

**Maternal Mortality Rate (MMR) & Infant  
Mortality Rate (IMR)**

**In**

**Selected villages in 5 districts of Bihar  
Patna, Nalanda, Khagaria, Saharsa and  
Rohtas**

Study Conducted by

**Ambpali Hastkargha Evom Hastshilp Vikas  
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21<sup>st</sup> August, 2009

## **PREFACE.**

It is ironic that in a society where 'mothers' are equated to goddesses, very little attention is paid to ensure that they don't die or lose their health permanently in the process of becoming mothers. Literature indicates that for one maternal death, there is much more maternal morbidity. There is enough scientific evidence to suggest that IMR and MMR can be brought down significantly by higher literacy (especially female literacy), awareness and access to better primary health care services. Then the question arises as to why are mothers-children dying in our country?

This study is an analysis of the situation in terms of Maternal and Infant Mortality indicators in rural and urban areas in five districts of Bihar namely, Patna, Nalanda, Rohtas, Saharsa and Khagaria. The study indicates that the health services are ineffective and rural poor women are not in a position to access high quality and equitable maternity care as all the rural areas are disadvantaged. The programmes focusing on improving the nutritional status of the mother and child, by promoting ante and post natal check-ups, breastfeeding, appropriate complementary foods and feeding practices are highly inadequate. Micronutrient nutrition, the control of anemia and the care of children with severe malnutrition, immunization, for strengthening the health system, are urgently needed to be improved. The health and survival of mothers and their newborns are linked, and many of the interventions that save the new mothers' lives also benefit their infants as a UNICEF report, Status of Worlds' Children, 2006, has pointed out. The importance of developing a strong information, education and communication programme with respect to antenatal care and safe motherhood and greater involvement of men in maternal and newborn health care is also critical.

Geeta Sinha

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### **Geographical Areas**

- |    |                   |        |                                 |
|----|-------------------|--------|---------------------------------|
| 1. | Patna District:   | Urban: | Patna                           |
|    |                   | Rural: | Goregama, Fatuha and Narauli    |
| 2. | Nalanda District  | Urban: | Biharsharif                     |
|    |                   | Rural: | Nagarnausa, Noorsarai, Giriyak, |
| 3. | Rohtas District   | Urban: | Bikramganj                      |
|    |                   | Rural: | Saroser, Meura, Kapisiya        |
| 4. | Saharsa District  | Urban: | Saharsa                         |
|    |                   | Rural: | Kahna, Nandlali, Sehuol         |
| 5. | Khagaria District | Urban: | Khagaria                        |
|    |                   | Rural: | Ramnagar Math, Chakla, Amni     |

### **The Research Team**

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## INTRODUCTION

Maternal and Infant Mortality Rates (MMR & IMR) are regarded as important and sensitive indicators of the health status, general standard of living and effectiveness of interventions for improving maternal and child health in a country

The highest numbers of Infant and Maternal deaths in the world are recorded in India, (State of India's Newborns 2004). The dismal mortality Rates are seen in India despite the progress of the country on many fronts. Over the last five years, India has seen impressive economic growth as well as progress in terms of human development. With 9% economic growth in 2006-07, population below the poverty line has been gradually falling. Indians today have a life expectancy of 64 years (2006) as compared to 49 years in 1970. 53.7% of Indian women (as compared to 75.3% males) are literate. On the flip side, the advances made on every front are simply negated by the population growth which is unfortunately enormous and extremely poor. Even today, 300 million Indians are classified as below the poverty line. And thus, in its approach paper for the 11th Five Year Plan, the Government of India (GOI) recognizes that these remarkable growth rates are not fast or equitable enough to reach disadvantaged populations. GOI has adopted **National Development Targets** which are in line with – and at times more ambitious than – the **Millennium Development Goals (MDGs)**. The **MDGs** laid down by the United Nations aim for a reduction in maternal deaths by 75% to 109 (MMR) between 1990 and 2015 in India which requires a reduction rate of 5.5% per year to achieve the goal.

### Definitions

**Maternal Mortality Rate (MMR)** measures the risk of dying from causes related to pregnancy, childbirth and puerperium. It is an index of obstetrical care, needed and received by the women in a community. It

is calculated by the total number of death from maternal causes registered for a given year divided by the total number of live births registered during the same year multiplied by 1000. The MMR of India has declined to 450 per 100,000 live births (2003), (reported as 301/100,000 live births based on a sample registration system, but has been adjusted by the WHO at 450/100,000 live births against 540 in 1998-99. India's MMR is in stark comparison to that of the US (11) and UK (8). The lifetime risk of maternal death in an Indian woman is 1 in 70 as compared to 1 in 8200 in the UK and 1 in 4800 in the US. Comparing India with the only other country that approaches its population in magnitude, the MMR in China is 45 with a lifetime risk of maternal death being just 1 in 1300. UN agencies report that maternal death is 41 times more likely in India than in the US, and 10 times more likely than in China.

**Infant Mortality Rate (IMR)** is the total number of deaths of less than one year of age registered in a given calendar year divided by the total number of registered live births during the same year calendar year multiplied by 1000. Two thirds of all infant deaths are neonatal deaths – that is within the first 28 days of life. According to official estimates, infant mortality in India has declined from 77 deaths per 1,000 live births in 1991-95 to 57 deaths per 1,000 live births in 2001-05 (0-4 years), 55 (SRS 2008) thus implying an average rate of decline of 2 infant deaths per 1,000 live births per year. India has also cut its under five mortality rate from 117 to 72 between 1990 and 2007

**Neonatal mortality:** The probability of dying in the first month of life.

**Post-neonatal mortality:** The probability of dying after the first month of life but before the first birthday.

**Infant mortality :** The probability of dying before the first birthday

**Child mortality:** The probability of dying between the first and fifth birthdays

**Under-five mortality:** The probability of dying before the fifth birthday.

Compared to other indicators like crude birth rate, and under-five mortality rate etc, IMR has been considered more important by the public health

experts because **infant mortality is the single, largest category of mortality**. Changes in specific health interventions affect IMR more rapidly and directly and hence it may change more dramatically than the crude death rate in a population. The **Infant Mortality Rate (IMR)** of the India, at 55 per 1,000 (2008) live births, is more than Bangladesh (52.5/1000). In the 1960s, IMR in India used to hover around the 100 mark in the country. IMR has declined in both urban areas (40/1000 live births/yr) and rural areas (69/1000 live births/yr). As a comparison, Sri Lanka has an IMR of 11 deaths per 1000 live births. In developed countries the rate is approximately 5/1000 (UK, Japan and Sweden). IMR in India is still quite high. However, it is close to the world average of IMR of 56/1000 (yr 2002).

Among the neighboring countries, Pakistan's Infant and Maternal Mortality Rates are 67.5 and 500 while in China the IMR is 23 and MMR is 483.

### **Maternal and Newborn Health in India**

Antenatal care (ANC) refers to pregnancy-related health care provided by a doctor or a health worker in a medical facility or at home. The Safe Motherhood Initiative proclaims that all pregnant women must receive basic but professional antenatal care (Harrison, 1990). Antenatal care can contribute significantly to the reduction of maternal morbidity and mortality because it also includes advice on the correct diet and the provision of iron and folic acid tablets to pregnant women, besides medical care. Improved nutritional status, coupled with improved antenatal care, can help to reduce the incidence of low birth weight babies and thus reduce perinatal, neonatal, and infant mortality.

National Family Health Survey 3 (NFHS-3, 2005-06) is the third large-scale multi-round survey which has been conducted in 29 states of India on a representative sample of households to provide data on health and family welfare needed by the Ministry of Health and Family Welfare and other agencies for policy and program-related purposes; and to provide information on important emerging health and family welfare issues. According to the survey, **“One out of every ten Indian children will not reach the age of 5. India has the highest number of neonatal deaths (within the first 28 days**

**of birth) in the world”**. About one million neonatal deaths occur here annually. Data shows that 21 per cent of the 26,000 children of less than five dying everyday in the world are Indians.

**Infections are the main contributors to infant mortality and malnutrition contributes to over 50% of child deaths.** 30% of infants born with low birth weight (LBW) across the world were from India (1998-2004), according to The State of the World's Children 2006, UNICEF.

One in four pregnant women has not had a single antenatal checkup and **the majority of deliveries take place without the assistance of a health professional.** Currently, about one-third of expectant mothers in India are not immunized against tetanus, which prevents mother and child infection at birth.

**India has the lowest child immunization rate in South Asia.** The proportion of children who have not had a BCG vaccine in India is twice as high as in Nepal, more than five times as high as in Bangladesh, and almost 30 times higher than in Sri Lanka. **Scheduled tribe children have only a 26% chance of being immunized.**)

NFHS-3 has determined that as many as 48% of pregnant women still do not achieve three antenatal visits in pregnancy. Only 23.1% mothers received iron and folic acid for at least 90 days in the last pregnancy. Anemia is widespread in Indian women (56.2%) and this coupled with malnutrition (33% women have a body mass index below normal) ensures that a large number of Indian women conceive when they are not fit to undertake a pregnancy

Although 76 percent of women who had a live birth in the five years preceding the survey received antenatal care, only 44 percent started antenatal care during the first trimester of pregnancy, as recommended. Another 22 percent had their first visit during the fourth or fifth month of pregnancy. Just over half the mothers (52 percent) had three or more antenatal care visits. Also the quality of antenatal care left lot to be desired. Less than three in four had their abdomen examined, and less than two in three received other services, including being weighed, having blood pressure measured, and urine and blood samples checked. Only 36 percent received information about

pregnancy complications. Sixty-five percent received (or bought) iron and folic acid (IFA) supplements for their most recent birth, and only 23 percent took IFA for at least 90 days, as recommended. Seventy-six percent of mothers received the two or more tetanus toxoid injections during pregnancy for their most recent birth. Only 4 percent of women took a drug for intestinal parasites during their pregnancy. IFA coverage and tetanus toxoid injections for older women, women with four or more children, women from rural areas, women with no education, and women in households in the lowest wealth quintile are well below the national average. In virtually all categories of women, only a fraction of women who received IFA said that they consumed IFA for at least 90 days as recommended.

One-fourth of all pregnancies in the five years preceding the survey underwent an ultrasound test. Urban women were much more likely to have three or more antenatal visits than rural women. Forty four percent of pregnancies in urban women underwent an ultrasound test, compared with 16 percent in rural areas. Pregnant women with at least 12 years of completed education were almost eight times as likely to have an ultrasound test as women with no education. A higher percentage of pregnant women with no living son had an ultrasound test, and this percentage declines as the number of living sons increases. An examination of the sex ratio of births after a pregnancy with an ultrasound test provides strong evidence that ultrasound testing is being used for sex determination followed by sex-selective abortions.

Thirty-nine percent of births in the five years preceding the survey took place in health Facilities; more than half took place in the woman's own home; and 9 percent took place in parents' homes. The more ANC visits that a woman had during pregnancy, the greater the likelihood that her delivery took place in a health facility. First births are more likely to be delivered in an institution than births at higher birth orders.

Only 13 percent of births to women in the lowest wealth quintile and 18 percent of births to both women with no education and to scheduled-tribe women are delivered in an institution. Overall, less than 1 in 10 (9 percent) births in the five years preceding the survey were delivered by caesarean

section. Among the 34 percent of births that were weighed at birth, over one in five (22 percent) were of low birth weight (less than 2.5 kg).

Forty-seven percent of births in the five years preceding the survey were assisted by Health personnel, including 35 percent by a doctor and 10 percent by an auxiliary nurse midwife, nurse, midwife, or lady health visitor. More than one-third of births (37 percent) were assisted by a traditional birth attendant, and 16 percent were assisted by only friends, relatives, or other persons. Thus, more than half of India's mothers deliver without the assistance of any health personnel. These are only some of the reasons for the unsafe deliveries. Moreover, considering the fact that approximately 28 million Indian women become pregnant every year, the number of women whose health is endangered is enormous.

Postnatal check-ups soon after delivery help safeguard the health of mother and baby, particularly for births occurring outside of health care facilities. Almost 6 in 10 women (58 percent) did not receive any postnatal check-up after their most recent birth. About one-quarter of women (27 percent) received a health check-up in the first four hours after delivery, and 37 percent received a health check-up within the critical first two days after delivery. Although the likelihood of a timely postnatal checkup is closely associated with having an institutional delivery, it is notable that 15-24 percent of births even in institutions did not receive a postnatal check-up. Among births delivered at home, only 9-12 percent of births received a postnatal checkup within two days of delivery. Despite an increase in institutional deliveries, 60 per cent of pregnant women still deliver at home.

#### Reasons for Not Seeking Antenatal Care Services

Mothers who had not sought antenatal care outside the home were asked about the main reason for not going for an antenatal check-up. The findings of NFHS for women who did not receive any antenatal care were quite revealing), the mother said that delivery in a health facility is too expensive. For this group, nearly three-fifths of the births were to mothers who stated that it was not necessary to go for an antenatal checkup. Thus, a large proportion of births are to mothers who do not realize the importance of safe motherhood. It is surprising to note that a higher

proportion of urban births (66 percent) than rural births (58 percent) were to mothers who felt this way. Other major factors contributing to the nonuse of antenatal care were lack of knowledge of antenatal care services (13 percent) and financial cost (7 percent). Mothers of 6 percent of births felt that it is not customary in the community to go for an antenatal check-up. Five percent of births were to women who had no time to go for antenatal care and another 5 percent were to women who were not permitted to go for an antenatal check-up. One to 3 percent of births were to mothers who said it was inconvenient to go for antenatal care and that the services were of poor quality.

