is far much better than 8% of women getting complete ANC in Bihar.

Though the ANC coverage of Jharkhand was higher than Bihar, but the institutional deliveries and rate of safe deliveries are almost same (15% and 20% respectively). The deliveries taking place in private institutions were more than that of public institutions.(11)

Hence overall it was observed that although Gujarat is a well-developed state, still the maternal health services needs improvement to reach the MDG. The state of Jharkhand is newly formed, hence adequate data is not available, and also the research studies conducted are also less. Overall it was observed that due to large amount of tribal population, the state is far behind Indian average and needs a lot of improvement in all aspects to make the situation of maternal health satisfactory. The state has put forth its initiatives put it requires continuous monitoring and analysis to plan its future activities in much rapid pace.

# CHAPTER 2- METHODOLOGY

1. **STUDY DESIGN**- Retrospective, Secondary Study

2. **STUDY SETTING-** Statistics Division, Ministry of Health and Family Welfare, GOI

3. **SAMPLE SIZE-** Total 50 districts of Gujarat and Jharkhand, two years data-2008-09 and 2009-10

4. **SAMPLING METHOD-** Convenience sampling method was used

5. **INCLUSION CRITERIA-** Districts of Gujarat and Jharkhand, for 2008-09, 2009-10, only maternal health indicators that broadly includes, antenatal care, delivery care and post-partum care indicators**.**

6. **METHODS OF DATA COLLECTION-**

**1.** Monthly consolidated reports of Gujarat and Jharkhand across districts was generated for last two years from HMIS of NRHM.

2. NFHS and DLHS-III reports-from the download section of the portal

3. PIPs of Gujarat and Jharkhand-2009-10

7. **STATISTICAL ANALYSIS**: Proportions were calculated using MS-Excel and Graphs were made.

# CHAPTER 3- RESULTS AND DISCUSSION

For the purpose to this study, two years data was taken (2008-09, 2009-10) from the HMIS portal, for both the states and respective indicators were compared for their performance.

The indicators used for evaluation of maternal healthcare services in Gujarat and Jharkhand are:

**A. Antenatal care**

1. Proportion of ANC registrations done in the 1st trimester
2. Proportion of pregnant women receiving complete three ANC checkups
3. Proportion of pregnant women who were anaemic.
4. Proportion of women who were given 100 IFA tablets.
5. Proportion of women who were given TT injections.

**B. Delivery Care**

**1.** Proportion of institutional deliveries.

**2.** Proportion of unsafe deliveries conducted.

**3.** Proportion of women who were paid JSY incentive out of total women who were registered under JSY.

**C. Post- partum care**

**1.** Women receiving post-partum checkups within 48hrs of birth.

**2.** Women receiving post-partum checkup between 48hrs and 14 days.

## 1. TOTAL PREGNANT WOMEN REGISTERED IN THE 1ST TRIMESTER FOR ANC

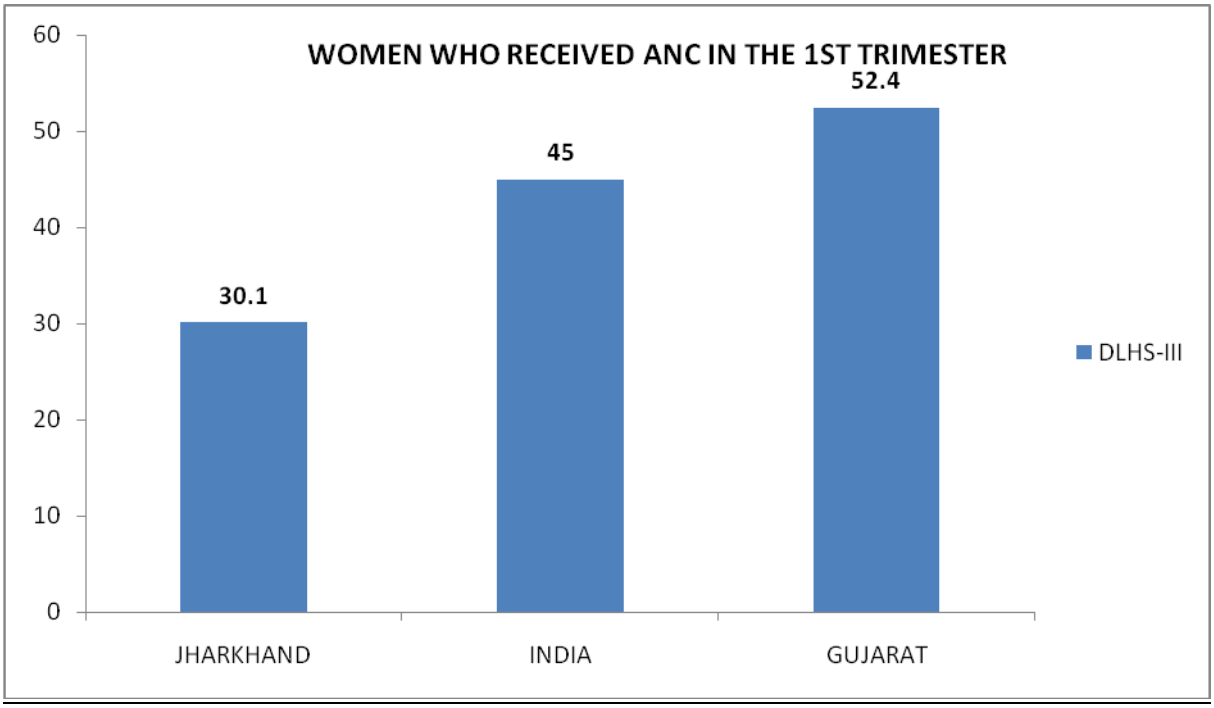



Figure: 1

According to DLHS-III, Gujarat shows very good performance in ANC registrations of 1st trimester, which is better than average Indian performance, whereas Jharkhand shows lower performance than Indian average with just 30.1% women registering in the 1st trimester.

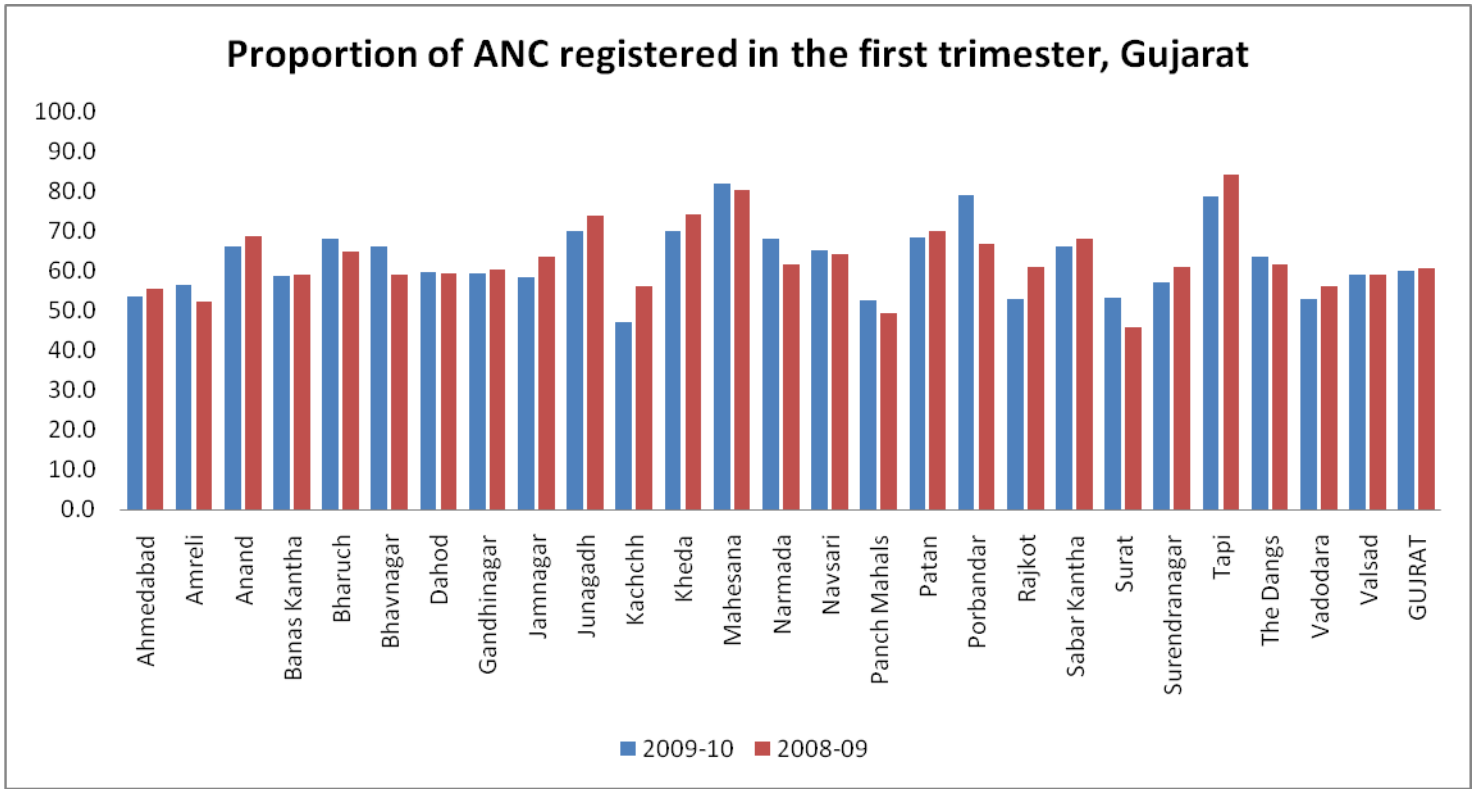



**Figure: 1.1**

Early registration for ANC means better care and treatment of the pregnant woman. The overall average of women registered in the 1st trimester for ANC (out of total ANC registrations) in Gujarat has been almost same for both the years (60 %-2009-10, 60.7%-2008-09) specifically it has shown a decline of 0.7% in 2009-10. On comparing the 26 districts, 14 districts have shown decline as compared to previous year, highest decline being in Kachchh and Jamnagar of almost 9% and 5.3% respectively. On the contrary few districts have shown a good growth, highest being in Porbandar and Bhavnagar (12% and 6.9% respectively)

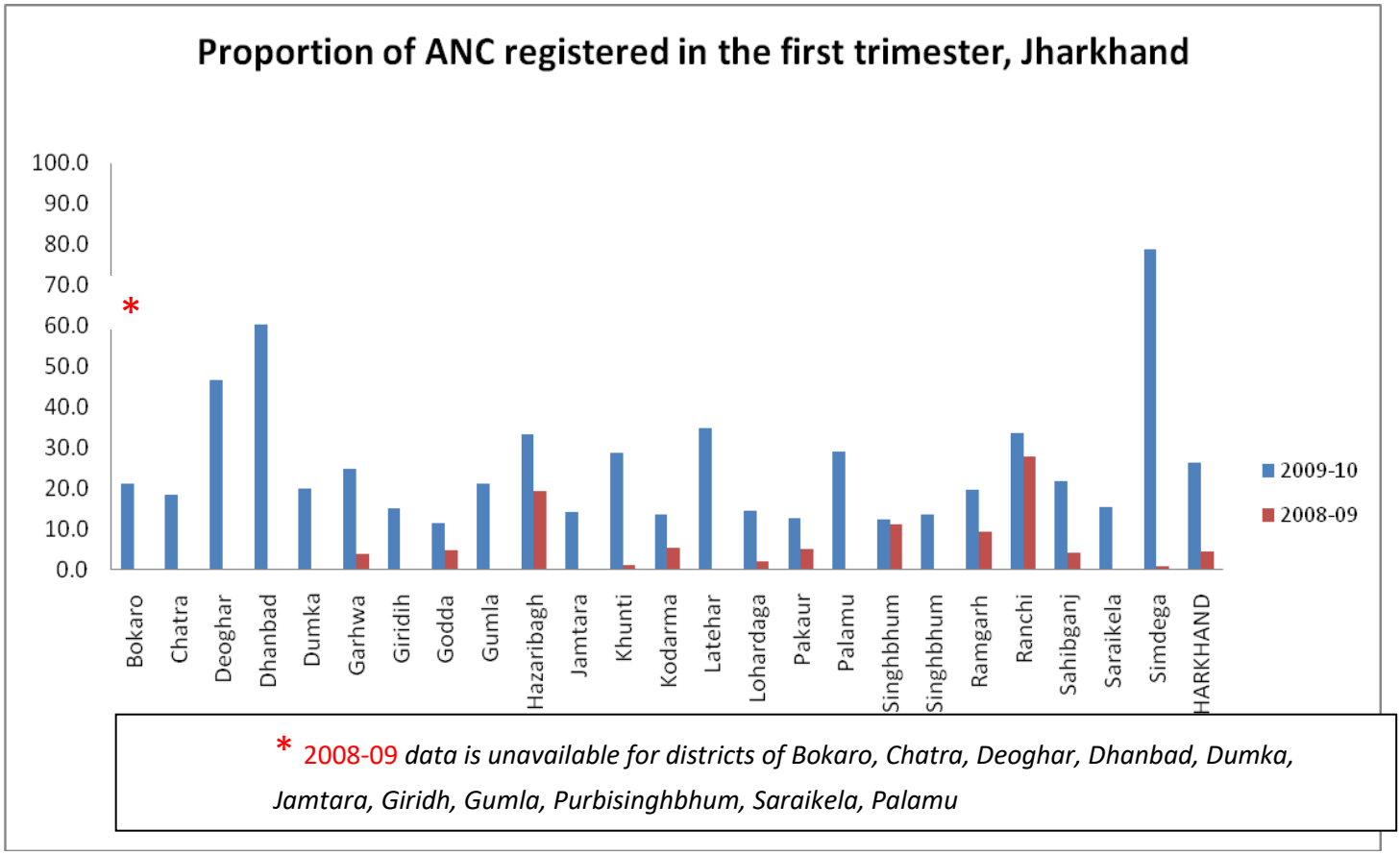



**Figure: 1.2**

As shown in the above graph, Jharkhand has shown a good growth from 4.3% to 26.2% ANC registrations in the 1st trimester. Here the data is incomplete for the year 2008-09 as it can be seen that may districts have not reported their figures, but comparatively the data quality and reporting has improved in 2008-09, still the number of women getting registered in the 1st trimester is quite low as compared to all India figures and that of Gujarat.

## 2. WOMEN RECEIVING THREE COMPLETE ANC CHECKUPS

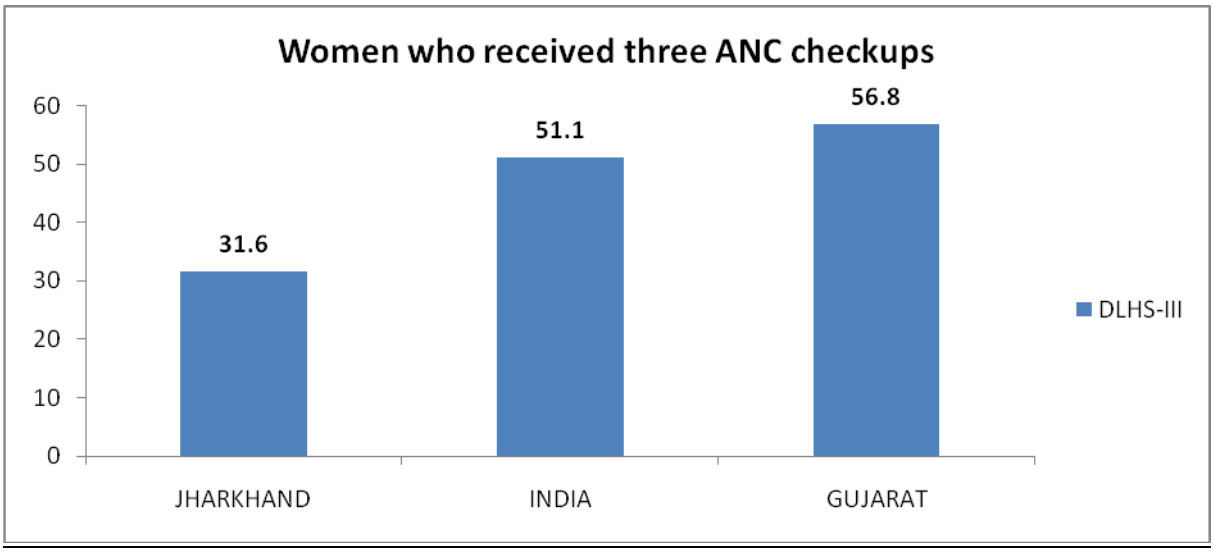



**Figure: 2**

Again, according to DLHS-III data Gujarat shows better performance in complete ANC checkups than all India average, and Jharkhand performs below Indian average with 31.6% complete ANC checkups for women who were registered under ANC.

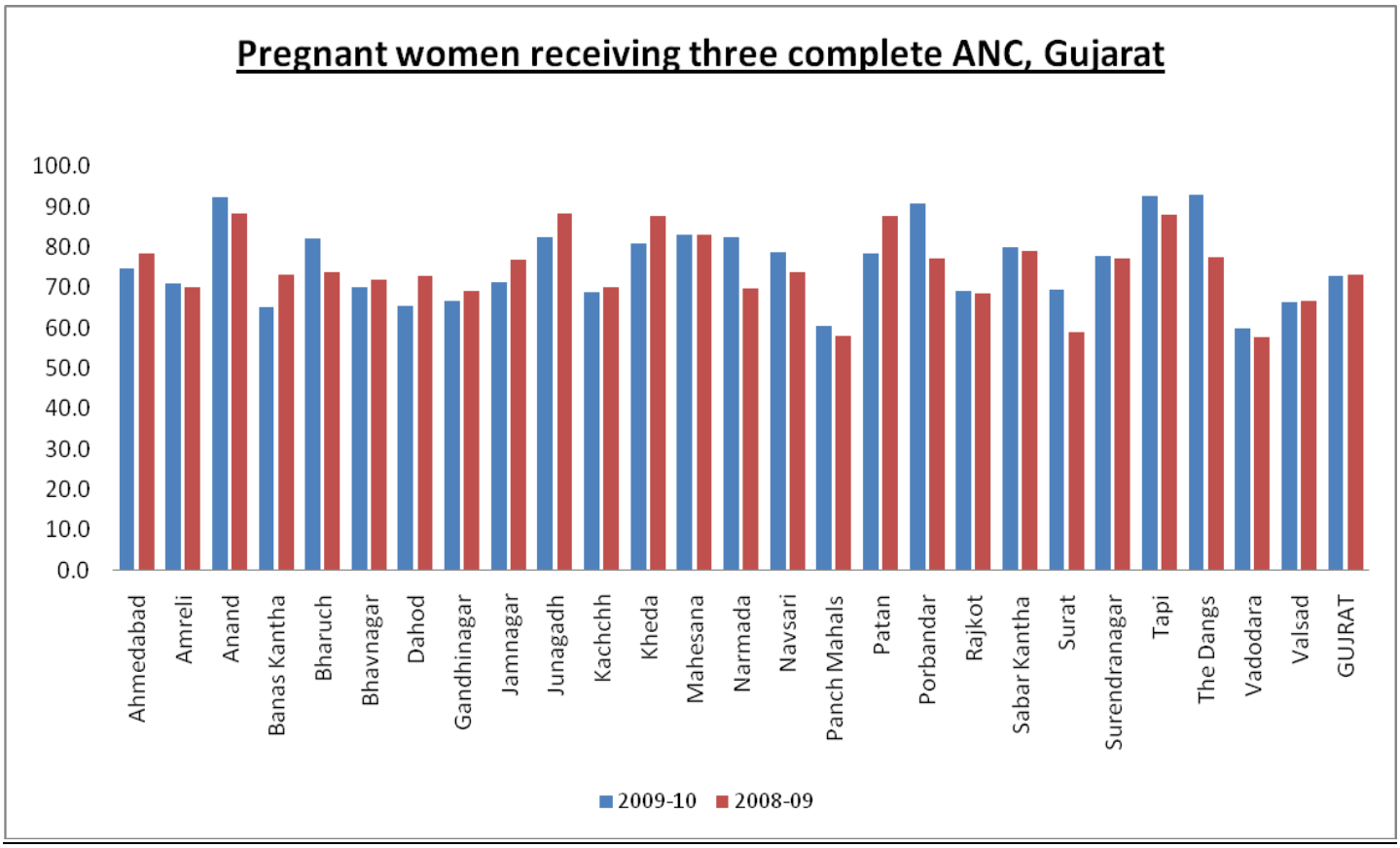
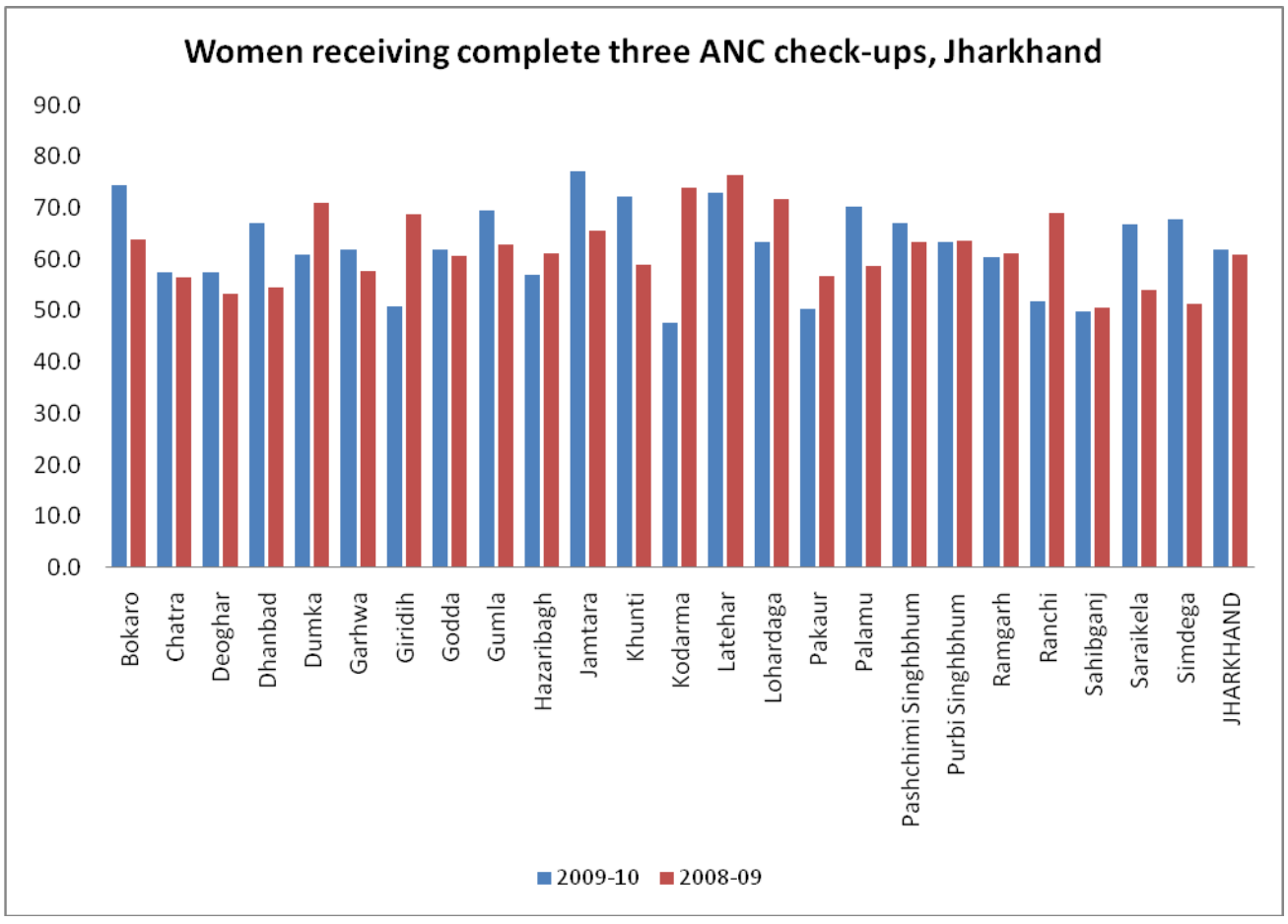


**Figure 2.1**

Women availing complete ANC checkups assure healthy pregnancy and better pregnancy outcome in terms of infant born. Gujrat on an average shows almost an unchanged rate of women receiving three complete ANC. , Among the districts, The Dangs and Porbandar have shown a remarkable increase of almost 15.6% and 13.6% respectively. On the other hand, districts of Patan and Banas Kantha have shown a decline in the figures of about 9.3% and 8% respectively .Overall Gujarat shows a decline of 0.2% as compared to the previous year.




.

**Figure 2.2**

At the state level, the women getting complete three ANC checkups have increased by approximately 1% as compared to 2008-09 (61.0%-2008-09, 61.9%-2009-10). The values are comparatively lower when compared to Gujarat, but majority of the districts in Jharkhand have shown considerable increase in number of complete ANC checkups. Districts of Simdega and Khunti have shown an increase of about 16.1% and 13.1%

respectively, but around six districts have shown considerable fall in the values, highest decline being reported Kodarma and Giridh of 26.4% and 18% respectively.