### **State Differential in India**

In India, wide inter-state variations in IMR and MMR are visible. We have extremely low IMR states like Kerala (13/1000) while in 3-4 states, IMR is less than 50 (Tamil Nadu, Andhra Pradesh, Maharashtra and Punjab) (SRS, 2008). But we also have high IMR states like Uttar Pradesh (73/1000), Orissa, Bihar and Madhya Pradesh which perform consistently poorly on antenatal care. The percentage of women who had three or more ANC visits ranges from 17 percent in Bihar and 27 percent in Uttar Pradesh to at least 90 percent in Kerala, Goa, and Tamil Nadu. States where the provision of IFA was far below the national average include Nagaland, Bihar, Arunachal Pradesh, Jharkhand, Uttar Pradesh, and Meghalaya. Infant and Maternal Mortality Rates of Himachal Pradesh were 19 per 1,000 live birth and MMR was 38.3 per one lakh live birth. (Sample Research Survey- 2007). With respect to under-five mortality, Uttar Pradesh also has the highest rate (96) and Kerala has the lowest rate (16). More than two-thirds of all maternal deaths occur in Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, Rajasthan and Assam.

### **Government Health Programmes**

Safe motherhood practices and child survival programmes have been given importance in Indian Governmental Health Programmes due to high infant/child and maternal mortality in our country. The Ministry of Health, Government of India, took concrete steps to strengthen maternal and child health services in the First and

Second Five Year Plans (1951-56 and 1956-61). The integration of family planning services with maternal and child health services and nutrition services was introduced as a part of the Minimum Needs Programme during the Fifth Five Year Plan (1974-79). The primary objective was to provide basic public health services to vulnerable groups of pregnant women, lactating mothers, and preschool children (Kanitkar, 1979). Since then, the promotion of health of mothers and children has been one of the most important aspects of the Family Welfare Programme in India and has now been further strengthened by introducing the Child Survival and Safe Motherhood Programme (Ministry of Health and Family Welfare, 1992a). The Ministry of Health and Family Welfare has also sponsored special schemes, under the Maternal and Child Health Programme, including the programme of Oral Rehydration Therapy, development of Regional Institutes of Maternal and Child Health in states where infant mortality rates are high, the Universal Immunization Programme, and the Maternal and Child Health Supplemental Programme within the Post-Partum Programme (Ministry of Health and Family Welfare, 1992a). A series of specific disease-centered programmes through the 1970s, '80s and '90s helped reduce India's IMR. But still millions of newborns in India die before their first birthday as they do not get the basics home-based essential care and regular post-natal visits by community workers during the most vulnerable weeks of their life. As far as IMR is concerned, it is estimated that 117,000 Indian women die annually during pregnancy, childbirth and the puerperium.

Recognizing the importance of health in the process of economic and social development and improving the quality of life of our citizens, as well as the asymmetry in healthcare between urban and rural areas, the Government of India launched the National Rural Health Mission to carry out necessary improvements in the basic health care delivery system. Some of the key goals of the (NRHM 2005-2012) are reducing infant mortality rate to 30 per 1,000 live births and maternal mortality rate to 100 per one lakh against 450 per one lakh live births by 2012 through promoting institutional delivery in the rural areas. An official estimate says half of India's women still deliver babies at home and accounts for the world's 20 per cent child mortality.

### **Urban - Rural differential**

The above discussion makes it clear that there is an urban - rural differential in mortality. IMR in rural areas is about 50 percent higher than that in urban areas. Infant and child mortality rates have declined slightly faster in rural areas than in urban areas. Between 1991-95 and 2001-05, infant mortality declined by 27 percent in rural areas, compared with 21 percent in urban areas. During the same period, the child mortality rate declined by 45 percent in rural areas, compared with 40 percent in urban areas. Even in the neonatal period, the decline in mortality was slightly faster in rural areas (26 percent) than in urban areas (18 percent).

According to socio-economic characteristics, perinatal mortality is highest for rural mothers, mothers with no education and less than 5 years of education, and mothers in the lowest wealth quintile.

In the rural areas of India, maternal and child health services, namely antenatal and postnatal care of mothers as well as care of infants and children are delivered mainly by government-run Primary Health Centers (PHC) and sub-centers. The Female Health Worker, who is an Auxiliary Nurse Midwife, renders maternal and child health and family welfare services at the PHC. The information about relevant matters are also provided at the PHC, namely, The basic maternal and child care services offered at Primary Health Centres are pregnancy and childbirth; infant and child feeding practices, including breastfeeding; immunizations; episodes of illnesses such as acute respiratory infection, fever and diarrhea, and the treatment received; mother's knowledge and use of Oral Rehydration Salts (ORS); and the level of child nutrition assessed by measuring the weight and height of children.

According to the Bulletin on Rural Health Statistics in India (2006), as per the 2001 population norm, there is a national shortage of 20,903 sub-Centres (SCs), 4803 Primary Health Centres (PHCs) and 2653 Community Health Centres (CHCs). There is only one bed per 6000 people. A large percentage of couples report an unmet need for contraception. Only 30% of couples who want to delay or space child bearing in rural areas, get it.

Services for pregnant women and children can also be obtained from private and public maternity homes or hospitals, as well as from private practitioners. In urban areas, maternal and child health (MCH) services are available mainly through government or municipal hospitals, urban health posts, hospitals and nursing homes

operated by nongovernmental voluntary organizations, and various private nursing homes or maternity homes.

**In a nutshell, India still has the highest number of maternal deaths worldwide and accounts for one-fifth of all global maternal mortalities. Clearly, IMR and MMR in India need to decrease at a much faster rate in the future and this goal can only be achieved by giving priority to women, children and their healthcare.**

### **Bihar and its Health Indicators**

Bihar's population in 2001 was 82,998,509, making it the 3rd most populous state in India with a population density of 880 persons per sq. km. It has around 40% of its population below poverty line. The population growth was 28% since the 1991 census; the 11<sup>th</sup> highest growth rate of the 35 States and Union Territories and the 2nd highest amongst the large States (>2.5 million population). Bihar's population is 90% rural (72% for India). The overall gender imbalance is the 14th worst of the 35 States and Union Territories with 919 females for every 1000 males (933 per 1000 for India). Overall literacy rate is 47% (65% for India), with substantial female educational disadvantage as shown by a male to female literacy rate ratio of 1.8 (1.4 for India). Children aged under-five-years comprise 13% of the Bihar population (11% for India).

The major health and demographic indicators of the State like infant mortality rate, maternal mortality ratio, total fertility rate, etc. are much poorer than the all India level and reflect a poor health status in the State. It is also a reflection of the of the ineffective public health system. All the better performing states (Kerala, Maharashtra, Tamil Nadu) are known to have better public health systems right down to the PHC level as opposed to the poorly performing states like Bihar where the physical infrastructure and the manpower resources are inadequate and frequently non-existent.

In Bihar, the doctor or the compounder/pharmacist posted with the designated rural health centre visit the village market weekly or fortnightly and run some sort of the outpatients' department service. This is because either the physical infrastructure (building etc.) is nonexistent or is too

dilapidated or has been acquired for some other purpose. In still more remote areas, even such a service is unheard of. State Health Service simply does not exist for large parts of the population of these areas for all practical purposes. The patients survive and die at the mercy of the private health services (the commercial enterprises and the NGO hospitals) — including merciless quacks. Private health services are also very expensive often leading to indebtedness in rural areas. Wherever the public health services are present, we come across suboptimal functioning of the existing infra structure and poor referral services. Significant proportions of hospitals do not have appropriate manpower, diagnostic and therapeutic services and drugs, particularly in the public sector.

In Bihar, there are shortages of sub-centers, primary health centers, and community health centers along with manpower, drugs and equipments necessary for Primary Health Care and inadequate training facilities. Other factors affecting the health status include **very high fertility rate, low level of institutional deliveries and a high level of maternal deaths, very low coverage of full immunization, low level of female literacy, and poor status of family planning programme.**

The recent National Family Health Survey 3 (2005-06) indicates some improvement in immunization coverage, contraceptive use, and institutional deliveries. Bihar has taken major strides to reduce infant mortality rate (IMR) but is still higher than most of the states. With 158,000 infant deaths occurring annually, the MDG goal is to bring down the current IMR of Bihar from 60 per 1,000 live births (SRS - 2006) to 35. However, malnutrition among children and women, and the prevalence of certain vector borne diseases, communicable diseases, and water borne diseases is also high in the state. Better health outcomes are expected in the state with the up-gradation of health infrastructure. Recruitment of doctors on contract, outsourcing of diagnostic facilities, availability of free medicines, provision of ambulance services, increasing outreach through mobile medical units and through a mechanism of web-based monitoring, are some of the steps Bihar has launched. A variety of programmes to reduce morbidity and mortality, namely:

Janani Evam Bal Suraksha Yojana, Anaemia Control Programme, Routine Immunization, Programme for Elimination of Iodine Deficiency Disorders, etc have also been started. These programmes are at different stages of implementation.

Two of the key elements of NRHM viz. **ASHA** or Accredited Social Health Activist (the link between the community and the health services selected from the local area) **and District Health Planning** have been undertaken by the State in a rigorous manner. Specific initiatives, improvements in infrastructure and delivery system of health care, provision of manpower, equipments and drugs, inter-sectoral coordination and other innovative approaches are expected to have far reaching implications towards better health of common people across the State

## DEFINING THE RESEARCH

### 1. Issues before the Present Research

A critical analysis of the review brings to fore certain issues which need attention. As is clear from the above discussion, despite successes, MMR and IMR are still in the unacceptable range in Bihar, high maternal mortality ratio (MMR) is the result of several factors, such as lack of antenatal and postnatal care (ANC &PNC) and high incidence of unsafe deliveries. According to NFHS-3 results, ANC reaches only around 34% of the women in Bihar compared to 77% for India. The percentage of institutional deliveries was only 22% for Bihar as against 41% for the country in 2005-06. Thus, as the technologies needed to prevent nearly all maternal and infant deaths are well known, **why then, so many Indian women and infants die due to pregnancy and its complications every year? Why does Bihar still lag behind with respect to saving maternal and infant lives** and is stuck with the problem of maternal and infant mortality and morbidity. Health outcomes in Bihar are below the national average. If the current rate of health outcomes persists, Bihar state will not be able to achieve the MDG targets.

The review of the literature indicates that the reasons, to a large extent, for the poor MMR and IMR in the state are:

- Poor organization and management of existing health services in the state
- Failure of the government to give priority and funding to a proven package of effective interventions in the state. Only 39% births in rural areas are attended by skilled health professionals (2005-6).
- Within the state also, there are wide rural-urban variations, utilization of antenatal care services is substantially better in urban than in rural areas, where the urban woman receives antenatal care from a qualified health professional or doctor, whereas rural women are more likely to receive antenatal care from a health worker or a health professional who is not a doctor, probably a quack.

## **A. Objectives of the Study**

The objective of the study was to understand and analyze the phenomenon of maternal mortality and infant mortality in the context of awareness, availability and utilization of the facilities along with the societal attitudinal factors in three villages of the five selected districts totaling fifteen villages and five urban areas. Specifically:

1. To gather primary information about antenatal care, child delivery characteristics, nutrition, contraception and other prenatal indicators of MMR in the selected villages and urban areas of the five districts of Bihar.
2. To collect primary data about feeding, immunization, treatment of childhood diseases, knowledge and use of ORS packages and care of critically ill children and other indicators of IMR.
3. Based on the above, to identify the existing gaps in the social infrastructure and delivery system of health care, provision of manpower, equipments and drugs, inter-sectoral coordination, monitoring and evaluation, of sample villages in the five districts as far as maternal and child health are concerned.
4. Based on the findings, recommendations for initiatives for action towards better health of common people would be suggested.

## **B. Hypothesis**

a. Hypothesis 1 the literature review has clearly shown that urban women are better off in terms of maternal and child health than the rural women. In 2001-05, the infant mortality rate was 50 percent higher in rural areas (62 deaths per 1,000 births) than in urban areas (42 deaths per 1,000 births). The reasons are multiple. Poor awareness about the health factors, poor health infrastructure and the attitudinal factors especially among the elderly in the family and community found to be responsible for this. In Bihar, **The hypothesis tested was that urban families would be high on conforming to the MMR indicators than the rural families.**

b. Hypothesis 2 as is evident from the literature review; Bihar is poor on all indicators. The five districts in our study are not equally advanced or high on development indicators. Some areas are higher and some lower on the development aspect. Our hypothesis is that the areas higher on indicators, Patna (the capital city) and Nalanda (touristy and close to Patna) will be higher on the MMR and IMR indicators than the other three districts. Rohtas, Khagaria and Sharasa being more backward than Patna and Nalanda would be lower on the indicators. **Thus, Patna and Nalanda would be higher on MMR indicators than Rohtas, Khagaria and Saharasa.**

## METHODOLOGY

### 1. Tools

A. **Quantitative Method** Questionnaire schedule was the main tool of data collection. **Matri-Shishu Kalyan Survekhshan (Mother Child Welfare questionnaire/interview schedule)** was prepared to address the research issues. It included the different aspects and indicators of the IMR and MMR identified on the basis of literature review and pilot fieldwork. After the first brainstorming session, the questions were generated and given to five people for comments. This way the questionnaire was modified and fine tuned four times. Discussion was also held with community people, health professionals and NGO workers before finalizing the questionnaire. The questions were on the following dimensions:

#### Questions

The dimensions covered were:

Whether the respondent eats more nutritious food during pregnancy.