### 3. PROPORTION OF PREGNANT WOMEN WITH ANAEMIA

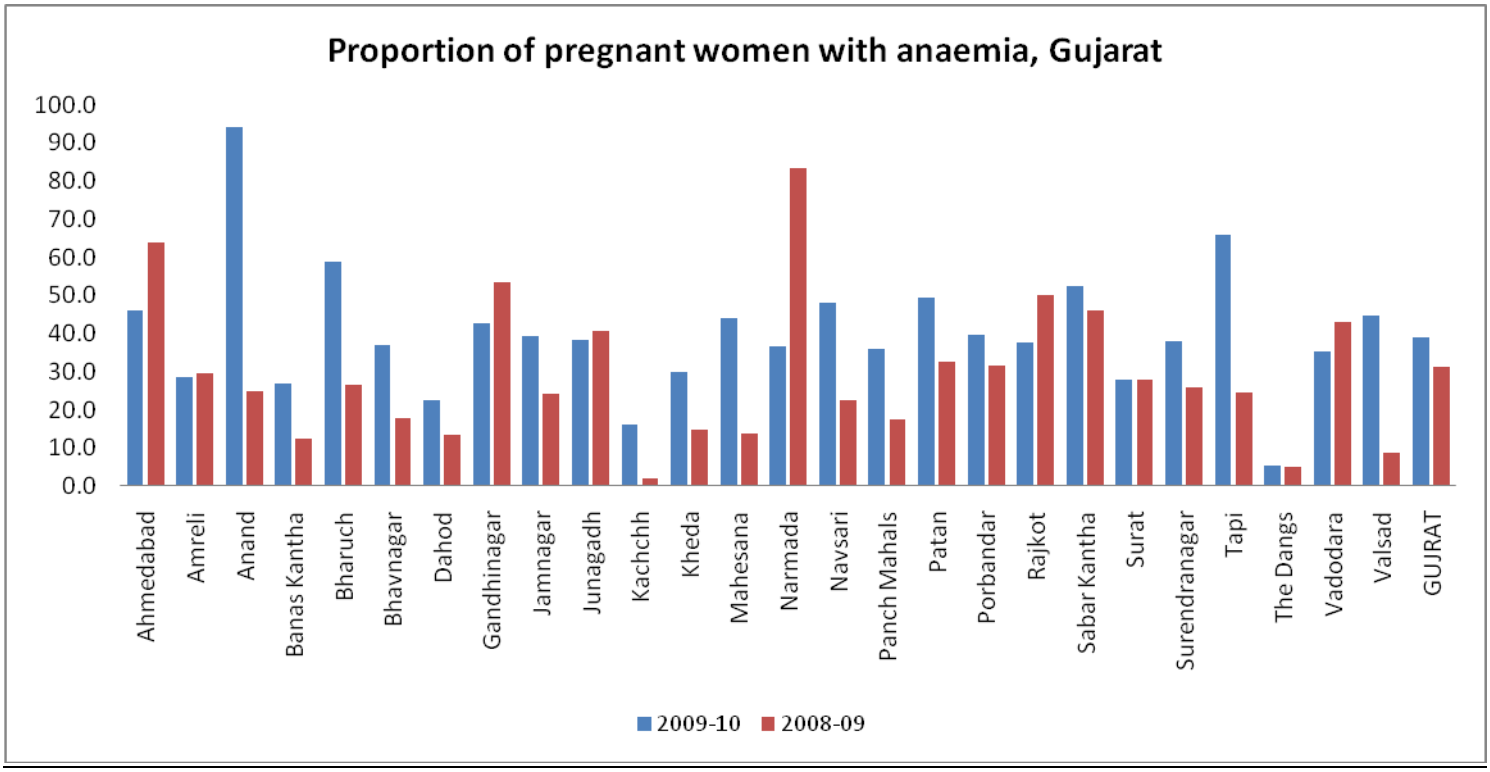
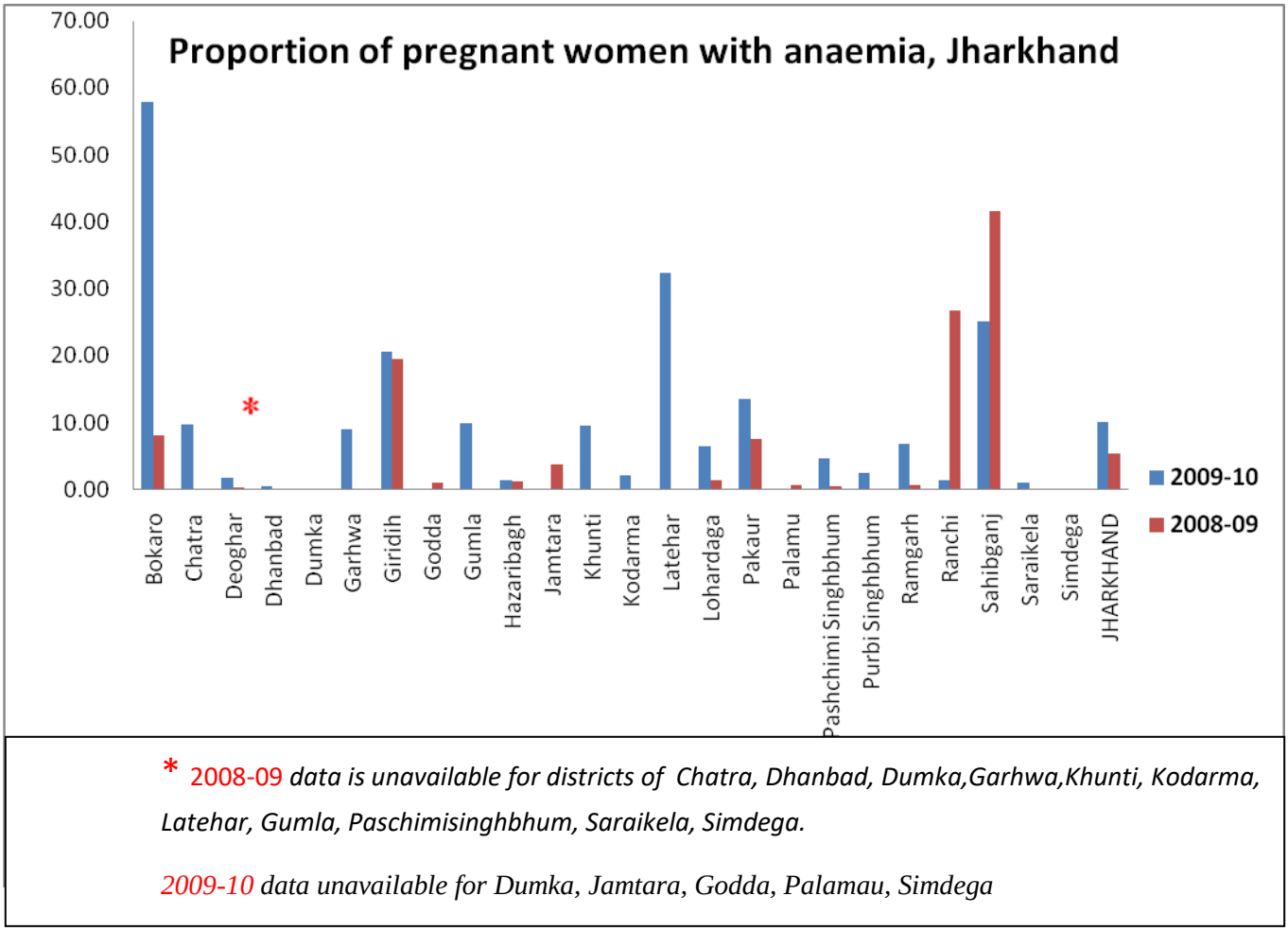



**Figure 3**

As compared to 2008-09, the number of pregnant women with anaemia seems to have risen from 31.1% to 38.9% in 2009-10. In district wise analysis, except six districts ,in which Narmada shows a considerable decline in number of anaemic women of about 47%, rest majority of the districts show increase in the number of anemia cases, highest increase being reported in Anand district (69.1%). Hence by looking at this condition, iron and other nutrient supplement use needs to be motivated during ante-natal checkups.




* 2008-09 *data is unavailable for districts of Chatra, Dhanbad, Dumka,Garhwa,Khunti, Kodarma, Latehar, Gumla, Paschimisinghbhum, Saraikela, Simdega.*

*2009-10 data unavailable for Dumka, Jamtara, Godda, Palamau, Simdega*

**Figure: 4**

As depicted in the graph, the data for 2008-09 is not complete and consistent (both the data is not reported or may be wrongly reported). With the available data it is observed, that number of pregnant women cases have increased from 5.4% to 10.06% in 2009-10, but the district wise analysis shows few districts were considerable decline have been marked, Ranchi and Shahibganj and shown a decrease of 25.2% and 16% respectively. But majority of the districts, have shown a very high rise of almost about 49.6% in Bokaro, the incompleteness and inconsistency in the 2008-09 data may be the reason.

## 4. TOTAL PREGNANT WOMEN WHO WERE GIVEN 100IFA TABLETS

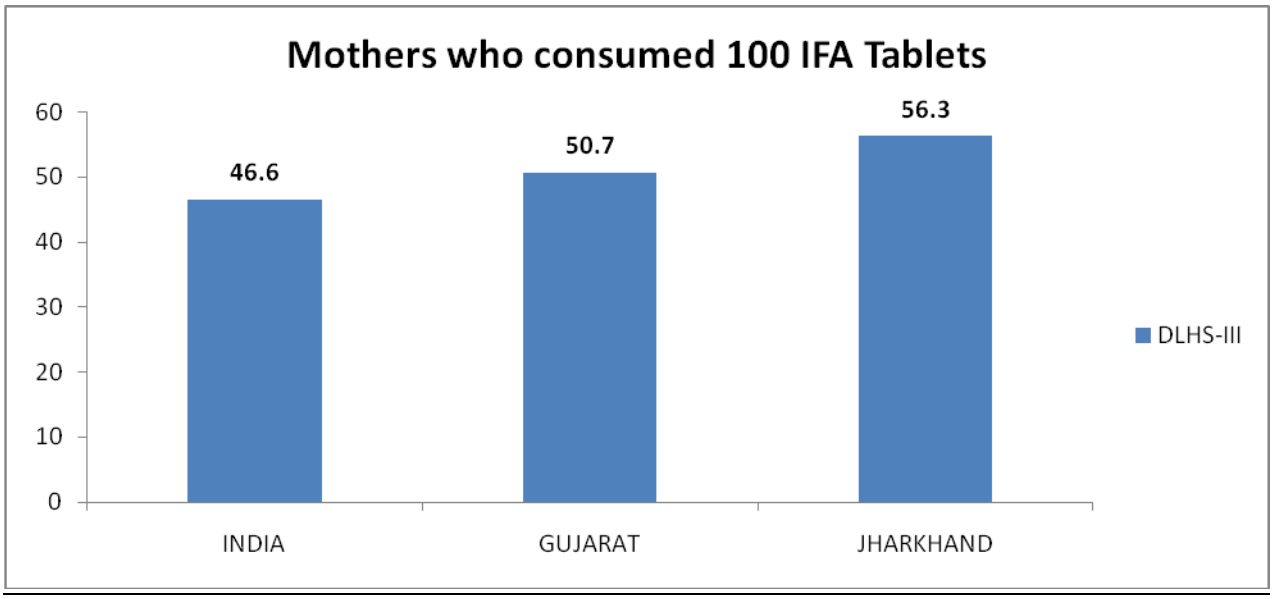



**Figure: 5**

Iron and folic acid tablets are given to pregnant woman to support their increased demand for iron, during pregnancy. According to DLHS –III highest proportion of women in Jharkhand were given 100 IFA tablets as compared to Indian average of 46.6%. Both Gujarat and Jharkhand distributed higher proportions of IFA tablets than Indian average.

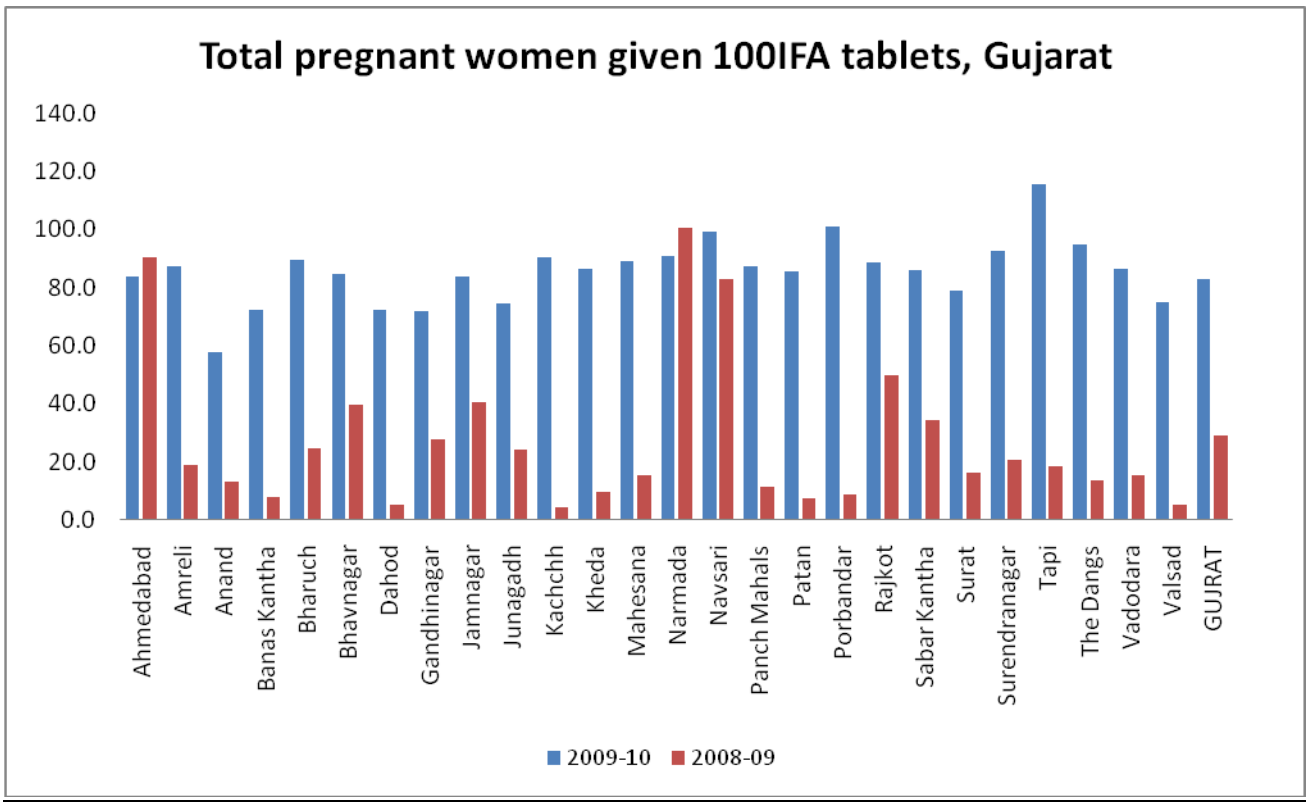



**Figure: 5.1**

According to the data reported on the HMIS portal, Gujarat shows an increase in number of anaemia cases as compared to last year, hence the distribution of IFA tablets were improved from 29% to 83% in 2009-10. But when we look at the district data, overall we see improvement in almost every state , but few districts like Narmada, Porbandar, Tapi (proportions- 100.2%, 100.9%, 115.7% respectively) they show very high proportions may be because there is wrong reporting of data(number of IFA tablets instead of number of pregnant women). But on a whole (except wrong reporting by Porbandar and Tapi) Gujarat shows a good improvement in providing IFA tablets to improve the health of pregnant women.

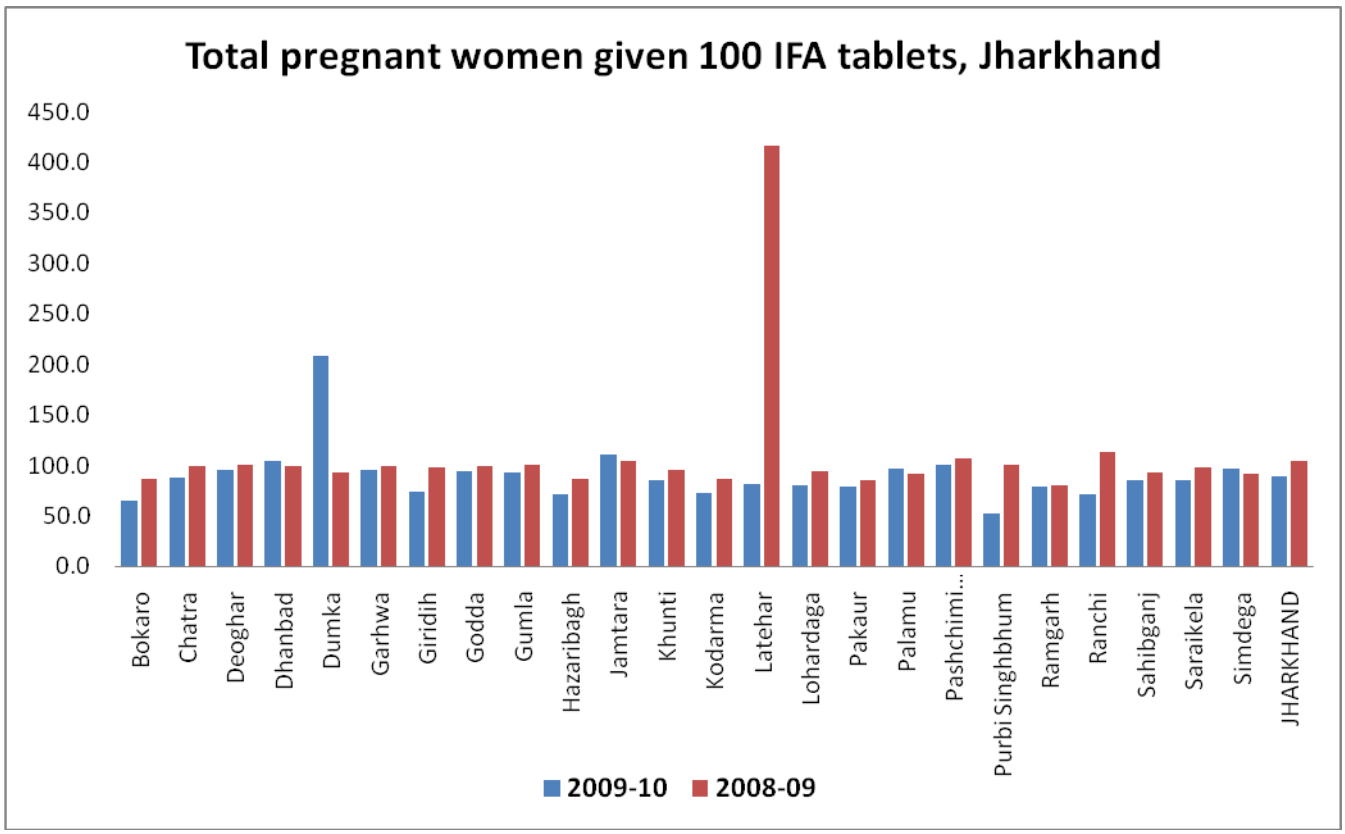



**Figure: 5.2**

Despite of over/wrong reporting by few districts, Jharkhand as a whole shows a fall in distribution of IFA tablets although the numbers of Anaemia cases seem to increase when compared to 2008-09. Wrong reporting of figures have occurred probably because districts have entered number of IFA tablets instead of number of women who were given those tablets hence the state shows a steep fall in number of tablets distributed when compared to previous year by 15.7%.But overall, 88.7% pregnant women are given IFA tablets that depicts a distribution practice by the state.

## 5. PROPORTION OF INSTITUTIONAL DELIVERIES

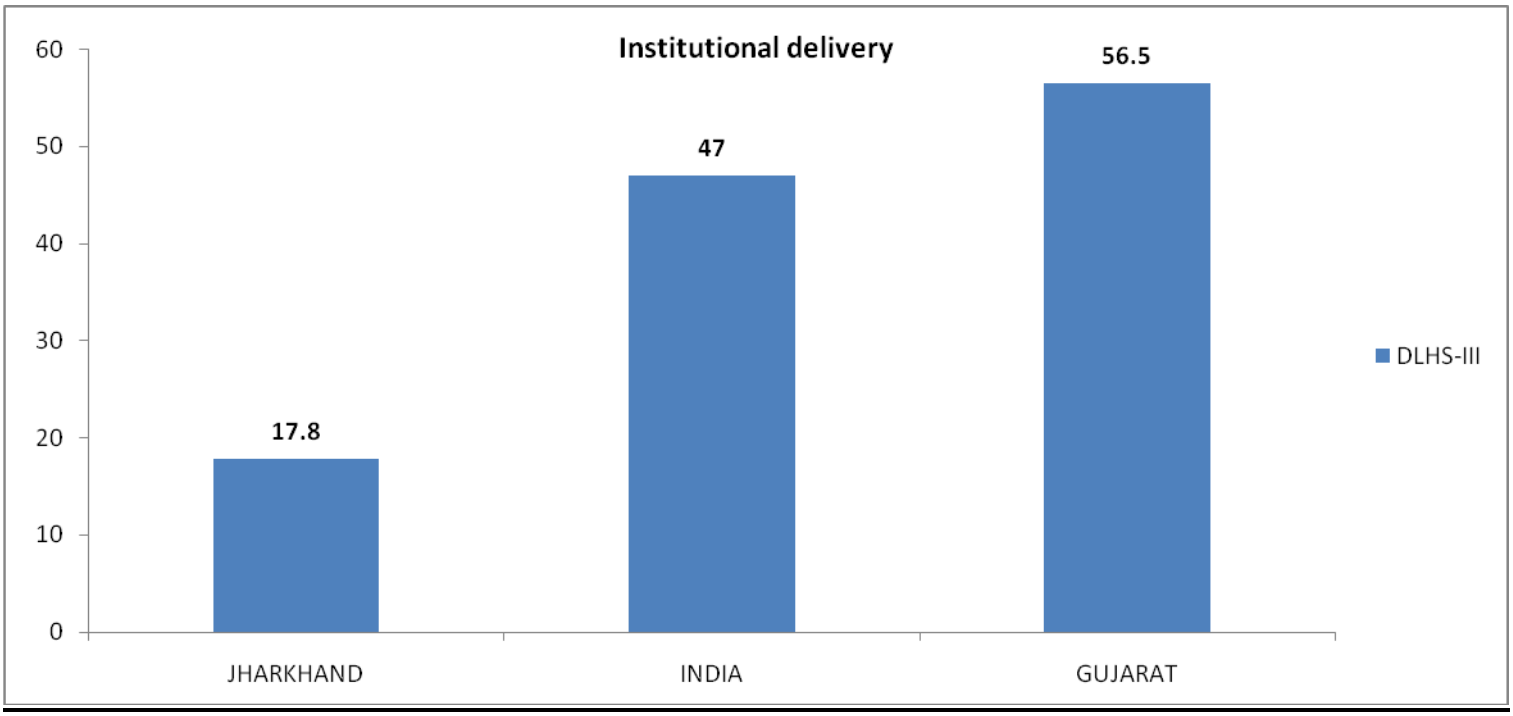



**Figure: 6**

Institutional deliveries are motivated under NRHM as it increases the probability of mothers having safe and skilled delivery, which indirectly reduces still births and complications during and after delivery. DLHS-III shows Gujarat with higher proportion of institutional deliveries than Indian average of 47%. Jharkhand shows very poor performance with just 17.8% of institutional deliveries, far below the national average.

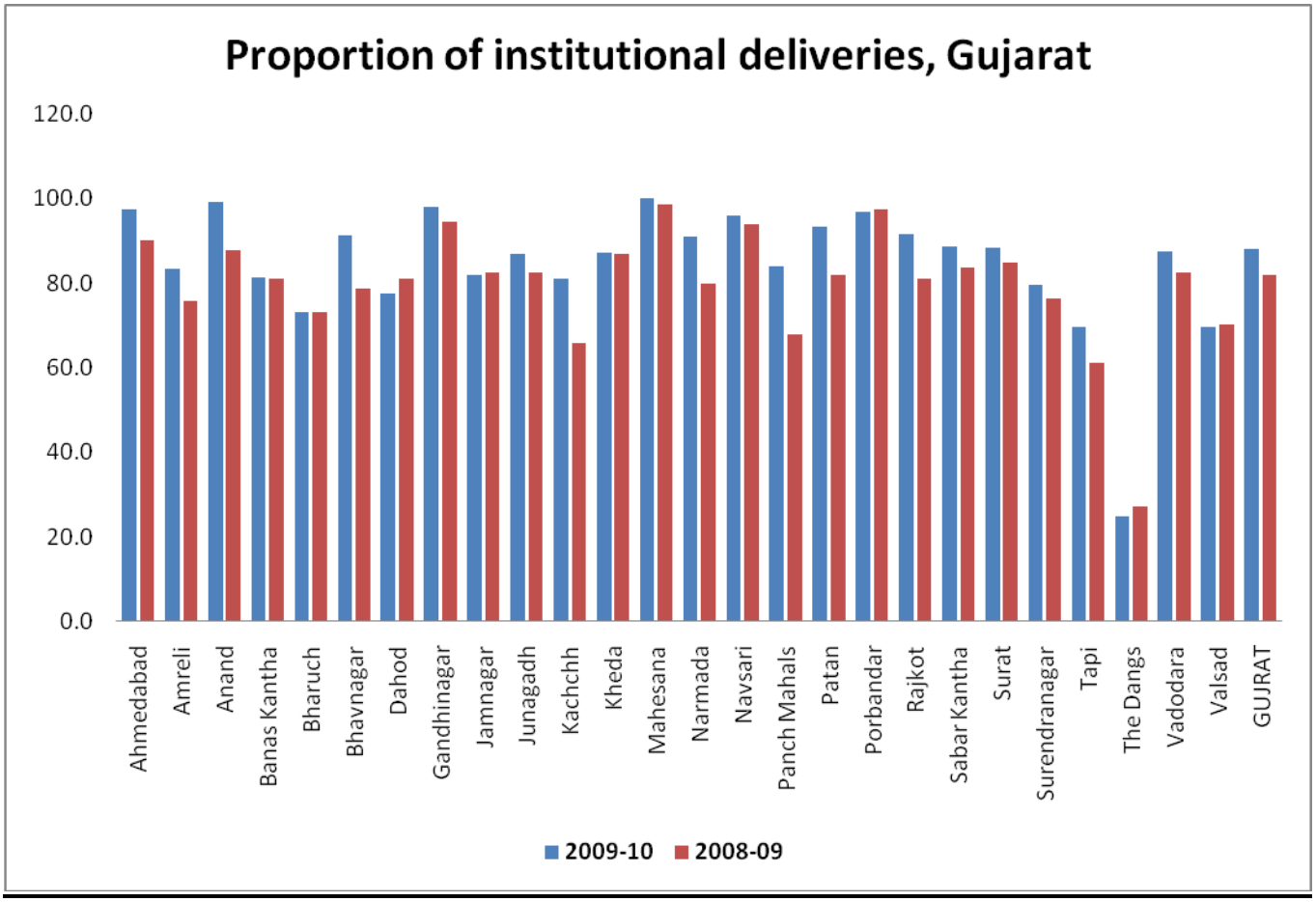
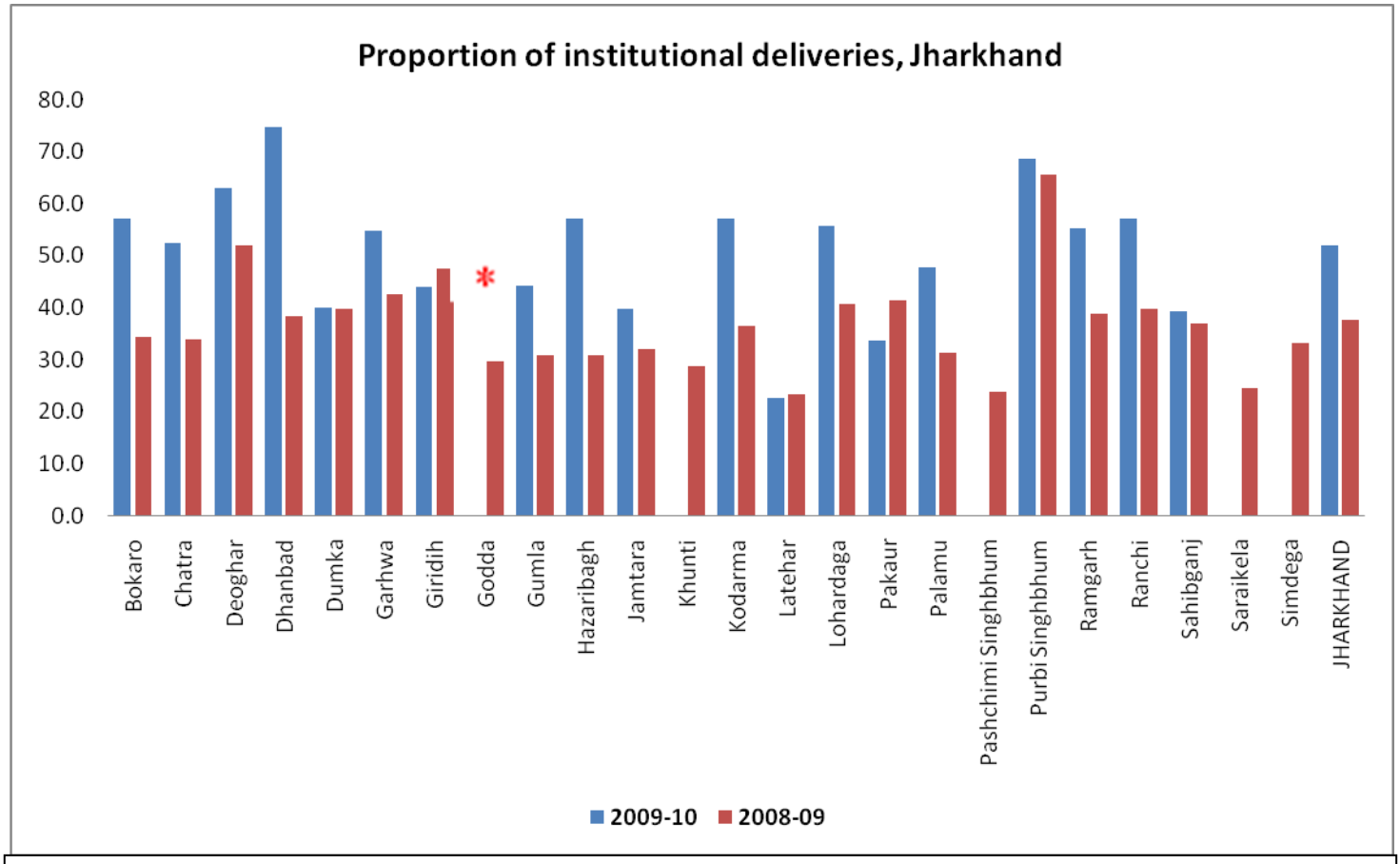



**Figure: 6.1**

Deliveries carried out in institutions ensure a good care both to the mother and infant provided by skilled medical professionals. The state of Gujarat shows an increase about 6% in their institutional delivery rate out of total deliveries taking place, being 82% in 2008-09 which increased to 88.1% in 2009-10. Except for few districts which have shown a minor fall in their institutional deliveries, majority of the districts have shown a good rise, maximum increase of up to 16% by Panch Mahal which denotes more number of safe deliveries which reduces the chances of maternal mortality and ensures good health and care of the newborn.




* *2009-10 data unavailable for Khunti, Godda,Paschimisinghbhum ,Saraikela, Simdega*

**Figure: 6.2**

The overall state proportion shows a good increase from 37.6% to 51.9% in 2009-10 for institutional deliveries although few districts have not reported their values in 2009-10. On district-wise analysis, l

Latehar and Pakaur shows a decline 0.8% and 7.7% respectively, but majority of the districts depict good improvement in their institutional delivery rates, Dhanbad depicting highest rise of about 36.5%. But, despite after the improvement from the previous year, the performance of Jharkhand is far below that of Gujarat.