Number of meals that the pregnant woman eats

Number of antenatal check up(ANC) for pregnant women

Control of anemia, Iron tablets for pregnant woman on doctors advice

Delivery care

Contraceptive use or birth-spacing methods after delivery

Infant and child feeding practices, including breastfeeding

Level of child nutrition assessed by measuring the weight and height of children.

Polio drop and immunizations

Newborn infections as acute respiratory infection, fever and diarrhea, treatment for anemia; mother's knowledge and use of Oral Rehydration Salts (ORS)

**Total number of questions      20**

(Appendix 1: Questionnaire)

Demographic information was also taken in the questionnaire.

**B. Qualitative methods**

**Focus group** discussions were held with people of the target areas.

Respondents here included the residents, students, teachers, doctors, hospital people, village authorities and other people from the community, (men and women). The points discussed were related to maternal and infant care and suggestions.

**Interview of cases** from rural and urban areas were conducted along the indicators and factors of maternal and infant mortality.

**C. Selection of sample areas**

Five districts namely, Patna, Nalanda (Biharsharif), Khagaria, Saharsa and Rohtas were taken up. In each district, **three villages** and **some urban centre** were taken up for the study..

1. **Rural sample** Villages were selected where Ambapali has a base or close to it. However, efforts were made to select villages different from each other in terms of infrastructure facilities specially health facilities. In each district 600 rural, i.e., 200 people from each of **three** villages were taken up for the study. This made a total of 3000 in rural sample from the five districts. The sample included pregnant women, other men and women in the family and community.

2. **Urban Sample** a sample of 200 was taken from the urban centers of the five districts making a total of 1000 urban sample.

3. **Sample size** thus, 4000 from questionnaires, 3000 from rural and 1000 from urban areas were prepared. Around 100 from focus groups, discussions and case interviews were also examined (qualitative data). As the literature survey has revealed that

maternal and infant mortality rates are negatively related to higher socio-economic groups, the sample was mainly lower socio-economic group in rural, semi-urban and even in urban areas

#### **D. Data Collection**

Data collection was done as per the design of the study, **Mother Child Welfare Schedule**.

**Questionnaire schedule** namely, **Matri-shishu Kalyan Survekshans** was applied on the above mentioned sample. The responses of the respondents were recorded on the different items of the schedule. Demographic information on education, income etc. were also collected. Apart from the questionnaire, some qualitative methods were also used.

Before selecting and approaching any particular community for the study in any district, one or two local persons having knowledge and the information of the nearby localities and communities were included in the team by the Ambpali field workers. This enabled the research team to gain confidence of the target community.

In the course of data collection, whenever the research team would visit some tola of a village or a mohalla of a town, they would soon be surrounded by a curious group of people. As per the research plan, the male investigators would introduce themselves to the male group and the women team would mix with the women folk. Initially, the purpose of the visit (study) would be outlined to the group in general terms and then 3-4 males and an equal number of females would be selected by the male and female investigators respectively for interviewing. In the selection of the respondents for individual and families for interviewing, young couples or pregnant/lactating mothers were used as criteria so that by and large a representative sample could be studied. Often, soon after conducting individual interviews with four or five individuals, it would become difficult for the research team to resist the curious group of onlookers and soon, group interviews would begin. In large village tolas or township mohallas, the research team would move from one spot to another covering about eight to ten families at each spot.

#### **E. The Interview Process**

The interview session would start by giving specific introductory instructions regarding the purpose of the study, i.e., to collect information regarding general status of the pregnancy and delivery factors and the maternal and infant -for effective governmental planning for development of mother and child care. These instructions would, however, vary between respondents, groups or localities depending upon the receptivity of the respondents. But the actual theme (statement of the purpose) would remain the same.

During the interview, questions were asked one by one in a conversational manner. The questions were elaborated whenever needed. The atmosphere was kept informal and the respondents were allowed to talk freely on different points. They were also allowed to express their ideas in their own language. The investigators too, wherever and as far as possible, would try to communicate in the local language. **Particular answers to the item/question were assessed carefully and recorded accordingly on the scale associated with each item of the schedule.**

**Besides interviews, field notes based on experiences narrated by elderly males/females** as well as views of more active respondents of the community and other sources were also prepared. At the end of the interview session, the research team would thank the respondents before their departure.

In the same manner, the entire selected sample were approached and interviewed. The entire exercise of data collection took about three months time during which the team traveled approximately 2000 km. in the five districts.

#### **F. Problems encountered during data collection**

Some respondents felt that it was a waste of their time. They would not gain anything by answering the questionnaire. In fact some even said that they have filled similar questionnaires earlier but no one has ever come back to give them any feedback.

Some other respondents felt that some views asked for were of a confidential nature (contraception) and they would not like to

share with others. However, they were reassured that their views would be kept confidential and if they so wanted, they need not give their names.

A major difficulty encountered was that the males were very much disinterested in answering the questionnaire. Many of them replied that it was a woman's topic and that these should be filled by women.

## **G. Data Analysis**

### **Coding Plan**

The responses of the participants from the various locations were recorded on the different items of the schedule. After data collection, the coding plan was explained to the computer expert. For convenience, the responses on the first item was merged into 2 categories (nutrition same as before pregnancy and better than before pregnancy) and the percentage of respondents falling under each category was computed. The rest of the questions were assessed as per the scale provided in the schedule. Data were systematically coded and entered in computer Excel sheet and analyzed. For analysis, mean and percent scores have been computed for each question for the whole group

## RESULTS

This chapter presents the data collected by qualitative and quantitative methods. The qualitative methods were used for greater insight into the situation and used four focus group discussions and 11 case interviews.

On the other hand, the quantitative data highlight the findings on antenatal and delivery care, immunization coverage, treatment of respiratory infection, fever and diarrhea, mothers' knowledge and use of ORS and infant feeding. These findings have been tabulated and presented in the form of tables and graphs.

### A Quantitative Findings

The findings were tabulated and presented in the form of Tables and Graphs.

1. Tables 1A,1B,1C and 1D Summary of the responses on all the ten indicators for Rural areas, district wise (3000 samples from 15 locations).
2. Table 2A, 2B, 2C and 2D Data for the same indicators on the Urban samples (1000 samples from five urban centers).
3. Chart 1A and 1B Comparative Data for MMR between Rural and Urban samples

	Nutrition		No of meals in Pregnancy /Lactation				No. of ANC Checkup				Iron Tab	
	<i>same</i>	<i>better</i>	1	2	3	4	0	1	2	3+	No	Yes
Patna Av	37	63	2.5	75.7	14.5	7.3	54.8	11	20.8	15	68	31.8
Nalanda Av	19.3	80.7	3.2	17.5	78.5	0.8	26.2	36.2	29.3	8.7	58	42
Rohtas Av	5.3	94.7	2.5	71.2	24	2.3	18.5	10.3	41.7	28.2	24	75.7
Saharsa Av	10.3	89.7	0	41	55.7	3.3	18.5	10.3	56	15.2	55	45.2
Khagaria Av	22	78	0.5	51.5	42.7	5.3	37	13.5	37.5	8	40	59.8
<b>Rural Average</b>	<b>18.8</b>	<b>81.2</b>	<b>1.7</b>	<b>51.4</b>	<b>43.1</b>	<b>3.8</b>	<b>31</b>	<b>16.3</b>	<b>37.1</b>	<b>15</b>	<b>49</b>	<b>49</b>

**Table 1B Disrictwise Rural MMR Indicators**

All figures in %

	Delivery Place				Complicated Delivery Venue				Contraception Method			
	Home	Phome	Pthsp	GtHsp	Home	Phome	Pthsp	GtHsp	None	Oper	Pill	Doc
Patna Av	0	1.5	10.7	84.2	0	1.8	90	8.2	63.3	17.7	19	0
Nalanda Av	5.2	25.7	18.3	39.2	0	0.8	51.5	47	56.3	23.5	20	0
Rohtas Av	19.3	8.3	18.3	54	0	0	46.8	53.5	68.5	21.3	10	0
Saharsa Av	13.7	3	14.5	68.8	0	0	35	65	71.3	17	12	0
Khagaria Av	10	6.2	15.8	67.3	0	0	41.2	55.5	67.8	22.3	9.8	0
<b>Rural Av</b>	<b>9.6</b>	<b>8.9</b>	<b>15.5</b>	<b>62.7</b>	<b>0</b>	<b>0.5</b>	<b>52.9</b>	<b>45.8</b>	<b>65.5</b>	<b>20.4</b>	<b>14</b>	<b>0</b>

**Table 2A Urban MMR**

All figures in %

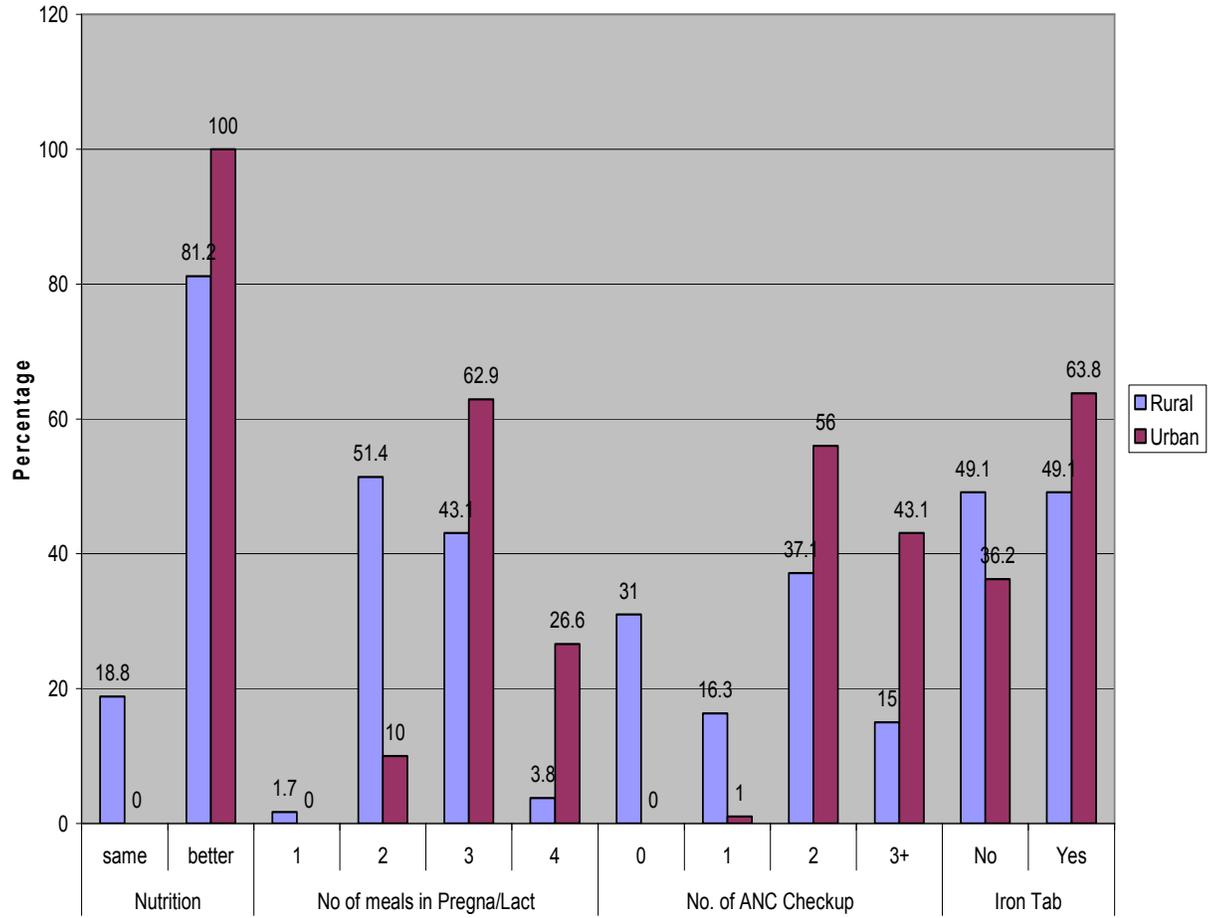
	Nutrition		No of meals in Pregnancy/Lactation				No. of ANC Checkup				Iron Tab	
	same	better	1	2	3	4	0	1	2	3+	No	Yes
Patna Av	0.5	99.5	0.5	10.5	66	23	0	2.5	40	57.5	35.5	64.5
Nalanda Av	0	100	0	8.7	46.7	44.7	0	0	64.7	35.3	28.7	71.3
Khagaria Av	0	100	0	11	75	14	0	0	65	35	44	56
Saharsa Av	0	100	0	12	69	19	0	0	66	34	41	59
Rohtas Av	0	100	0	10	63	27	0	1	56	43	36	64
<b>Urban Av</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>10</b>	<b>62.9</b>	<b>26.6</b>	<b>0</b>	<b>1</b>	<b>56</b>	<b>43.1</b>	<b>36.2</b>	<b>63.8</b>