## 6. PROPORTION OF UNSAFE DELIVERIES OUT OF TOTAL DELIVERIES

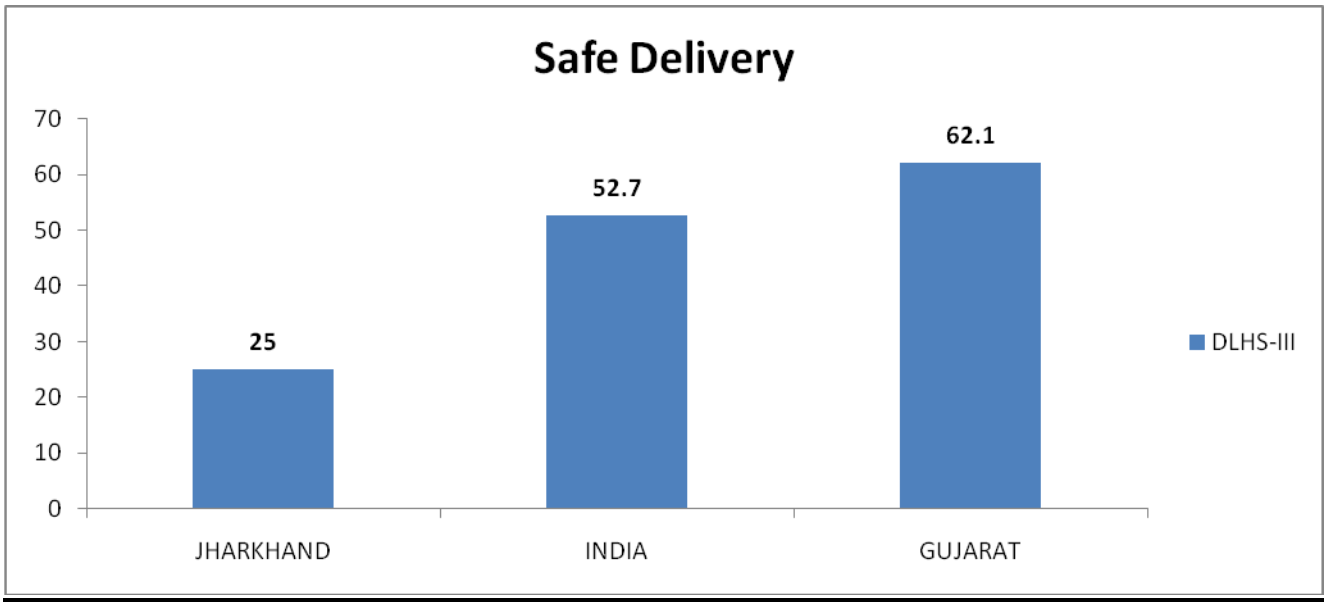



**Figure: 7**

Deliveries carried out in the institution or under the assistance of SBA trained personnel are considered safe. As per, DLHS-III , Gujarat reports good performance showing higher proportions of safe deliveries as compared to national average of 52.7%. On the other hand, Jharkhand shows a lower performance with just 25% safe deliveries.

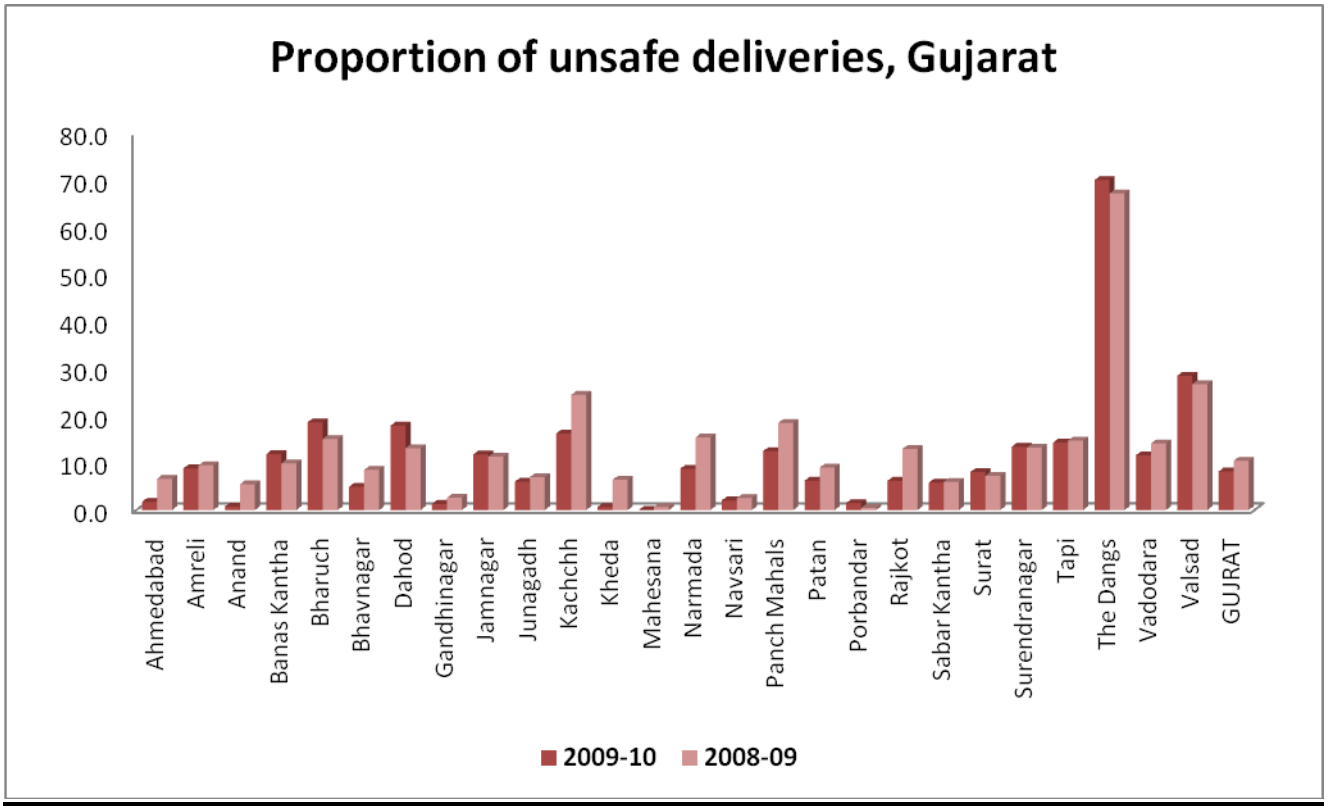



**Figure: 7.1**

As seen previously, there has been improvement in the institutional delivery rate that might be a reason that the proportion of unsafe deliveries have declined from 10.5% to 8.2% in 2009-10. On district wise analysis, The Dangs reports very high rates of unsafe deliveries of about 70%(which has increased)in 2009-10 which might lead to maternal mortality and increased still births in the district. Majorly all the districts have shown an improved situation as unsafe deliveries have reduced compared to 2008-09, a good improvement depicted by Kachchh which shows a decline of 8% in the rate of unsafe deliveries.

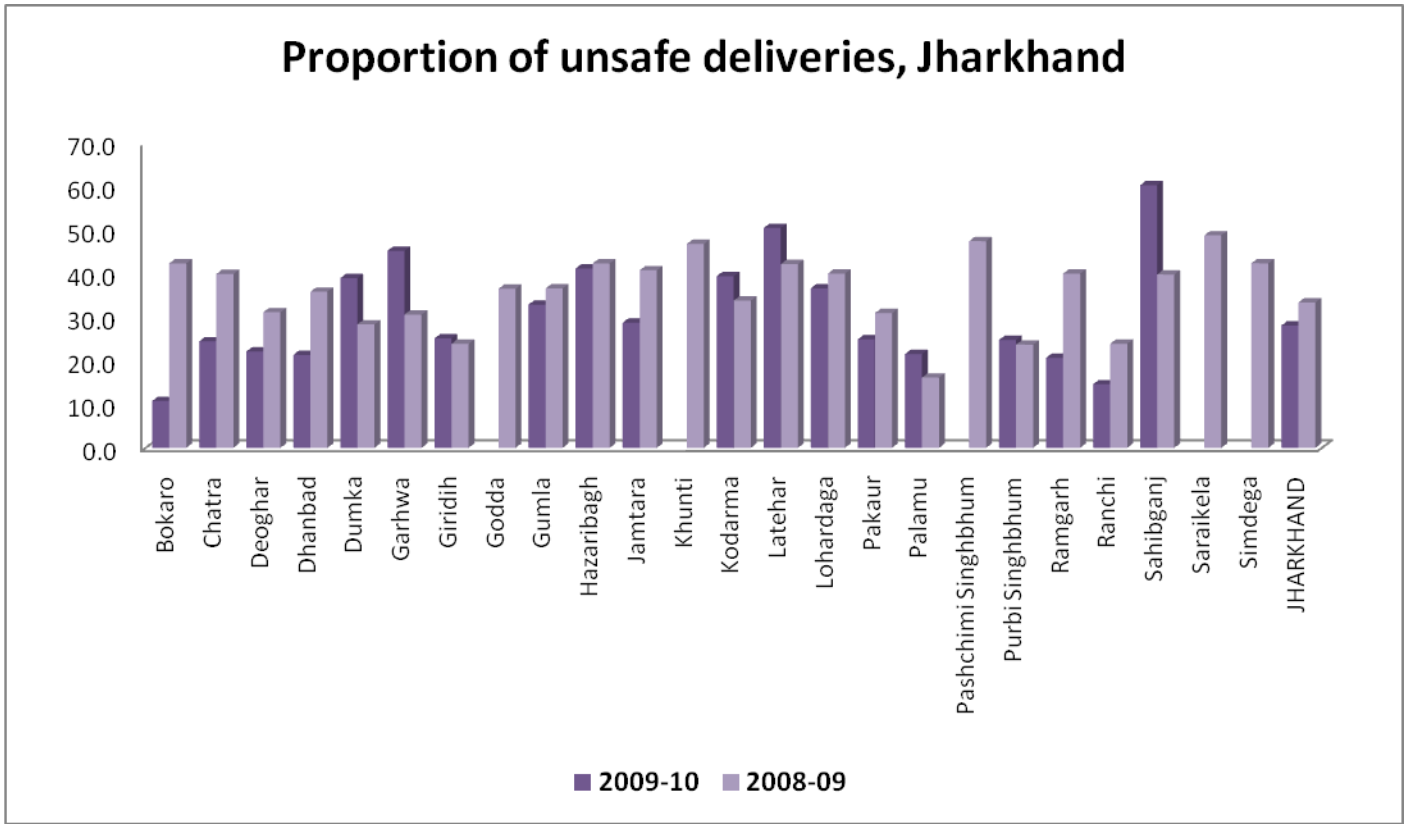



**Figure: 7.2**

Although the overall state performance shows an improvement by decline in the number of unsafe deliveries from 33.4% to 28.0% in 2009-10, but the district wise analysis shows increase in the rate of unsafe deliveries in many of the districts, highest rise being reported in Sahibganj of about 20%. On the other hand a remarkable decrease has been shown by Bokaro of about 31.6%, although the state shows a decline in unsafe deliveries may be because few districts have not reported their figures for 2009-10.

## 7. NUMBER OF PREGNANT WOMEN RECEIVING TT IMMUNISATION

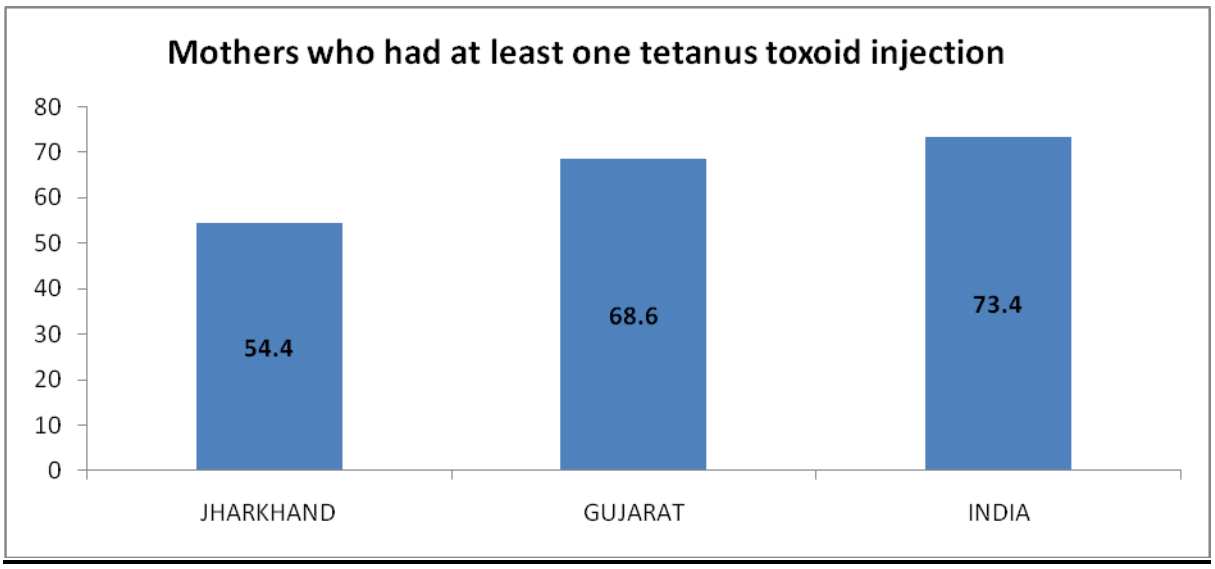



**Figure : 8**

According to DLHS –III data both Gujarat and Jharkhand perform below the national average to TT immunisations under ante-natal care. Gujarat performs comparatively better than Jharkhand with 68.6% TT immunisations.