**Table 2B Urban MMR Indicators**

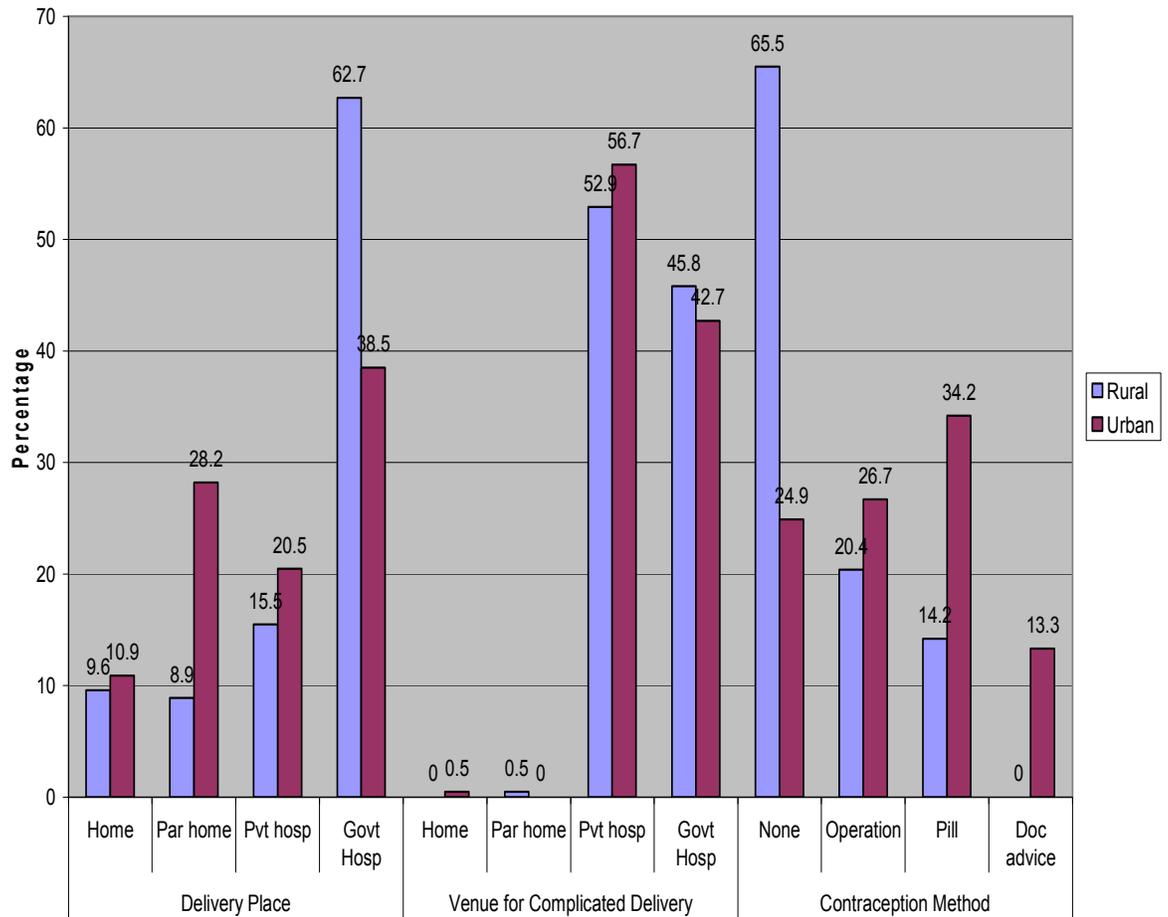
All figures in %

	Delivery Place				Venue for Complicated Delivery			Contraception Method				
	Home	Parent Home	Pvt Hosp	Govt Hosp	Home	Par home	Pvt Hosp	Govt Hosp	None	Operation	Pill	Doc advice
Patna Av	6.5	23.5	35.5	34.5	1.5	0	57	41.5	18.5	32	34	15.5
Nalanda Av	11.3	26	19.3	36.7	0	0	61.3	38.7	28.7	22.7	35.3	10
Khagaria Av	14	35	6	45	0	0	54	46	31	24	28	17
Saharsa Av	16	34	7	43	0	0	52	48	26	25	39	10
Rohtas Av	11	28	21	39	1	0	57	43	25	27	34	13
<b>Urban Av</b>	<b>10.8</b>	<b>28.2</b>	<b>20.5</b>	<b>38.5</b>	<b>0.5</b>	<b>0</b>	<b>56.7</b>	<b>42.7</b>	<b>24.9</b>	<b>26.7</b>	<b>34.2</b>	<b>13.3</b>

Chart 1A MMR Rural-Urban Comparison



**Chart 1B MMR Rural-Urban Comparison**



**A. Indicators of Maternal Mortality Ratio (MMR)**

**1 Nutrition (Table 1A, 2A and Chart 1A)**

Question 1 *“whether the food intake after becoming pregnant was more nutritious than their food intake before becoming pregnant”* pertains to nutritional aspect of the diet of the pregnant and lactating women

If we look at the rural data district wise, we see that in Patna 37%, in Nalanda 19%, in Rohtas 5.3%, in Saharsa 10% and in Khagaria ,22% of the rural women eat the same kind of diet as they did before they became pregnant. Whereas 63% in Patna, 80.7% in Nalanda, 95% in Rohtas, 90% in Saharasa and 78% in Khagaria ate more nutritious diet. We find maximum number of women eating same kind of food as before pregnancy in rural areas of Patna (35%).

Among the rural samples, 18.8 % was eating similar food as pre-pregnancy in terms of nutrition and 81.2% were eating more nutritious food during pregnancy. 100% of the urban sample claimed that they ate more nutritious food than pre-pregnancy.

As far as the urban pregnant and lactating women are concerned, not even a single woman out of the sample of 1000 said that she ate the same diet. 100% of the urban sample agreed that they ate more nutritious food as pregnant and lactating mothers.

Question 2 *“number of meals eaten during pregnancy or lactation”*

In Patna, we see 2.5% eat one meal 75.7% two meals a day, 14.5% eat 3 meals and 7.3% eat four meals a day. In Nalanda 3.2% one meal, 17.5% two meals, 78.5% three meals.8% eat four meals a day. In Rohtas, 2,5% eat one meal,71% two, 24% three, and 2.3% eat four meals a day in their pregnancy.41% two meals,55.7 three meals,3.3% eat four meals a day in

Saharsa. Among the pregnant sample in Khagaria 0.5% are eating one meal. 51.5% eating two 42.7% are eating three and 5.3% four meals a day. District wise, the rural sample shows that women are eating mostly two meals a day.

1.7% of the rural women ate one meal, 51.37% ate two meals, 43.07% ate three and 3.83% ate four meals a day as pregnant mothers. Among the urban sample, 63% ate three meals and 27% ate four meals.

### **Number of Ante Natal Checkups (ANC) Table 1A, 2A and Chart 1A)**

The Tables show the number of ANC check ups that the pregnant women get done in each location of the each district. In the Patna villages 54.8%, Nalanda 26%, Rohtas and Saharsa 18.5 % each and Khagaria 37% of the sample do not have ANC check ups at all. Two ANCs are utilized by 21% in Patna, 30% in Nalanda, 42% in Rohtas, 56% in Saharsa and 37.5% in Khagaria. The maximum “more than three ANCs” are used by pregnant women in Rohtas (28.2%), 15% of Patna and 15.2% in Saharsa. In Khagaria only 8% of the sample gets more than three ANCs done.

On a Rural average basis, 31% claimed that they did not go for ante natal check-ups, 16.3% went for a single ante natal check up, 37% for two and 15% go for three or more than three.

On the other hand urban sample showed that 57% have two, 43% have more than three checkups. Patna urban sample indicated that all the women go for more than three check ups whereas the Patna rural sample showed 55% with no ANC whereas 11% have one and 21% two and 13% go for more than three checkups.

## **Intake of Iron Tablets (Table 1A, 2A and Chart 1A)**

For Rural areas In Patna 68%, in Nalanda 58%, in Saharasa 55%, in Rohtas 24% and 40% in Khagaria took iron tablets during pregnancy. The average for the rural areas was split 50:50 between the users and non-users.

In the Urban areas, users of iron tablets totaled Patna 64.5%, Nalanda 71.3%, Rohtas 56%, Saharsa 59% and Khagaria 64%.

## **Delivery (Tables 1B, 2B and Chart 1B)**

### **a. Question 1 – “Place of normal delivery”**

In rural Patna, no one planned to deliver at home, only 1.5% at parents home, 11% at private and 88.5% at government hospitals. In Nalanda 31% at either home or parental home, 39% at government hospitals and 18% at private hospitals. Similarly for Rohtas, 28% at home and parental home, 54% at government hospitals and 18% at private hospitals. For Saharsa 17% at home and parental home, 69% at government hospitals and 14% at private hospitals. For Khagaria, 16.2% at home or parental home, 67% at government hospitals and 16% at private hospitals.

The averages for the rural areas were: 9.6% home, 8.9% parental home, 15.5% private hospital and 62.7% government hospitals.

For urban areas, the averages were 10.8% at home, 28.2% at parent's home, 20.5% at private hospital and 38.5% at government hospitals.

### **b. Question 2 – “Place of delivery in case of Complications”**

For complicated cases, in both rural and urban areas no one wanted the delivery to take place at home or parental home.

In the rural areas overall, there was a slight preference for private hospitals (52.9%) over government hospitals. However, this varied

from 90% preference in Patna for private hospitals to only 35% in Saharsa.

Even in the urban areas, there was a 56.7% preference for private hospitals over 42.7% of government hospitals. The variation was 52% in Saharsa for private hospitals to 61.3% in Nalanda.

### Contraception after delivery (Tables 1B, 2B and Chart 1B)

The averages for the rural areas were: No contraceptive methods 65.5%, operation 24.4%, pills 14% and no one took advice from doctors.

In the rural samples, Nalanda fared best with 23.5% opting for operation and 20% for pills.

In the urban samples, while 25% did not resort to any contraceptive methods, 26.7% preferred operation, 34.2% pills and the rest other methods on the doctor's advice.

It was no surprise that over 80% of the samples resorted to some form of contraceptive in urban Patna. On the other hand only 69% used contraception methods in Khagaria.

### B. Indicators of Infant Mortality Ratio (IMR)

**Table 1C Districtwise Rural IMR Indicators**

	All figure in %														
	Immunization		ORS Use		Newborn Illness				Type of baby feed			Milk in Diarhia			
	1	2	1	2	1	2	3	4	Bot/pkt	cow	self	Bt/Pkt	Cow	self	
Patna Av	0	100	76.8	23.2	0	0.8	97.8	1.3	7.3	90.7	2	0	95.7	4.3	
Nalanda Av	2.3	97.7	58.8	41.2	1.5	4.5	45.7	48.3	2	6.7	91	0.3	1	99	
Rohtas Av	3.7	96.3	47.8	52.2	0	34	36.5	29.5	3.3	51.5	48	2.7	25.2	72	
Saharsa Av	22.8	77.2	61.7	38.3	0.8	0.5	41.8	56.8	5.8	43.5	48	0.3	51.8	48	
Khagaria Av	4	96	50.8	49.2	0.8	8.3	60.3	30.5	4	35	61	0	34	66	
<b>Rural Av</b>	<b>6.6</b>	<b>93</b>	<b>59.2</b>	<b>40.8</b>	<b>0.6</b>	<b>9.6</b>	<b>56.4</b>	<b>33.3</b>	<b>4.5</b>	<b>45.5</b>	<b>50</b>	<b>0.7</b>	<b>41.5</b>	<b>58</b>	

**Table 1D Districtwise Rural IMR**

All figures in %

	Anemia Treatment				Newborn Ht/Wt			Critical Illness		
	1	2	3	4	No	Yes	don'tknow	hm Rem	PvtHos	GtHosp
Patna Av	0	0	74	26	100	0	0	0	92	8
Nalanda Av	0	0	41.3	62	90.3	9.7	0	0.3	53	46.7
Rohtas Av	0	0	55	45	99	1	0	4.3	45	50.7
Saharsa Av	0	0	36	64	84.7	15.3	0	0.7	40	59.3
Khagaria Av	0	0	31	69	90.7	9.3	0	0	59.3	40.7
<b>Rural Av</b>	<b>0</b>	<b>0</b>	<b>47.5</b>	<b>53.2</b>	<b>92.9</b>	<b>7.1</b>	<b>0</b>	<b>1</b>	<b>57.9</b>	<b>41.1</b>

**Table 2C Urban IMR Indicators**

All figures in %

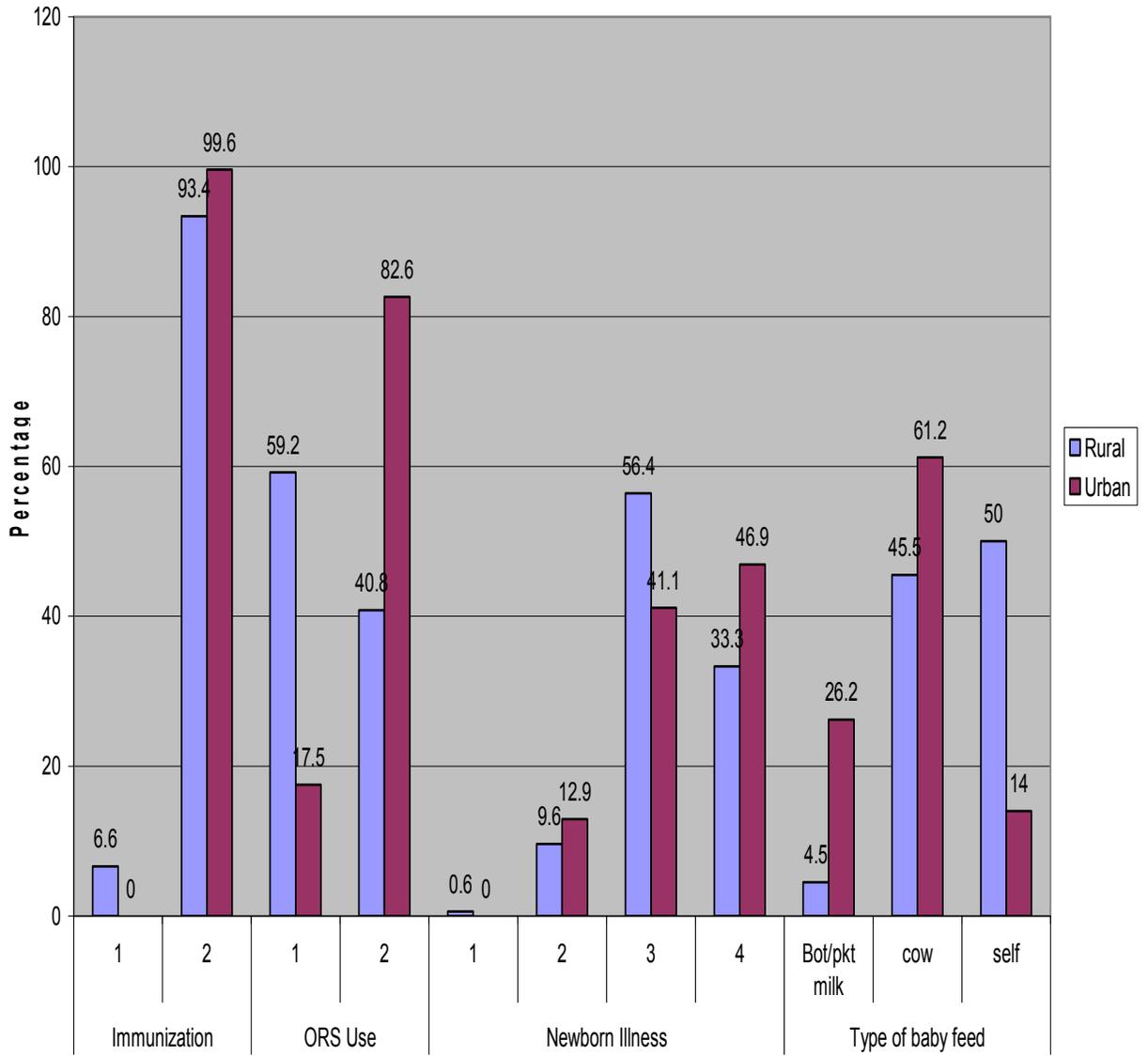
	Urban Immunization		ORS Use		Newborn Illness				Type of baby feed		
	1	2	1	2	1	2	3	4	Bot/pkt milk	cow	self
Patna Av	1	99	10.5	89.5	0	10.5	47.5	42	28	56	14.5
Nalanda Av	0	100	27.3	72.7	0	10.7	42.7	46.7	15.3	44.7	6.7
Khagaria Av	0	100	16	84	0	17	23	60	26	64	10
Saharsa Av	0	100	18	82	0	17	44	44	26	64	21
Rohtas Av	0	99	17	83	0	13	41	47	26	61	14
<b>Urban Av</b>	<b>0.4</b>	<b>99.6</b>	<b>17.4</b>	<b>82.6</b>	<b>0</b>	<b>12.9</b>	<b>41.1</b>	<b>46.9</b>	<b>26.2</b>	<b>61.2</b>	<b>14</b>

**Table 2D Urban IMR Indicators**

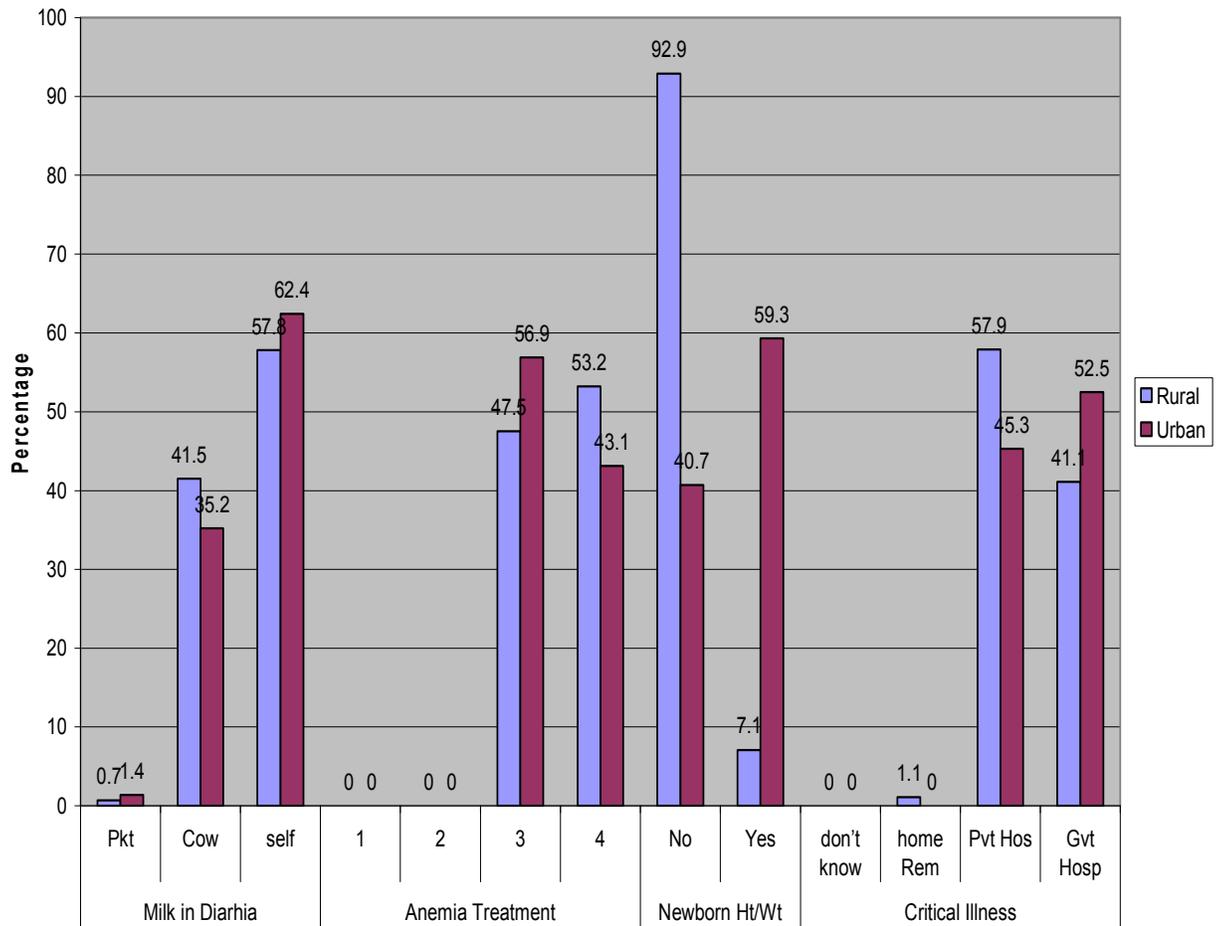
All figures in %

	Milk in Diarhia			Anemia Treatment				Newborn Ht/Wt			Critical Illness		
	<i>Pkt</i>	<i>Cow</i>	<i>self</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>No</i>	<i>Yes</i>	<i>don't know</i>	<i>Home Rem</i>	<i>Pvt Hos</i>	<i>Gvt Hosp</i>
Patna Av	3.5	36	60.5	0	0	65	35	33	67	0.5	0	49	50.5
Nalanda Av	0	22.7	44	0	0	50	50	32.7	67.3	0	0	51.3	48.7
Khagaria Av	0	39	56	0	0	52	48	50	50	0	0	37	53
Saharsa Av	0	31	69	0	0	56	44	58	41	0	1	37	62
Rohtas Av	1	35	62	0	0	57	43	41	59	0	1	45	52
<b>Urban Av</b>	<b>1.4</b>	<b>35.2</b>	<b>62.4</b>	<b>0</b>	<b>0</b>	<b>56.9</b>	<b>43.1</b>	<b>40.7</b>	<b>59.3</b>	<b>0</b>	<b>0</b>	<b>45.3</b>	<b>52.5</b>

Chart 2A IMR Rural-Urban Comparison



**Chart 2B IMR Rural-urban Comparison**



**1. Immunization (Table 1C, 2C and Chart 2A)**

On an average basis, 93% of the samples in the rural areas had their babies immunized.

In the urban areas, this figure was 99.6%

District wise, in the rural areas, 100% of the samples in Patna were immunized compared to 77.2% in Saharsa.

## **2. Knowledge of Oral Re-hydration Salts (ORS)(Tables 1C, 2C and Chart 2A)**

In the rural areas an average of 59.2% had no knowledge of ORS

District wise, in the rural areas the knowledge of ORS varied from a high of 52.2% in Rohtas to a low of 23.2% in Patna.

The average for the urban areas - 82.6% had knowledge of ORS.

Patna scored highest with 89.5% to Nalanda lowest at 72.7% positive on ORS knowledge.

## **3. Treatment of the illnesses in newborn (Tables 1C, 2C and Chart 2A)**

- 13% of the urban sample said they would use home remedies, 41% private and 47% preferred government hospitals for the treatment of the for Newborn Infections of pneumonia and diarrhea. However, the urban samples of Patna and Saharsa showed preference for private hospitals more than government hospitals.
- For the treatment of anaemia, 57% opted for private and 43 % for govt. hospital.
- In case of critical illnesses, 45% opted for private and 53% opted for government hospitals.
- As for the rural sample, 10% said they did not know what they would do,10% would use home remedies, 55% for private hospital and 43% for government hospital in case of newborn infections of pneumonia and diarrhea.
- For the treatment of anaemia of their newborn infants, rural sample.
- Similarly, for the treatment of critical illnesses, 60% opted for Private hospital and 40% for the government hospital.

## **4. Baby feed (Tables 1C, 2C and Chart 2A)**

- 7.3% of the Patna rural sample said that they would give tinned milk to their newborn and 91% cow's milk and 2% breastfeed the baby. However, the 2% of the Nalanda planned to give tinned milk, 6.7% cow's milk and 91.3% breastfeed to their babies. In Rohtas 3.3% (tin),

51. 5%(cow) and 48.2%(self) were the percentages for the rural sample. In Saharsa 5.8% wanted to give tinned milk, 43.5% cow's milk and 47.5% gave breastfeed to their babies. In Khagaria, 4% (tin), 35% (cow's) and 61% opted for breastfeeding the newborn.

- In case of baby suffering from diarrhea, none of the Patna rural sample would give tinned milk to their newborn and 95.7% cow's milk and 4.3% breastfeed the baby. However, the .3% of the Nalanda planned to give tinned milk, 01% cow's milk and 98.7% breastfeed to their babies. In Rohtas 2.7% (tin), 25.2% (cow) and 72.2% (self) were the percentages for the rural sample. In Saharsa .4% wanted to give tinned milk, 51.8% cow's milk and 47.8% gave breastfeed to their babies. In Khagaria, none opted for the tin, 34% for cow's and 66% opted for breastfeeding the newborn.
- 26% of the urban sample said that they would give tinned milk to their newborn and 61% cow's milk and 14% breastfeed the baby. However, the 30% of the Patna urban sample gave breastfeed to their babies. In case of baby suffering from diarrhea, 14% would opt for tined milk, 35% for cow's milk and 62% would breastfeed the baby.
- As far as the rural women were concerned, 4.5% opted for tinned milk, 45.5% for cow's milk and 50% opted for breast feeding for the normal feeding of the baby. However, in case of diarrhea, only.7% said they would give tinned milk, 41.5 settled for cow's milk and 57.8 for breastfeed.

##### **5. Newborn height and weight (Table 1D, 2D and Chart 2B)**

- 100% of the Patna, 90% of Nalanda, 99% of Rohtas 85% of Saharsa, 98% of Khagaria rural sample did not weigh their babies and measured their heights.
- Urban To the question whether they weigh their children and measure their height, 40 percent said that they did not do it and 60% of the urban sample replied in the affirmative. 98% of the urban Patna sample claimed that they weigh their babies and measure their heights.