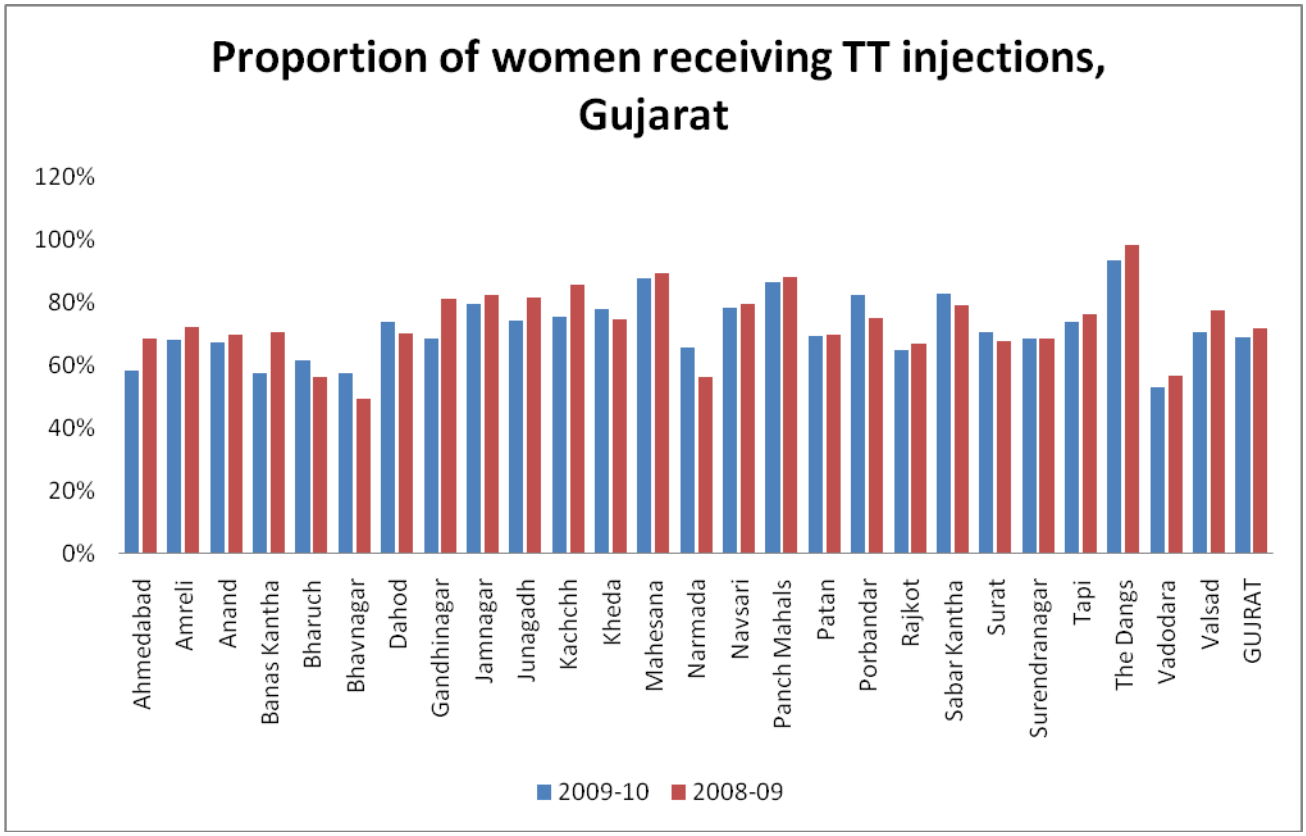



**Figure 8.1**

Gujarat shows a decline in TT immunisations by 2-3% in 2009-10. Overall, district wise analysis shows very minor changes in the performance of two years , few districts have improved slightly while few have declined very slightly in their TT immunisation coverage.

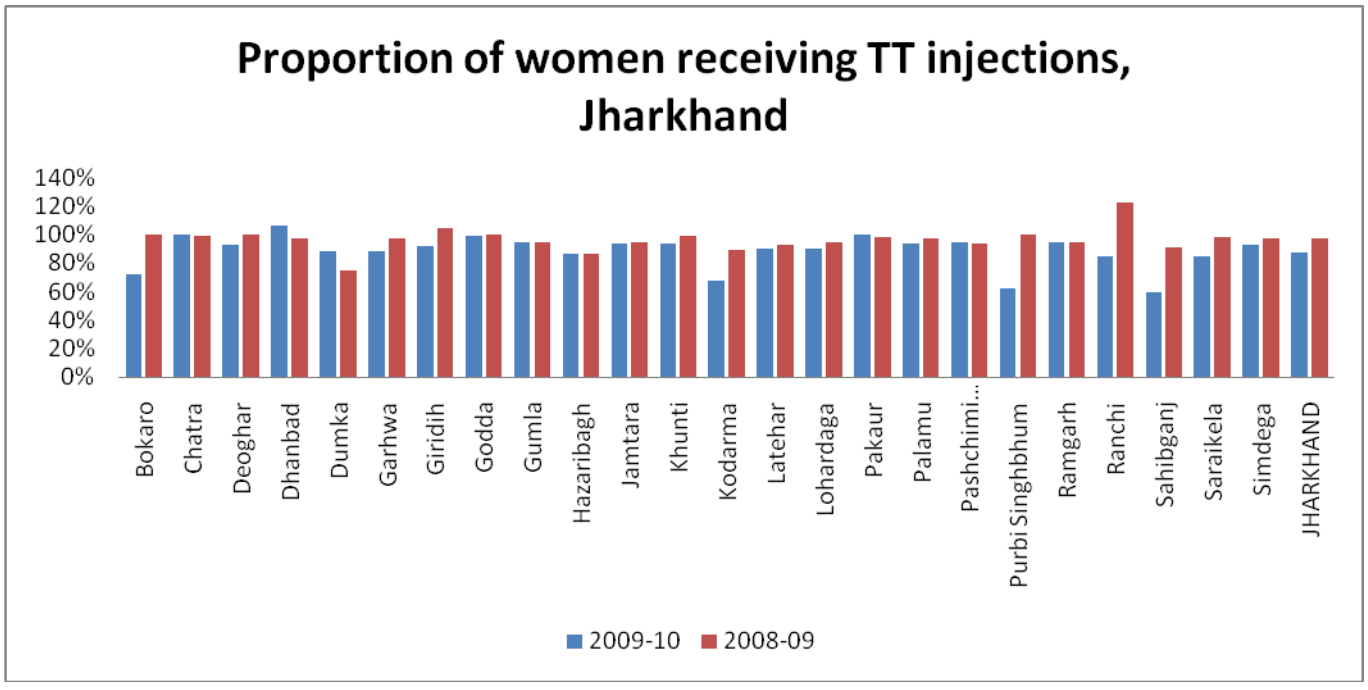


**Figure 8.2**

A similar trend was observed in Jharkhand with a decline in the TT immunisations of around 10%. But here the increased proportions in 2008-09 are because of over-reporting by few districts. 2009-10 data is comparatively more accurate and Jharkhand shows a better performance than Gujarat.

## 8. TOTAL MOTHERS WHO WERE PAID JSY INCENTIVE

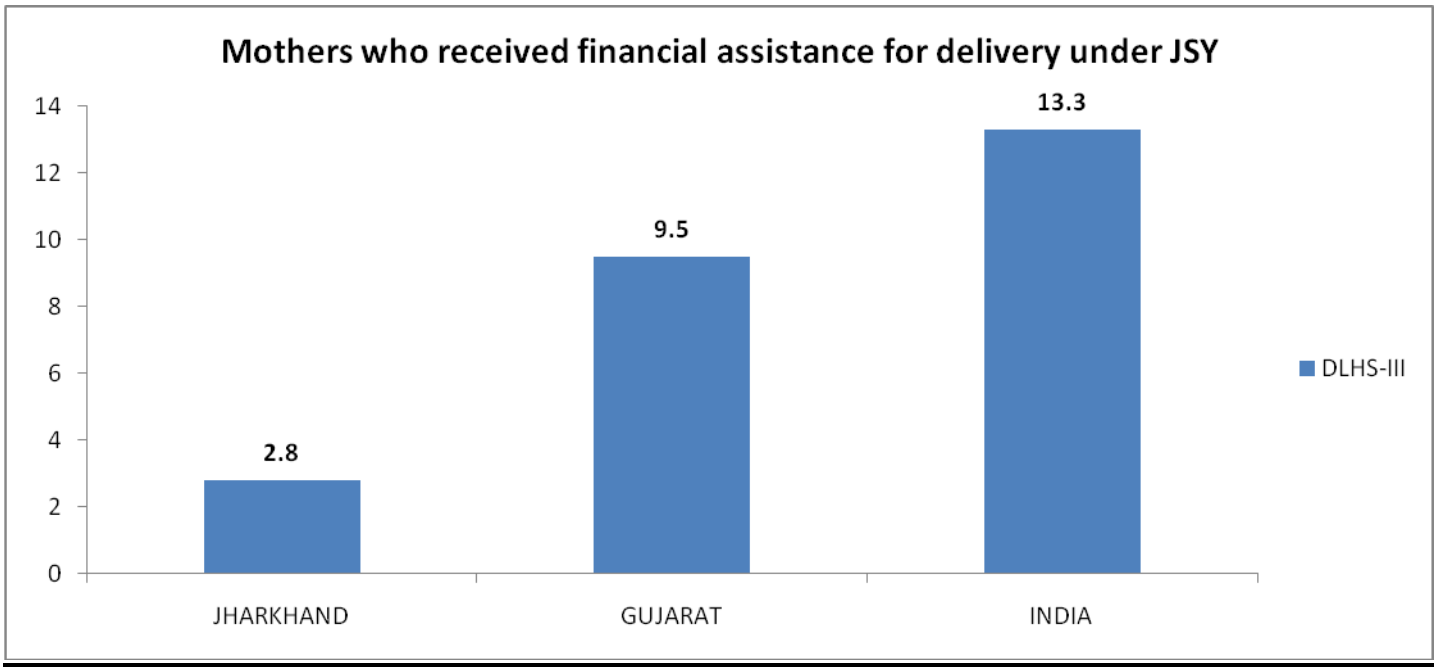



**Figure: 9**

Janani Suraksha Yojna is an incentive scheme operationalised under NRHM mainly to promote institutional and safe deliveries. Although the national average of women who are paid this incentive is low, the coverage under Gujarat and Jharkhand are lower than the national average of 13.3% ( as per DLHS III)

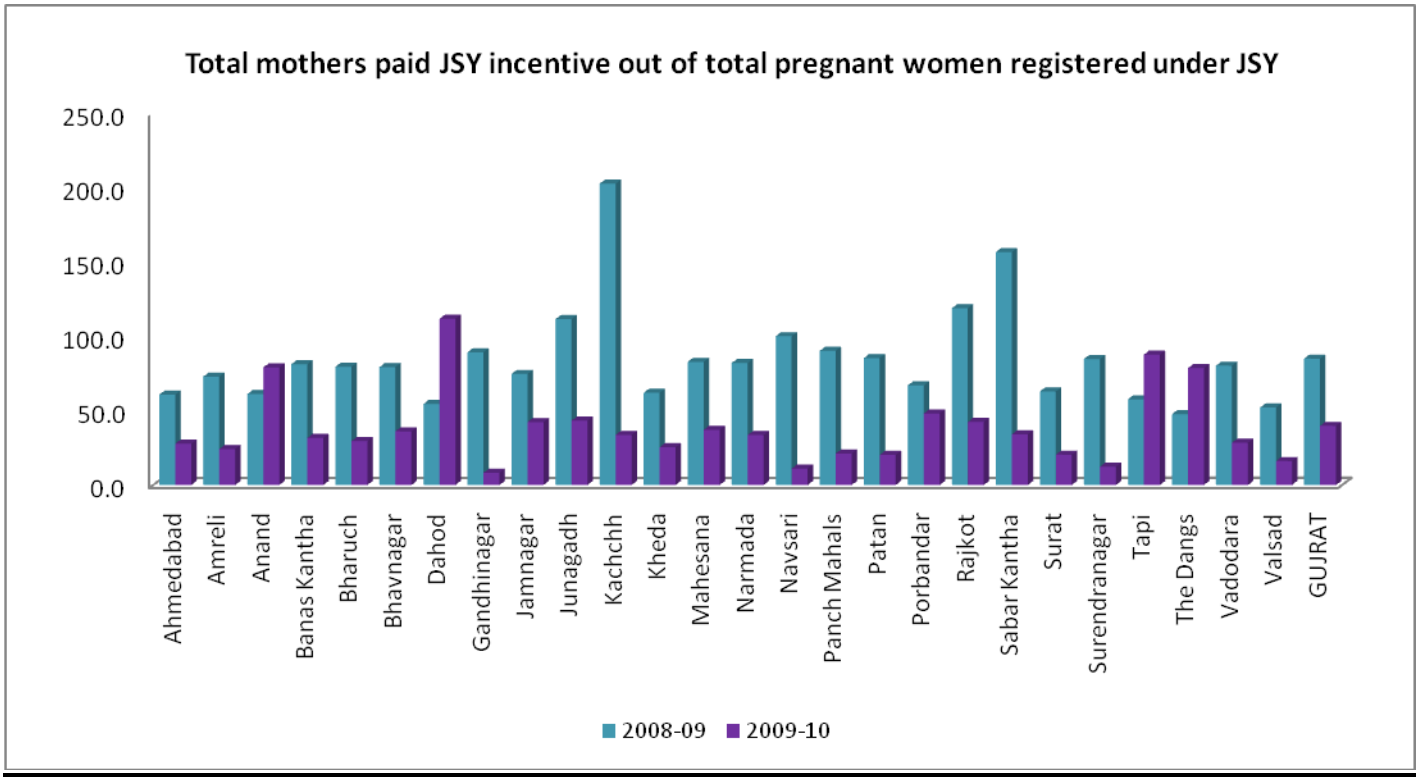
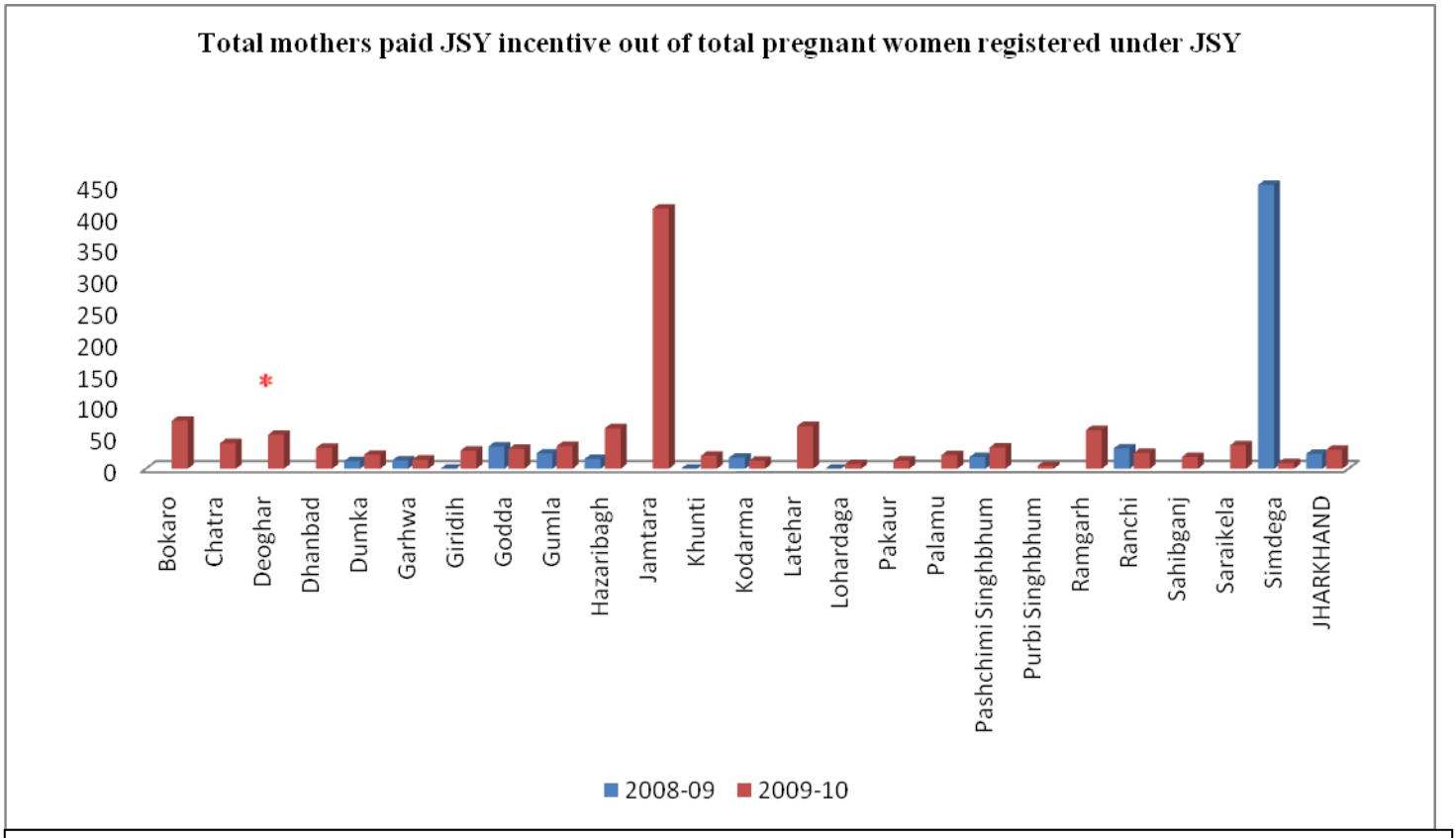