- Rural 93% of the rural sample did not weigh their babies and measured their heights. Only 7% did.

## **B Qualitative Findings**

### **Focus group discussions- 4.**

#### **Case Interviews 11**

Name of Village: Ramnagar Math, Dist. Khagaria

Date:-25/2/2009, Time:-11:00 am (discussion for 2 hrs)

Location: - Sheela Devi's verandah, w/o Uma Nath Singh (farmer)

No. of people: - 12 (male and female)

Topic of discussion: Facilities and healthcare for pregnant woman

Manju Devi, one of the participants complained about the lack of health facilities in the village. In the absence of a medicine shop or doctors, one had to travel 15-20 kms to reach the dispensary in **Khagaria town**. If the condition is serious, women usually die on the way. In Khagaria town also there is no facility for proper care and attention towards pregnant or post pregnant woman. Manju Devi had lost her sister two months back due to pneumonia after delivery and not much care could be taken in the village. According to the participants, lack of awareness about health, especially among married woman seemed to be the main cause of large number deaths of woman in the village.

The delivery of Sheela Devi's two daughters-in-laws' was held under the supervision of village *chamein* (nurse, dai) at home only. She proudly claimed that her daughter-in-law had normal children. When the daughters-in-law were contacted about their experience during their pregnancy and delivery, they said they were very frightened and had left everything on god.

Shanty Devi said that the Anganwadis of their village were not running as smoothly as they should. Most of the women consulted their senior family members regarding pregnancy problem rather than go to any doctor for ante-natal check -ups.

Suggestions: - a team of doctors should visit the village and spread awareness regarding different complications that occur during and after pregnancy.

## **Conclusions**

Lack of awareness about maternal and infant health issues among people specially women

Heavy dependence on traditional birth attendant (dais).

Lack of medicine shops and medical facilities and doctors in Ramnagar Math of Khagaria.

Anganwadi of the village not working well.

## 2. Urban Khagaria (Lawn of Mrs. Renu Kumari, Ex M.P.)

Time - 11.00am to 3.00pm Date – 2<sup>nd</sup> May 09

Participants –28 (12 Men aged 40 – 50 yrs, 16 Women aged, 30 – 45Age)

Topic of discussion – Maternal Health awareness and childcare.

Ambpali co-coordinator Pushpa Singh led the discussion by putting up questions and taking feedback. Women were questioned regarding facilities of village dispensaries and availability of medicines, doctors and treatment on time. Most of them were unhappy by the facilities provided there. Even men are inside the labor room which makes the women very uncomfortable. One participant Ms. Sangita narrated her experience when she came to her mother's place in Khagaria for delivery. She gave birth to a dead boy due to wrong diagnosis of the nurse in the town hospital. After the incident, she stayed at her in-law's place for her second delivery, went to Patna Kurji Holy Family Hospital and had a successful delivery..

Many women complained that men don't co-operate with them even in the difficult time of pregnancy. And so they have to carry on with the hard domestic work of even carrying bucket-full of water from the wells or hand pumps. Most of the women who don't want to deliver the baby and wish to abort the child are not allowed because it may be a boy who can help in the family business.

Life of women, according to the elderly Ms Gayatri Devi, was pathetic as they don't have any say about decisions on contraception or planning for number of children as one can afford. In case of an unwanted pregnancy; men just give a cold shoulder and tell the spouses to manage. How can an illiterate woman manage a situation like this, if they have never stepped out of their houses?

To the questions about their preferred sex of child, the men said it is all gods' wish but definitely they would prefer to have a boy because, they would grow up to take care of them. On the question whether they were taking care of their parents, they said **“how we can, as we are busy, our spouses are looking after them”**.

So it can be concluded that women have multifarious tasks to perform. They have to take care of themselves, children, the family and society. The group felt that **“the role of men was to just to earn money and make a woman pregnant and leave them to take care of themselves”**

### **Conclusions**

- Unsatisfactory medical services in urban Khagaria
- In the town government hospita, even men present inside the labour rooms.
- Burden of housework and responsibilities
- No say about contraception
- Men prefer sons to daughters
- Men not helpful

3. Name of the village:- Goregawan, Patna

Date:-20/1/2009, Time: 11:00 a.m.-1 pm, Place: school ground, under a tree

Participants:-12-13 female; 4-5 males; a few girls and 3-5 old citizens. Many more people joined the discussion after seeing the crowd.

To the question as to where they preferred going for ante-natal care or treatment, they answered that due to lack of money they would go to a

govt. hospital. About the kind of care in the hospital, all of them showed anger and agreed that that it is not satisfactory and the neta's(leaders) of the area should sometime come to see for themselves as to how the patients are being looked after.

On the question on number of meals during pregnancy, the educated participants replied 3-4 times and the poor participants said that 1-2 times as usual as they could not afford more than that.

Most of them agreed that they went for check ups and also took iron tablets but no fruit supplements. They preferred going to a hospital for delivery. They would go for "hum do hamare do" policy.

They want to give polio drops and immunization for their neonatal after delivery. For any complication they preferred going to private hospitals. There was no ambulance facility, trained nurse or hospital for treatment of premature baby around their locality.

We came across a mother of 8 months old twins who looked like one month old. Her husband's earning of Rs. 2000 was not enough to provide them with proper nutrition. The mother was breast feeding them but she herself was very thin and perhaps not eating proper food to provide enough for her twins.

### **Conclusions**

Due to lack of money, they would go to govt. hospital.

Government hospital very poorly equipped with equally poor service, no ambulance service, no trained nurses.

For complications, would go to private hospital, might need to sell property to meet the expenses.

No facilities for premature babies.

4. Saharsa Town, Manoharlal Vidyalaya, Purab Bajar,  
Time-10am.to 2pm Date 10<sup>th</sup> may '09'  
Participants-35 (15 girl students of 10<sup>th</sup> class, 16 Females (30-40age),  
4 Males (30-40age)  
Topic of Discussion Maternity and Childcare

The discussion was conducted by Ms Usha Das (member of Ambpali) who asked the participants to recognize a packet of O.R.S, distributed free of cost at government hospitals. Students did not have any idea. However, some men and women knew its use.

Participants were asked about the condition of government hospital, they said they don't like to go there, they preferred going to private hospitals even if costly. To save the child they sell their land or ornaments too.

When asked about the major family planning methods, they did not speak at first due to shyness. Rama Devi named condoms and everyone laughed. They have no knowledge of female monthly cycle plan. When women were asked whether they went for regular check up, they said that old ladies tell us not to move out of the house during pregnancy because of black magic. So they went to the doctor only if there was any problem of pain or when delivery pain began.

The women folk were unhappy by the non co-operative attitude of their husbands and seem helpless about it as they felt it was a male dominated society and they have to follow the husband's/i-.laws orders.

## **Conclusions**

Some adults know the use of ORS, students do not.

Government hospital in poor condition in Saharsa town

Elderly ladies did not allow the young pregnant girls to go for ANCs in Saharsa town

Non-cooperative attitude of the husbands and in-laws

Inadequate knowledge of contraceptive methods

They would sell jewelry or property to get treatment done at a private hospital rather than government hospital.

5 Place: Saha Nursing Home, Rajendra Nagar Patna

Date – 1 to 3<sup>rd</sup> May 2009

Discussion held with the patients waiting outside for their turn to meet the doctor.

Patient 1 – This patient come from Patna City for her routine check up with her mother to the doctor's clinic. She was quite worried because it was her first delivery and her in-laws were expecting a son.

Patient 2 – had come from Mandiri, Patna for a thorough check up of why she was not able to conceive. Married for the last 7 years, she had to get herself examined due to the pressure of the family. She was depressed by her infertility and for not fulfilling the desire of her husband and his family.

Patient 3 – She had an illegal sonography done to find out the sex of her child in her womb. The moment she was told that it was a female, her husband and her in-laws forced her to have an abortion. Therefore she had come with the hope to be helped. We told her it was illegal but she said that she already had two daughters and could not afford to have any more. We asked what if it was a male child, she looked at her husband and started crying. She was very afraid of the abortion process. Female foeticide, a crime in our society still prevails even after the laws being so strict. However due to so much advertisement of I-pills and other contraceptives, the cases of abortions have gone down. But the women are not aware of what harmful impact the chemical contraception pills must be creating on the physical system of a female body.

## **Conclusions**

For complicated cases, girls come to private clinics in Patna

There is pressure from the family to produce sons, force to get abortion of female foetus done despite them not wanting

No awareness about the harmful impact the chemical contraception pills-I pill

## 6 Place – Kurji Holy Family Hospital, Patna

Date – 21 – 25 June, 2009, Discussion with 3-4 maternity cases everyday

Case1 - Madhu Serafin of Bihita block, Patna-. She said that she did not trust her own block hospital so she came to Kurji hospital. She

trusted the Kurji nurses because they are sincere in their work and will care for her. Even though her husband was a poor mechanic she managed to bear the expenses as she did not want to take any risk to herself/ her feotus.

Case 2 - Rachna from Lalganj, Muzaffarpur- She had faced the trauma of multiple abortions in her village and so for this third pregnancy, her parents brought her to Patna for better treatment. She was quite happy and satisfied by the care of the hospital at the delivery of her daughter.

Case 3 - Rita Devi, Maner block,- Patna She had a complicated pregnancy of turned baby and as there was no post delivery care unit in that block, she had come to Patna for safety and proper care. She also had a daughter but not regretting as she felt daughters to be better than sons.

Case 4 - Rekha Mahto Anishabad, Patna-She had three daughters and was again pregnant in hope of a son. When asked why she was she not worried about her ill health due to so many deliveries, she said she had to keep her in-laws happy with a son; she said we have consulted an astrologer and have done a lot puja for it.

*(There is still the myth of son being important in the society for which a woman has to suffer so much. Yet education and awareness has changed the scenario some what)*

## **Conclusions**

There is no faith on block hospitals

For complicated delivery, they come to Patna private hospitals

There is a pressure to get sons

### **7 Place - Danapur Army Hospital, Patna**

Date – 26<sup>th</sup> to 30<sup>th</sup> June, 2009, Discussion with 2 lady doctor and 4 nurses

Doctor 1 We have about 15-20 pregnancy cases every day and we try for normal delivery. There are some cases where the mothers want operation conducted at a certain time decided by astrologers. They

thought these cases strange that after so much modernization, man is inclined towards such beliefs.

Doctor 2 Normally a pregnant girl is nervous for the first delivery but much better for later ones. Now normally they are above 20 and above. The very young and above 40 cases are rare. 20-30 age groups are maximum. Now due to higher education and job oriented social structure, gradually 30-40 age group is growing in India.

Nurse 1 In many cases, the pregnant girls are more concerned about the well being of their child rather than themselves. There is lack of awareness regarding importance of cleanliness, hygiene, malnutrition, loss of blood and vitamin A. These are frequent phenomenon among the pregnant ladies of the village. Many times we come across, short-tempered and irritated patients asking silly questions,

Nurse 2 This month we have faced about 10 cases of miscarriage due to malnutrition. All except 2 were from rural section that did not take proper food during pregnancy and faced miscarriage of 3-4 months. They became very weak during the cleaning process in the hospital due to mental and physical pressure both.

## **Conclusions**

- There are cases when astrologically defined time is selected for delivery of a caesarian section baby even in urban Patna.
- The girls and women do not give importance to their health. They give more importance to their children's health.
- There is lack of awareness regarding importance of cleanliness, hygiene, malnutrition, loss of blood and importance of vitamins among the women.

## DISCUSSION

### Rural-Urban Differential

#### A. Nutrition

- The findings on the nutrition of the diet and the number of meals show a clear cut difference between rural and urban sample. The urban women definitely are having better diet in terms of more nutrition and more meals. Almost 19% of the pregnant and lactating women from the rural areas eating the same kind of food as before pregnancy, 81% of the women claim that they are eating better diet. As far as, the number of meals is concerned, 1.7% of pregnant rural women are eating only one, 51.5% of women eat two meals and around 47% eat three or more meals a day. On the other hand, among the urban pregnant and lactating women 100% of the sample agreed that they ate more nutritious food as pregnant and lactating mothers. Thus it is clear that in terms of nutrition of the diet and number of meals, the urban pregnant and lactating moms are far ahead of the rural moms with 63% eating three and 27% more than three meals in a day.
- Findings on Number of Ante Natal Checkups (ANCs) also show 31% of the rural sample not going for ante natal check-ups at all, 16.3% went for a single ante natal check up. Whereas among the urban sample, no one who did not have ANCs or even one ANC. The data showed that 57% have two, 43% have more than three checkups. The urban–rural difference is accentuated in Patna finding where all the urban women go for more than three check ups whereas Patna rural sample showed 55% with no ANC and 11% having one. Patna is the capital and that is why it is more surprising that the Patna rural areas are so backward in indicators. Obstetricians advise that antenatal care should begin, at the latest, six weeks after the last menstrual period. Studies of the impact of the initial antenatal visit show that, even when antenatal care is initiated as late as the third trimester, there is a substantial reduction in perinatal mortality (Ramachandran, 1992. In case of fewer ANC visits, e.g., one visit, in both urban and rural areas a substantial majority of

mothers who receive antenatal care receive it for the first time at a later gestational age than is recommended. The findings do show that even late ANC is better than none for reducing the IMR.