**Figure: 9.1**

As shown in the graph, the total number of mothers paid incentive under JSY has reduced drastically in 2009-10, but district wise analysis shows that total state proportion for 2008-09 has many states with proportions higher than 100. The cause of such type of reporting by the districts have been analysed that they have reported amount of JSY incentive rather reporting number of mothers who were given that incentive. The data for 2009-10 is more consistent and reports highest proportion of 87.7% women was given the incentive in the Tapi district, in 2009-10. On the other hand, lowest proportions for women paid JSY incentive was depicted by Gandhinagar which was only 8.8% of total women registered under JSY. The probable cause could be either the data was not captured or the incentive was paid after the end of financial year.




* *2008-09 data unavailable for Bokaro, Chatra, Deoghar, Dhanbad, Jamtara, Latehar, Pakaur, Palamu, Ramgarh, Sahibganj, Saraikela*

**Figure 9.2**

As we can clearly see from the above graph, the data for 2008-09 in Jharkhand is quite incomplete; around 12 districts have not reported the values, hence the state total figures are quite low i.e 23.6%. The data for 2009-10 is comparatively more complete but still the reporting by few districts like Lohardaga, Purbisingbhum are quite low. The major cause identified for such low reporting was mainly the incentive paid to the mothers for home delivery remains un-captured. Also, as we can see Jamtara and Simdega have very high figures because here instead of reporting number of mothers, the incentive paid to them was entered. Hence, it can concluded that states have understanding issue related to this indicator, moreover either the incentive is not being paid especially for home deliveries or they remain uncaptured.

## 9. PROPORTION OF WOMEN RECEIVING POST-PARTUM CHECKUP OUT OF TOTAL DELIVERIES

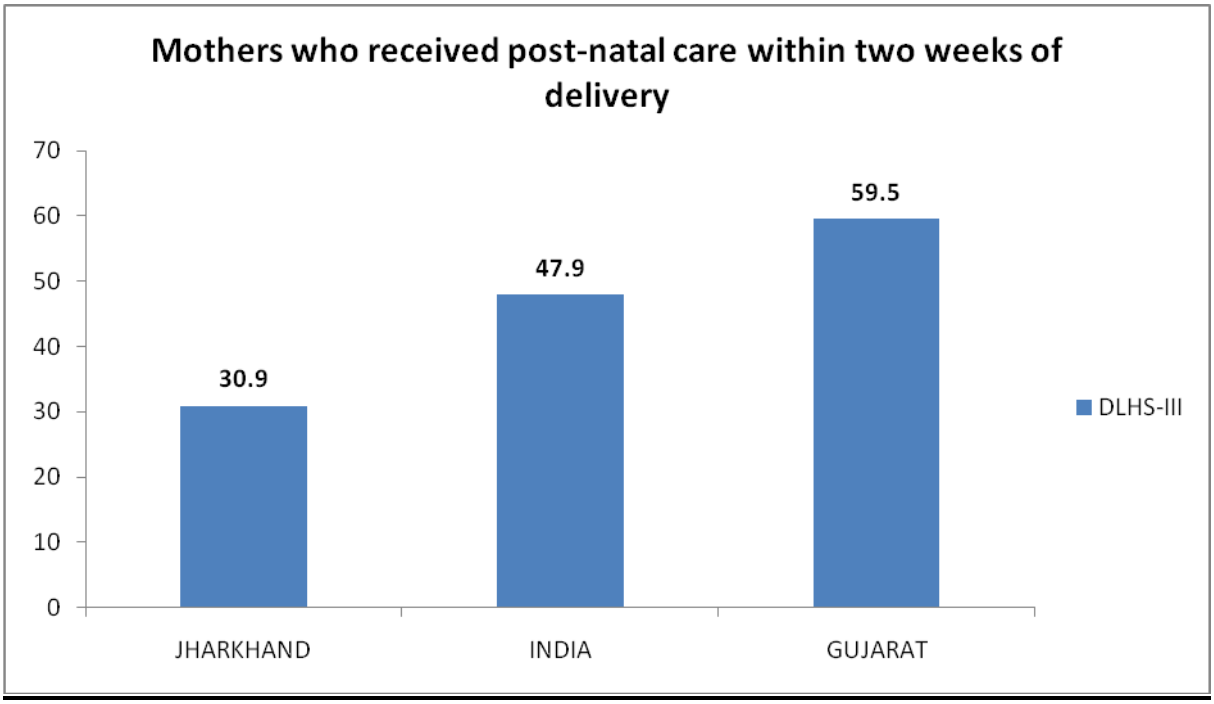



**Figure:10**

A mother needs to get post-partum check-up done to ensure no complications, both to the mother and to the child. She receives her 1st post-partum check-up within the institution itself, if she gets the delivery done in the institution; hence institutional deliveries are promoted to ensure safe delivery and motherhood. DLHS-III shows Gujarat with more number of post-partum checkups than national average of 47.9%, may be due to higher rates of institutional deliveries. Jharkhand shows 30.9% of post-partum checkups which is lower than all India average.

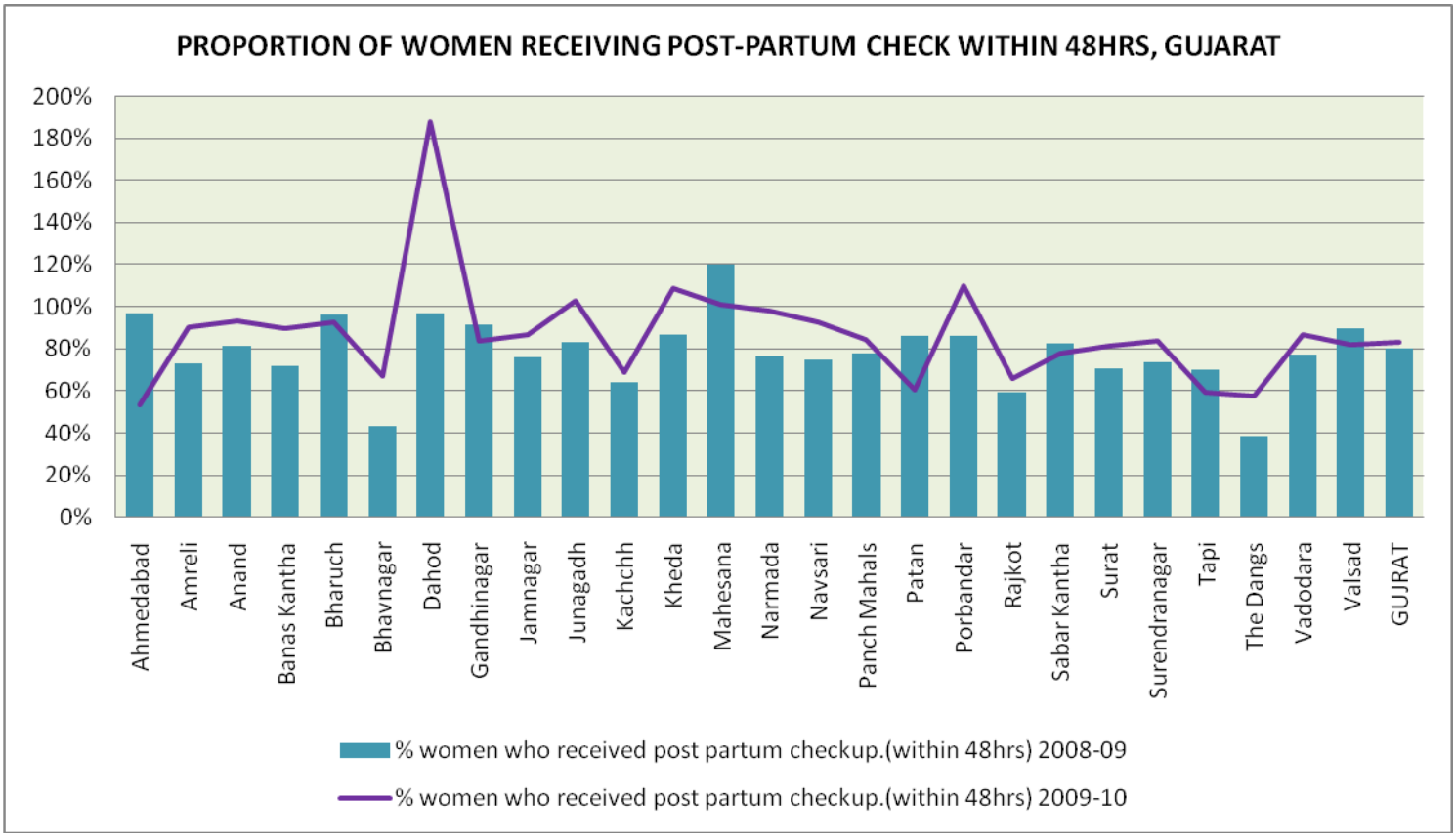



**Figure: 10.1**

In the above graph, the rate of women getting post-partum check up within 48hrs has increased by 3% in 2009-10, but the districts of Dahod and Porbandar have reported wrong figures hence the proportion is very high. Overall in Gujarat, we can see a good number of women receiving post-partum checkups.