- The findings of Intake of Iron Tablets show the rural sample equally divided among users and non-users and 64% of urban taking it. NFHS report discussed earlier has shown that during ANC visits the advice about the Iron tablets is provided. Our findings on ANCS have clearly indicated that the visits are so non-existent or few, the intake of tablets are also erratic.

#### B. Place of Delivery

Regarding delivery place, the findings show that many deliveries are taking place at home (showing a total of 18.5 as home delivery, for the rural women) either one's own or parental home and around 77% institutional deliveries as far as the rural sample is concerned (20.5 percent at Private hospital and 38.5 percent at Government hospital). This trend is also visible among the urban pregnant girls. The urban sample shows a total of home delivery as 39% and 61% as institutional. It is surprising that a large chunk of even our urban sample is delivering at home. The qualitative data has demonstrated some reasons for it. One reason is that they do not think that ANCs are important, especially as the elder generation reminds them that before the advent of the hospitals etc, the children were being born through the help of traditional birth attendants, (**Chameins**, as they are called in Bihar dialects) Other reasons mentioned were the poor quality of government health systems, cost, inconvenience etc.

For complicated cases, none wanted to stay at home, .As far as the preference for hospital was concerned this was visible for government hospital was more preferred for normal deliveries (cost factor) and private hospital for complicated ones ( cost no matter for the family). If the complications were known, for example the baby was upside down, or troubled pregnancy. But as the literature has shown that there are

many complications which happen at the delivery time for which one cannot be prepared. So, the need for **Skilled Birth attendant** rather than the **Traditional birth attendant** are crucial for a safe motherhood. The developing countries which have drastically reduced their MMR and IMR have recognized the value of this factor.

C. Contraception

On the question of Contraception, no contraception was the most popular option for the rural women. Operation was the next option and pill was the last preference (14%) It does seem clear that concept of spacing is not yet practiced there. The qualitative finding has also indicated that women do not have much idea about spacing methods. Among the urban sample too, 25% have answered for none option. Pill (34%0, operation (27%) and doctor's advice (13%) are the other urban options. It does seem that a huge population of young married girls in Bihar, irrespective of being urban or rural, is not aware about the need for informed contraception and spacing. Our interviews have indicated that the men and the elderly have not allowed the young couples to explore the contraception options. The son-centeredness of our society is another crucial factor here. Everyone wants more sons as soon as possible. So the children are produced till they have one, two or three sons. The recent success of our National Family Planning Program has been mainly evident in more number of operations being performed as the chief family planning method used by urban-rural population in the state. However, when we see the age group of the girls who are getting the operations done, they seem to be very young, in twenties, even as young as 19-20-21. So this is another factors which needs attention. What are the implications of using the terminal family planning method at so young an age?

D. Immunization

It does seem that there is awareness and need about immunization and polio drops. About 98% of rural and 100% of the urban population is keen to immunize their newborn. However, the facilities in the rural areas are very poor as shown in the findings and also by our focus group and case interviews. As our interviews have shown that women are more conscious

of their children's health rather than their own is evident in this finding. Almost the entire sample has agreed to immunize the baby.

E. ORS

In rural areas a huge population of mothers are not aware of ORS. In urban areas too, only about 83% knew about it and 17% were unaware. Literature has shown that diarrhea is one of the major killers of newborn infants and use of ORS can bring down the incident of newborn death substantially.

F. Illness of Newborn

The respondents have been asked about pneumonia, diarrhea, anemia, critical (serious) illness of the newborn, hardly anyone has opted for home remedies. Mostly they have opted for hospital whether in rural or urban areas. In fact they have mentioned that they would not mind selling land etc and go for quality health care for their babies. This finding that the people are interested in the healthcare of their children is also in accordance with the fact that Bihar has made strides in improving IMR.

G. Baby Feed

Breastfeeding is not preferred among the sample with only 14% of the urban and 50% of the rural sample choosing it. There is a greater choice of other kinds of milk among the sample with urban choice of tinned milk at (26%) and in rural areas (4.5%), for cow's milk at 61 % (urban) and 45.5% (rural areas). During diarrhea also, the trend is there. However, during the diarrhea the breastfeed figures become more popular as is shown in the data by huge improvement in the in the urban (62%) rural sample (58%). The data shows a shift in the attitudes as breastfeeding is not only recommended by the doctors, even traditionally it was the preferred variety of milk. .

H. Newborn height and weight

There is a large difference visible among the moms who are weighting the babies and take their heights between the rural and the urban. 93% rural

and 40% of the urban do not do it. Only 7% of the rural and 60% urban sample do it. Deaths during infancy are due to a particular mix of diseases and conditions to which the adult population is less exposed and less vulnerable and low birth weight of babies make them specially susceptible to health risks. So, the low birth babies have to be immediately looked after at the healthcare centers.

The findings completely support our hypothesis that the urban respondents would be higher on MMR & IMR indicators. We find that in each indicator the urban population shows higher percentages figures than rural figures.

### **District differential**

#### **1. Nutrition**

Data shows that only 63% of the respondents in Patna rural areas are eating more nutritious diet than before becoming pregnant. They emerge as the poorest area in this regard. The highest number of better responses have come from Rohtas (95%), Saharsa (90%) Nalanda (81%), Khagaria( 78%), respectively.

With regards number of meals, 1.7% of our rural respondents are eating only one meal. Highest in this segment is Nalanda (3.2%). Rohtas and Patna with 2.5% with one meal diet emerge as dangerously low on this indicator. Nalanda is also highest on three meals ((79%).Two meals is highest in Patna (76%) followed by Nalanda (71%). Eating poor nutrition or one meal during pregnancy is harmful for the foetus growth and development and is directly related to the stunted or wasted, low birth weight babies and complications for the mother. Our hypothesis regarding Patna and Nalanda being better than the other three districts, on MMR indicator is not getting supported at this point as we see a large number of girls in Patna not eating nutritious diet and again in Nalanda eating only one meal during pregnancy.

## 2. Anti Natal Checkup

The Patna rural sample is again dangerously low on ANCs with 59% without a single check-up followed by Khagaria (37%) Nalanda is topping with one ANC (36%). We see that regarding the ANCs too, our hypothesis is not getting supported as a large number of girls are going without or with only one ANC during the pregnancy in the rural areas in Patna and Nalanda. In fact the findings indicate Rohtas and Sahara as the best among the districts on this indicator.

## 3. Iron Tablets

As far as Iron supplement is concerned, the entire sample is dangerously low on iron intake. Patna and Saharsa are poorer than other districts on this indicator. More girls namely, 68% in Patna, 58% in Nalanda, 55% in Saharsa ,40% in Khagaria, and 24% in Rohtas are going without it. Patna and Nalanda are worse than the other districts as the data indicates.

## 4. Place of delivery

As far as place of delivery is concerned, in the Patna rural areas, none plan to deliver at home, only 1.5% at parent's home, 98.5% at hospital. On this indicator, Patna is emerging as better than other districts. However, in Nalanda 31% are planning to deliver at either own or parental home. Another finding which is emerging here is that the preferred hospital is Government hospital rather than private hospital for delivery. As the field notes of the investigators and the qualitative data has shown, they prefer the government hospital because of the low expense rather than because they like the facilities or the services.

For complicated cases, hardly anyone wanted to deliver at home; with 0.5% in Patna and 0.5% in Nalanda. Another notable result here is that most wanted to go to Private hospitals and not to the Government hospitals. The focus and case interviews have shown to us that when they are convinced of going to a private hospital they would even sell their assets. Data from literature has shown

that hospital expense is the biggest category of loans for the people in rural Bihar.

#### 5. Contraception

If we look at the rural data district wise, we find that none option (would not use any contraception after delivery) was used by maximum number of pregnant girls (average of 65%). This was by far the most frequent response in each district. The second option of operation was also popular for women who had at least two-three sons. Number of daughters was not important. The third option “the Pill” was used more by 19% (Patna) 20% (Nalanda). Contraception advice by the doctor was not used by rural women at all. It seems to be thus because of the fact that it is not available to them as is clear from the focus group interviews. The rural folk are not yet aware/ convinced of the spacing of pregnancy. If the husband/ in-laws want more children, they would not use any method. When the desired number of children is fulfilled, they would go for operation.

#### 6. Immunization

District wise rural response to the question on whether they would get their babies to have polio drop and immunization shots showed that In Patna villages 100% opted for ‘yes’ meaning they would give the new infant all the immunization doses. An average of 94% among the rural would be moms have shown their desire to immunize the children. However, the qualitative data has also shown that the poor quality of healthcare available in the villages distresses the community. The data does show that there is sufficient awareness among the community regarding the need for immunization.

#### 7. ORS Use

ORS packets are distributed free by the hospital and PHCs to the relevant public. Knowledge of ORS use is very important to reduce fatalities from diarrhea which is a major killer of the infants. However, here again, the Patna villages have scored poorer than villages from other districts.

Around 77% from Patna and 59% of our sample from Nalanda have shown ignorance about it. Here again, our hypothesis is not supported.

#### 8. Newborn Height and Weight

Measuring newborn height and weight is an important factor in infant care. The factors of stunting and wasting are anticipated and treated if the child is underweight and provided the relevant looking after and treatment. Here too our hypothesis is not supported because in Patna we see 100% of sample, not measuring the weight and height and in Nalanda 90.3% not doing it. However, 93% of the entire rural sample is unaware of these methods.

#### 9. Newborn illnesses

The findings show that for pneumonia, anemia, diarrhea, and any other critical illnesses, private hospital treatment is preferred than government hospital treatment. Very few have opted for home remedies. Here the Patna sample has shown maximum score for Private hospital. This finding is not surprising considering the poor state of PHC and the government hospitals.

#### 10. Baby Feed

The data here also shows a trend away from the breastfeeding with 4.5% opting for tinned milk powder for newborn even before the child is born, 45.5% opting for cow's milk and 50% planning for breastfeed of our total rural sample. Even in diarrhea, only 57.8% have opted for breast feed. Around 91% of the Patna sample is opting for cow's milk as the newborn feed and 95.7% during diarrhea. During diarrhea too, similar choices for feed has been indicated in the sample. The only difference is the Nalanda sample (91%) opting for breast feed and during diarrhea 99% opting for breastfeeding. Our hypothesis that Patna and Nalanda rural sample would be higher on IMR and MMR indicators than Rohtas, Khagaria and Saharsa has not been supported. It seems that the all rural areas are equally disadvantaged in Bihar

## CONCLUSIONS

Sub-optimal functioning of the delivery services, lack of ambulances and poor referral services at rural PHCS and government hospitals makes the primary health care of maternal, newborn unavailable to most vulnerable women and children of our sample areas.

There is no proper hospital or nursing home for care of critically ill newborn.

ANC, Iron and Folic Acid intake, breast feeding, measuring the height and weight of the newborn, ORS use etc are very poor among the sample. There is a large difference between the rural and the urban sample in terms of their use of essential prenatal requirements.

Community based Skilled Birth Attendant for maternal and child health care as a cutting age factor in reducing Maternal Mortality are not available for our sample community. The traditional Dais (attendants) can not cope with delivery time complications.

Heavy work load of women in agrarian life style is an important factor for poor maternal and newborn health.

Socio-economic and cultural practices of discouraging pregnant or young girls to go for health centers.

Pervasive gender inequality is rampant making the women unaware of the need to take of their own health.

There is lack of conviction on necessity of antenatal check-up, lack of knowledge of services of antenatal care services especially among the elder generation who control the younger couples.

There is need to aware the community about the advantages if breastfeeding and disadvantages of outside feed.

There is need to educate the community about the entire contraceptive scenario. The various factors and their implications for larger health issues of the women. Even the details and the implications of new emergency contraceptive pill have to be informed to them. The implications of the operation at a very young age should also be told to them. The contraceptive awareness programs should have adequate privacy as the young girls are shy to participate in the beginning.

There are substantial gaps in health sector infrastructure and essential health requirements in terms of ambulance, equipment, emergency drugs and consumables in primary health care institutions

There is lack of intersect oral synergy at the rural level; means the different facilities available at the Panchayat level are not co-coordinated. ICDS and Aanganwadi Worker, sanitation campaigns, drinking water; school health programme should be co-coordinated to create a positive atmosphere in the rural areas for attitude change and utilization of ANC facilities.

There is poor level of women's empowerment and literacy programs which would also go a long way in influencing the attitudes of the people themselves towards lowering maternal and infant neglect,

## SUMMARY

Maternal and Infant Mortality indicators in rural and urban areas in five districts of Bihar, namely, Patna, Nalanda, Rohtas, Saharsa and Khagaria .were studied in terms of their being used by the pregnant and lactating mothers. The indicators included ANCs, Nutrition, No of meals for the pregnant and lactating mothers, intake iron tablets, place of delivery, and complication in delivery, use of ORS, kind of Baby feed, and treatment of newborn illnesses, anemia, and critical illnesses of infants. The sample consisted of 3000 rural respondents from 15 villages, three villages from each district and 1000 from urban areas of the same districts and around 100 people from the community in Focus Group Discussion and Case Interviews. The tools used were Matri-Shishu Kalyan Sarvekshan- a twenty question Interview schedule for the quantitative data and focus group discussions and Case interviews for qualitative data. The data were analyzed in terms of percentages. Findings indicated a huge differential between the urban and rural sample in terms of their scores on accessing these indicators. All the rural areas scored poorly on the indicators than the urban areas. The rural areas of Patna and Nalanda ( more advanced districts) did not show any advantage over the rural areas of the other three districts, Rohtas, Saharsa and Khagaria ( more backward districts). The recommendations for Central Government, State Government, District Authorities, Panchyat and Voluntary Organizations have been suggested.