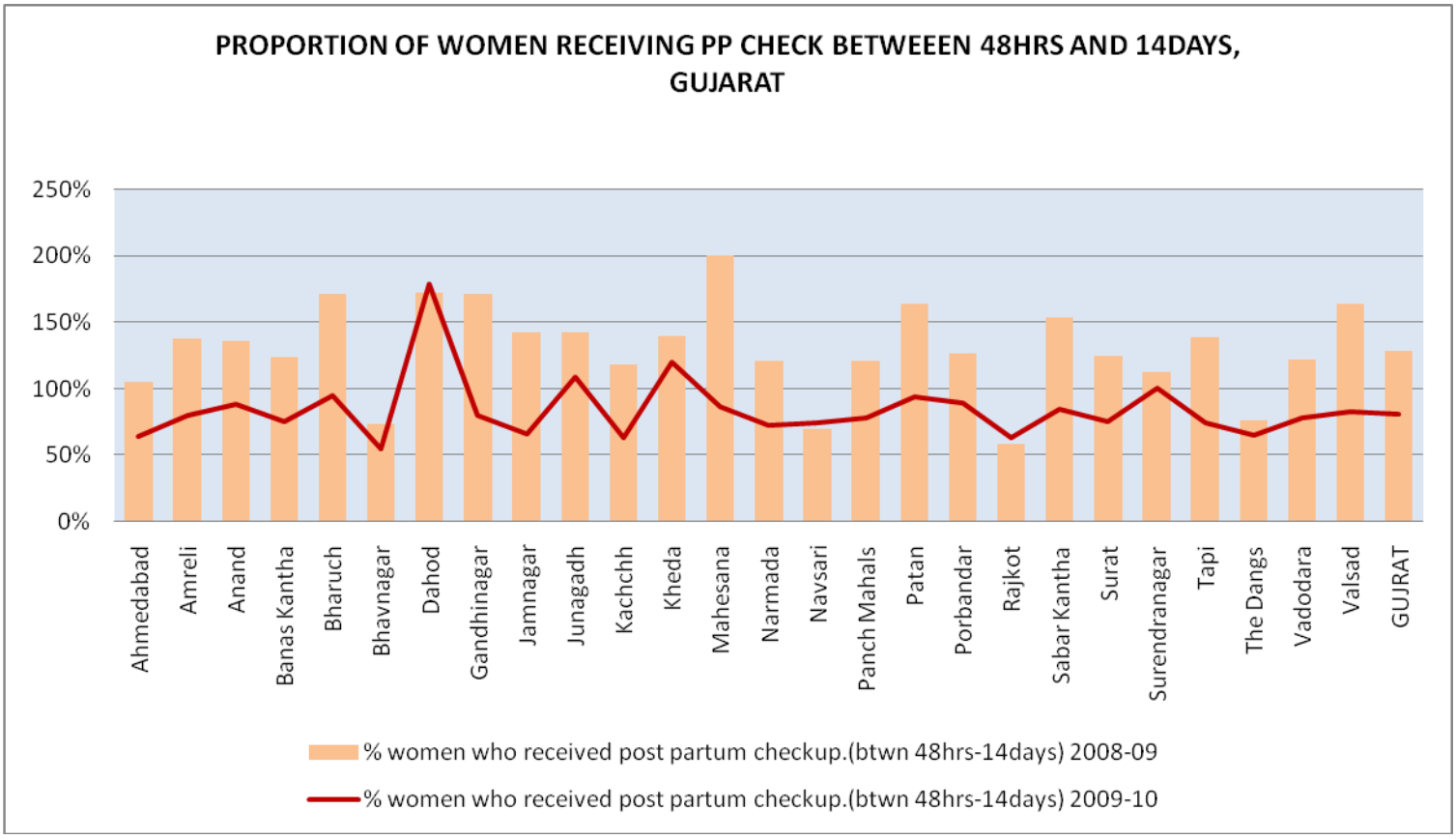
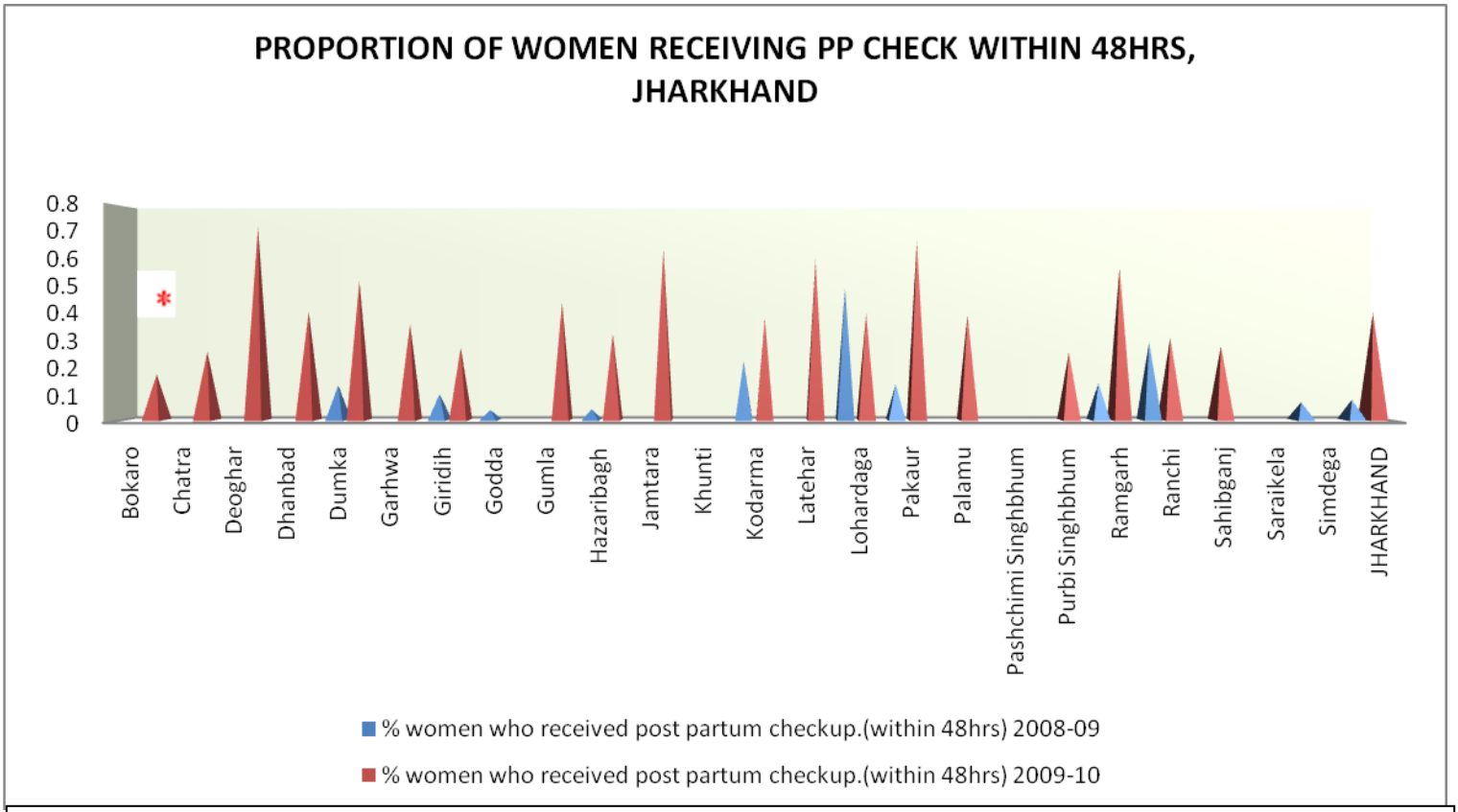



**Figure: 10.2**

Broadly, it can be seen from the graph that majority of districts have done wrong reporting of post-partum checkups done between 48hrs and 14days, hence the state total value for Gujarat in 2008-09 in inflated to 128%. Although, the figures have declined for year 2009-10, but the correctness of data has improved, which shows around 83% if women are receiving the second PNC check-up also. The wrong reporting by the districts may be because double counting of second PNC visit, which other-wise has been asked separately from the first visit.

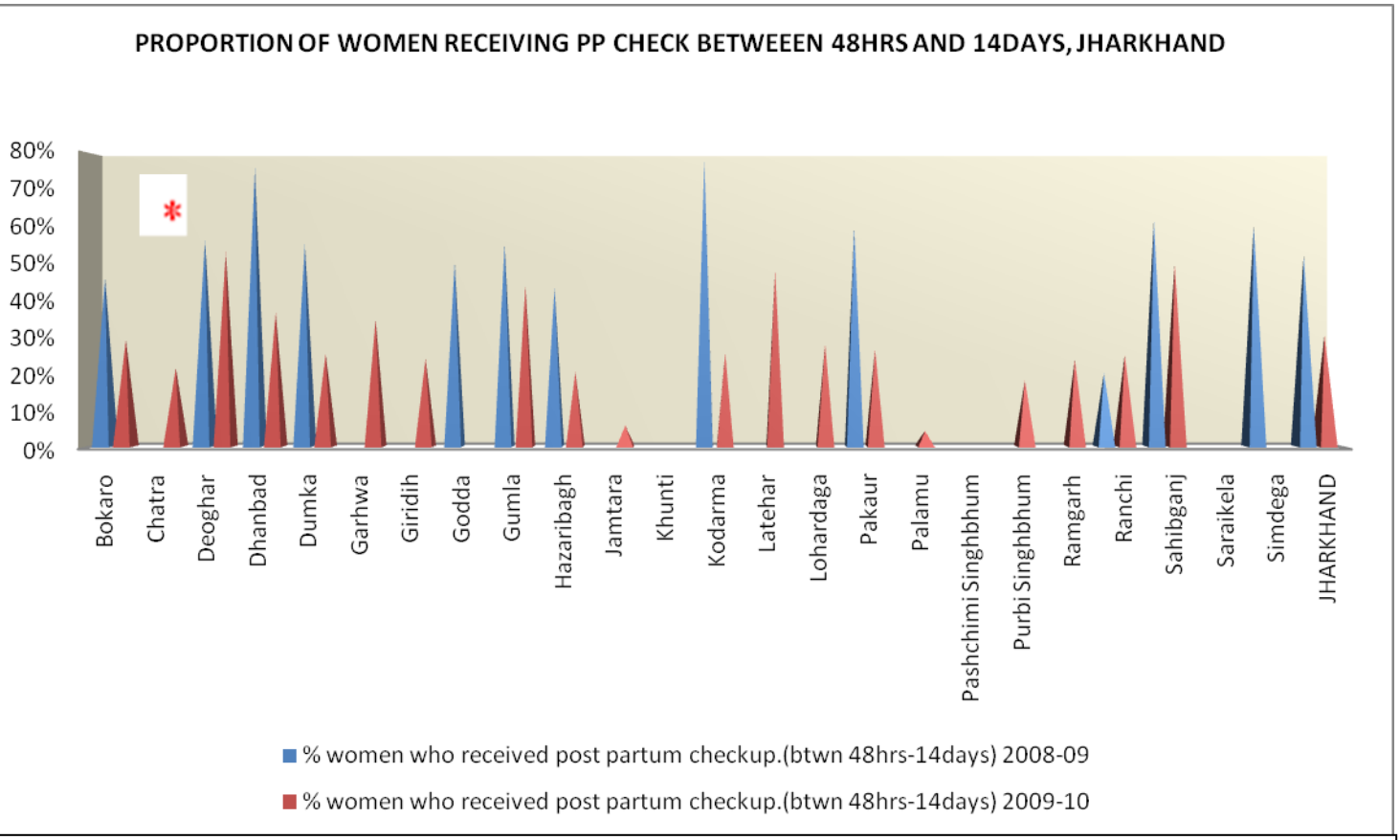



* *2008-09 data unavailable for Bokaro, Chatra, Deoghar, Dhanbad,Garhwa,Gumla,Khunti, Jamtara, Latehar, , Palamu, Sahibganj, Saraikela, , Paschimisnghbhum, Purbisinghbhum.*

*2009-10 Data Unavailable For Godda, Khunti, Paschimisnghbhum, Simdega, Saraikela*

**Figure: 10.3**

As clearly shown in the above graph of Jharkhand, the data for 2008-09 is quite incomplete, hence the state total figure is very low 8% in 2008-09. Comparatively, the figures have improved in 2009-10, making the state total of 40% women receiving PP check up within 48hrs, but still the condition is poor when compared to Gujarat. The possible reasons could be number of institutional deliveries are less or the data is not getting captured, like in Paschimisingbhum and Khunti , were the data is missing for both the years.




* *2008-09 data unavailable for Chatra, Garhwa,Giridh, Jamtara Khunti, Latehar,Lohardaga , Palamu,Ramgarh, Saraikela, , Paschimisnghbhum, Purbisinghbhum.*

*2009-10 Data Unavailable For Godda, Khunti, Paschimisnghbhum, Simdega, Saraikela*

**Figure: 10.4**

Similarly in the above graph, the overall state has reduced in 2009-10 to 30% from 52% women receiving post-partum check up between 48hrs and 14days. Overall, the figures are very low when compared to Gujarat, the lowest figure being reported by Palamu district with just 4% women receiving PNC check up after 48hrs in the year 2009-10

## CONCLUSIONS AND RECOMMENDATIONS

The situation of maternal healthcare services varies throughout the nation with southern and western states performing quite well as compared to northern and some newly formed states. The reason for variations identified in various studies are socio-cultural differences, level of urbanisation, accessibility to the services ( in terms of infrastructure, human resource, transportation), general myths, beliefs and practices of that particular region.

The study was mainly conducted to evaluate the performance of maternal healthcare services in a non-EAG state (Gujarat) viz a viz an EAG state (Jharkhand), under NRHM, from the data available on HMIS portal of NRHM. On analysis of their performance for two years, with the help of data available the major findings were:

1. Gujarat is amongst the well-developed states of the country and performs well in majority of maternal health indicators. The DLHS –III data and HMIS data both support that ANC coverage both in terms of full ANC checkups and early registrations, Gujarat the above the national average. Also, the proportions of institutional deliveries and post-partum checkups are comparatively higher than Jharkhand and all India average.
2. On comparative analysis of performance of Gujarat for two years, it has shown a good increase in the proportion of institutional deliveries from 82% in 2008-09 to 88% in 2009-10. The proportions of ANC registrations and full ANC checkups have almost remain same for the two years i.e. above national average. Consequently, the proportions of un-safe deliveries have reduced in 2009-10.
3. Conversely to the good performing indicators, Gujarat still lags behind in providing few services like DLHS data shows Gujarat performs poorly in supplying IFA tablets which is below Jharkhand. HMIS data shows an increase in the number of anaemia cases in 2009-10, although the supply of IFA tablets has increased considerably, but still it's less than proportions of women receiving 100 IFA tablets in Jharkhand.

   Also, women given JSY incentives have decreased from 84.9% to 39.7% in 2009-10, here the change is so large may be many districts reported value of JSY incentive in 2008-09, instead of number of women. But, DLHS data also supports those women who were paid JSY incentive is below the national average in Gujarat.
4. Jharkhand is a newly formed EAG state and maternal health indicators although perform far behind national average and Gujarat, the state is showing slow and steady growth to improve its situation. Also, the studies and documentation done to monitor its performance are not adequate and the data available is not very correct and reliable.

   Jharkhand falls behind in almost every indicator of maternal health services both according to DLHS and HMIS data except distribution of 100 IFA tablets, which is above Gujarat and national average.

5. On comparative analysis of two years HMIS data for Jharkhand, the state has shown a steady and good progress in proportions of ANC registrations and full ANC checkups. As per studies, it's mainly due to conduction of regular ANC camps. The proportions of institutional deliveries have shown a good increase 13%-14% in 2009-10, hence the proportions of unsafe deliveries have also reduced, and women receiving Post-partum checkups have increased.
6. Data quality is serious issue in both the states, especially Jharkhand mainly due to infrastructure limitations and lack of qualified personnel for data management. The states performance is improving gradually, put the reported figures are not satisfactory. The quality of data of Gujarat is comparatively better and complete, but still there are issues of over-reporting or wrong reporting mainly due to wrong understanding of indicators and lack of regular analysis of data.

RECOMMENDATIONS

1. The state of Jharkhand should take initiatives for increasing awareness of people to avail facilities available under NRHM and educate them about their benefits through increased community participation.
2. Also, the state should develop their infrastructure and accessibility to services by improving their referral and transportation mechanism.
3. Capacity building is a key factor to motivate the cadre employed under NRHM, which ultimately help in improving conditions in the state. Hence, regular trainings and refresher courses should be conducted and some means of incentive or appreciation should be kept for good performance, mainly to set targets.
4. Data quality as well as quantity is an issue, the 2009-10 data is still better in terms of quality as compared to 2008-09 data, mainly because the HMIS portal was launched in 2008 itself. The shift from paper to electronic form faces huge challenges, especially when it's a nation-wide change. With the help of centre, the state itself should take initiative to train people to use HMIS, help them understand various reporting formats and definitions. These trainings need to be very regular, as these are the initial years which requires correct understanding of data by the people who are entering it, and regular analysis by the people who are using it.
5. Also, feedback is the link which the states should be very prompt in giving, both upwards (to the centre) and downwards (to the districts and blocks) about what problems they are facing, what improvements can be done and where all they are lagging behind- a root-cause analysis is necessary for appropriate action.

LIMITATIONS OF THE STUDY

1. Data quality and quantity- the data from HMIS portal is under the process of quality improvement, as the portal has been recently launched. Hence value of few proportions is wrongly reported.

2. Lack of other studies and documentation done for Jharkhand.
3. The quality of data for maternal mortality reported in HMIS portal was very poor, hence it was not possible to include it.

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