## RECOMMENDATIONS

### For The Central Government

- There should be policy level decisions regarding recruitment of doctors. The salary and facilities provided to the doctors posted at rural areas should be adequate to make it attractive to them so that they work there.
- There should also be a policy regarding posting of skilled birth attendants' at all rural areas.
- The attitude towards baby feed among the communities in Bihar needs to be studied further to understand the dynamics behind the shift away from breastfeeding.

Central Government should get continuous evaluation done for the functioning of State health services, government hospitals, local services, NRHM etc. These findings should be used for drawing up plans for improving the accessibility of the services to the community through small local agencies/voluntary organizations. This can help in implementing the changes required through the local organizations as well.

### For State Government

At least one ambulance (in working condition) should be provided at the government hospitals to help patients reach hospitals on time.

There should be free medicine, iron supplements, ORS packets supplies in the Government hospitals so that whenever pregnant ladies come for check ups they can avail the medical facility.

Trained and skilled birth attendants, experts, specialist doctors also should be made to attend government hospitals, especially in the rural areas, from time to time.

Proper maintenance of the government hospitals and primary health centers should be done in terms of cleanliness and hygiene. Some nutrition for the pregnant girls, like fruit juice etc should be made

available to the patients. This is important so that people develop faith in the government health centers.

There should be a separate mobile ambulance-cum-dispensary service for quick servicing of the patients in remote areas.

A mobile van to supply medicines at reasonable rates can be made available to visit the nearby villages once or twice a week depending upon the population of the village. It should contain general iron supplements, ORS packets, analgesic tablets, tonics, vitamin A tablets, condoms, etc. This would create health awareness as well as credibility about the health centers in the minds of the people.

Should keep monitoring and evaluating the local hospitals and health services and continuously implementing the recommendations immediately after the findings.

#### For the District Level Authorities

- The men should not be allowed in the check-up rooms and labor rooms in the health centers and hospitals as it makes the womenfolk very uncomfortable.
- The hospitals, primary health centers etc. should be in well maintained conditions.
- Free medicines and services should also be available to all needy patients.
- The vacant positions for Doctors, Skilled Birth Attendants and other health staff should be filled regularly.
- There should be health melas at regular intervals. It can provide the vaccinations, supplements, awareness talks on relevant issues, viz., nutrition, hygiene, sanitation, drinking water etc. Services for the infants that promote timely and adequate immunization, growth monitoring, care during diarrhea, adequate breast-feeding and weaning need to be strengthened. The community itself should be involved. The local co-operative societies, NGOs can also be involved.

#### For Panchayats

- The Primary health centre, ambulances etc should be in good maintenance condition.
- The free medicines/services should be available at the centre.
- Awareness programs regarding each component of the maternal and newborn health care, Contraception Care, Babyfeed and other health topics should be held regularly at the village levels.
- There is great need to involve men in the awareness camps. There should be separate camps for men as the women/families are not comfortable within mixed groups.
- There should be co-ordination with the other functionaries, departments, societies, NGOs etc. It will lead to greater utilization of resources and thus be more effective.

#### For local Voluntary Organizations, Cooperative societies, NGOs

More awareness camps with the help of the Mukhia of the village who should gather the women folk of the area to listen to experts talk on relevant topics that would make them acquainted with the new developments. The talk on Contraceptive methods and breastfeeding should be at more regular intervals.

The 'Anganwari' Volunteers should continuously hold awareness programs for health and nutrition of women especially for pregnant women of their area.

## Limitation of the Study

In India gender, age, tribe, caste, location, poverty, region and religion, all exercise a powerful influence over mortality and morbidity rates. Exclusion from one service is often reproduced across others – resulting in multiple deprivations and increasing vulnerability of the mother, infant or child to disease, morbidity and death. In this context, our study has not looked at religion, caste, tribe etc. as the scope of the study was limited.

Although the study has a large and a representative sample, it is more of a trend analysis study. It does show the trends which largely support the earlier findings of NFHS, NRHM and show the need for urgent interventions in terms of creating awareness among the community, modifying the health infrastructure especially in the rural areas of the state. Government needs to work closely with voluntary organizations and the community in the intervention programs. However, in order to pinpoint the target groups for intervention, we need to do the analysis of demographic variables also. Due to curtailment of the research project, demographic analysis has been left out. As the second part of this research, it would be interesting to identify the demographic components.

तारीख

1	गर्भवती/नवजात शिशु की मामता के रूप में आपका भोजन सामान्य की अपेक्षा कितना अधिक पोष्टिक होता है यानि दूध, फल, सब्जी आदि अधिक खाती है।	बिल्कुल नहीं	थोड़ा	अधिक	बहुत अधिक
2	आप कितनी बार भोजन करती है	एक बार	दो	तीन	चार
3	गर्भधारण के बाद डाक्टरी चेक-अप कितनी बार कराती है?	बिल्कुल नहीं	एक	दो	3/4
4	डाक्टरी सलाह पर आप आयरन की गोली खाती है?	नहीं	हाँ		
5	आपका बच्चो कहाँ पैदा होगा	घर	मैके	प्राईवेट अस्पताल	सरकारी अस्पताल
6	डेलिवरी में कम्प्लीकेशन होगा तो आप कहाँ जायेगी?	घर	मैके	प्राईवेट अस्पताल	सरकारी अस्पताल
7	डेलिवरी के बाद आप कौन सी फ़ैमिली प्लानिंग की विधि अपनाएगी?				

### मातृ-शिशु कल्याण सर्वेक्षण

राष्ट्रीय महिला आयोग अम्बपाली संस्था के सहयोग से बिहार के ग्रामीण क्षेत्रों में एक पारिवारिक सर्वेक्षण करा रही है। आयोग मातृ-शिशु कल्याण सम्बन्धित सूचना एकत्र कर इस सम्बन्ध में सुविधाएँ बढ़ाने की कोशिश कर रही है। आपसे प्राप्त सूचनाएँ गुप्त रखी जायेगी। आपके सहयोग के लिए धन्यवाद!

नाम- उम्र पुरुष/महिला  
पता

शिक्षा

अपना व्यवसाय/रोजगार पति का व्यवसाय

पारिवारिक आमदनी

बच्चों की संख्या जीवित मृत

तारीख

1	गर्भवती/नवजात शिशु की मामता के रूप में आपका भोजन सामान्य की अपेक्षा कितना अधिक पोष्टिक होता है यानि दूध, फल, सब्जी आदि अधिक खाती है।	बिल्कुल नहीं	थोड़ा	अधिक	बहुत अधिक
2	आप कितनी बार भोजन करती है	एक बार	दो	तीन	चार
3	गर्भधारण के बाद डाक्टरी चेक-अप कितनी बार कराती है?	बिल्कुल नहीं	एक	दो	3/4
4	डाक्टरी सलाह पर आप आयरन की गोली खाती है?	नहीं	हाँ		
5	आपका बच्चो कहाँ पैदा होगा	घर	मैके	प्राईवेट अस्पताल	सरकारी अस्पताल
6	डेलिवरी में कम्प्लीकेशन होगा तो आप कहाँ जायेगी?	घर	मैके	प्राईवेट अस्पताल	सरकारी अस्पताल
7	डेलिवरी के बाद आप कौन सी फैमिली प्लानिंग की विधि अपनाएगी?				

8	क्या आप अपने नवजात शिशु को पालियो की बूंद तथा इम्यूनाईजेशन दिलाएगी?	नहीं	हाँ		
9	नवजात शिशु को निमोनिया/सांस की बीमारी/डायरिया हो तो आप कहाँ जाएगी?	पता नहीं	घरेलु दवा	प्रा0 अस्पताल	सरकारी अस्पताल
10	क्या आप ओ आर एस पैकेट का प्रयोग जानती है?	नहीं	हाँ		
11	आप अपने शिशु को कौन सा दूध पिलाएगी/पिलाती है?	डब्बे	गाय	अपना	
12	डायरिया में शिशु को कौन सा दूध पिलायेगी?	डब्बे	गाय	अपना	
13	शिशु को कोई बड़ी बीमारी हो तो आप क्या करेगी?	पता नहीं	घरेलु दवा	प्राईवेट अस्पताल	सरकारी अस्पताल
14	शिशु को खून की कमी (अनिमिया) हो तो आप क्या करेगी?	पता नहीं	घरेलु दवा	प्राईवेट अस्पताल	सरकारी अस्पताल
15	क्या आप शिशु की लम्बाई तथा वजन का नाप लेती है?	नहीं	हाँ		
16	क्या गाँव के आस-पास अस्पताल है जहाँ बच्चे पैदा होते हैं?	नहीं	हाँ		
17	क्या वहाँ जाने के लिए एम्बुलेंस की व्यवस्था है?	नहीं	हाँ		
18	क्या वहाँ प्रसव के लिए प्रशिक्षित दाई की व्यवस्था है?	नहीं	हाँ		
19	क्या इस गाँव में इमरजेंसी की अवस्था में दवाएँ मिलती हैं?	नहीं	हाँ		
20	क्या बीमार या प्रीमेच्यूर बच्चे के लिए विशेष अस्पताल की सुविधा है।	नहीं	हाँ		

## APPENDIX 2

### Description of the Geographical Areas

#### Patna

The headquarters of Patna district, and the capital of the state of Bihar, It is divided into six subdivisions and 23 Community Development Blocks. The geographical area of Patna is 3202 sq.kms and the population is 36,23,225. (1991census). Apart from industries, agriculture occupies a vital position in the economy. Rice, maize, pulses, wheat, Oil-seeds, vegetables, water-melons etc., are also grown in Diara belt. The vast river bed of Ganges provides suitable fishing grounds.

The district of Patna is very well linked with the other parts of the country through road, rail, and air. National Highway No.31 passes through the district and it lies on the main line of the Eastern Railway, thus making it easier to access other parts of the district and the country. There are popular tourist destinations of the district of Patna as it is an ancient town. Patna occupies a central place in the field of health services in the state. Patna Medical College (PMCH) has been an old and reputed institution in Bihar but with the general trend of deterioration in all aspects of our lives, PMCH is also in a state of disrepair and poor maintenance/service. The rural areas have PH Centres, also in bad conditions. .Patna has many good private hospitals and nursing homes where people came from other places in state.

#### Khagaria

Spanning over a total of 1486 sq kms, Khagaria is intersected by Ganga and Koshi rivers and subdivided into two divisions namely Khagaria and Ghoghri. With a population density of 859, it has a population of 12, 76,677 and total cultivable land of 1, 04000 hectares out of which 87147 hectares (1998-99) of land is irrigated with paddy, maize and wheat. Horticulture and Dairy are the two other prime economic activities. Also, due to abundance of cattle the

place earns a substantial portion of its revenue through animal husbandry. The district has 890 females for every 1000 males and a literacy rate of 41.56 % ( 2001 census). Khagaria is linked to other cities via NH 31. With no significant historical importance, there are only a few places of attractions in Khagaria. The government hospital is in very bad condition. There are private hospitals in the town. The villages have very poor health infrastructure.

### Saharasa

Situated on the banks of Kosi, 250 kms from Patna, this area is an agricultural belt with main crops of paddy and corn. Saharsa government hospital has about 100 doctors. The villages have primary health centers, and schools. Nandlali village is not on the main road however, our other sample village. Singhol is near the main road. However, for health and other problems, people need to go to Saharsa Government hospital. There are hardly any free health check-ups or free medicines available, so people want to go to private hospitals in Patna. Women are mainly housewives. A few of them earn some money from home-based occupations.

### Nalanda

The district headquarters of Nalanda is Biharsharif. The district is well connected by road due to its nearness to Patna (70 Kms) and its touristy attractions. The ancient Nalanda University and Rajgir are very famous spots and receive large number of tourists. Rural areas have primary health centers but for complicated cases, one needs to go to the urban centers. Ambulances are only available in urban areas not in rural areas. Similarly, primary schools are available in rural areas but not higher education. People depend on agriculture for livelihood. There is business available in the urban areas related to tourism, e.g., hotels, guest houses, restaurants, sweetshops etc

## Rohtas

Rohtas lies in the south-western corner of Bihar and borders U.P. Sone river which flows through it is its life-line. The Grand trunk Road and the main Grand Chord railway line connecting Delhi with Kolkata pass through it. Sahasram the district headquarters and is famous for the mausoleum of Sher Shah. The economy is mainly agricultural and the main products are rice and stone chips. Medical facilities are basic with the normally poorly equipped government hospitals and primary health centers and a few private nursing homes. Most people prefer to go to Varanasi for medical treatment as it is closer than Patna.

# APPENDIX 3

## MAP of BIHAR

