

Final

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

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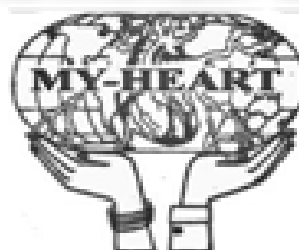
MY-HEART
Bhubaneswar, Orissa

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Preface

“Maternal mortality in Orissa; An epidemiological study” sponsored by planning commission, Govt. of India, is an attempt to explore the dynamics that works behind high rates of maternal deaths in the state. MY-HEART the leading health NGO in Orissa undertook the study across the state taking sub-centers as the unit and in the study process 230 sub-centres spread across the state were covered. The report explains in detail the complications and socio-cultural factors that led to maternal mortality and morbidity. Total 10150 live births and 175 maternal deaths have been assessed using both quantitative and qualitative tools and findings have been discussed in detail with recommendations for necessary shift/ changes in policy and implementation of schemes/ programmes.

The recommendations and findings are noteworthy and I hope MY-HEART with its advocacy initiatives through White Ribbon Alliance for Safe Motherhood would try to explore possibilities for adoption and policy changes in the state.

I would like to extend our sincere thanks to SER Division of Planning Commission, Govt. of India for providing financial support and technical inputs to make the study a success. Also I am thankful to the MY-HEART research & data analysis team led by Mr. J. K. Samantaray, A. Tripathy, L.K. Paikaray and N.C. Das who extended their sincere efforts to make things happen.

MY-HEART extends special thanks to Dr. Seba Mohapatra (Ex. DHS, GoO) and Dr. Nabin Kumar Pati, National Co-chair, WRAI for their supportive cooperation and technical guidance in preparation of the final report.

Above all we express our gratitude to the Secretary Department of Health & Family Welfare, Directors under Health Departments and all District level officials for their support and cooperation in collection of quality data from the field. Also our sincere thanks and gratitude to the W & CD. Department, Govt. of Orissa and their field functionaries for their support and co-operation.



Mr. Shaktidhar Sahoo
Director, MY-HEART

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EXECUTIVE SUMMARY

Maternal morbidity and mortality along with infant mortality rate is universally considered as human development indicators in a country and determines the health status of the people. In spite of very good plans and programmes, the reduction in MMR and IMR is much below the target set. Orissa is one of the poorest states in India having MMR 358 per 100000 live births as per SRS-2003 which is much higher than the national average and significantly contributing high MMR of the country. Having live births nearly 7 to 8 lakhs per annum the state experiences in an average 7 maternal deaths every day. The poor health infrastructure and lack of skilled personnel/health professionals affects the delivery maternal health services starting from pre-natal to post natal stage.

MY-HEART, a leading NGO, based in Bhubaneswar works on health under Mother NGO Scheme of Govt. of India and having quite a significant experiences in health programme implementation. Visualizing the ground realities that affects the poor health status of the people, since last 10 years maternal and child health programmes are being implemented. Also MY-HEART is the State Secretariat of White Ribbon Alliance actively engaged in maternal health advocacy with the network of more than 350 Civil Society Organisation members across the state of Orissa. Safe motherhood can be attained only if there is quality, accessibility and affordability to maternal health services in all the regions of the state. The plans and programmes and also policy directives addresses the needs of the people but significant numbers of challenges that resulted in poor implementation of the policy guidelines and high MMR in the state.

Visualizing the incidence of high maternal morbidity and mortality in the state, MY-HEART approached the Planning Commission of India to undertake an epidemiological study on maternal mortality in Orissa with the objective to determine the level of maternal mortality among different populations like Rural, Tribal and Urban Orissa and to identify the risk factors of maternal mortality, examining inter relationship between maternal mortality and fertility and the manner in which they tend to influence each other. The study also tries to explore the knowledge, attitude and practices and also the perception and health seeking behavior of community, whereby to bring understanding on various social cultural factors that affects ante natal, natal and post natal care. The study explores the possibilities of recommending certain preventable measures that can be addressed and also be taken into consideration for changes in policy guidelines and focus of programme planning to reduce maternal mortality in the state.

The study covered both women experiencing live birth and also the maternal death occurred during the last 4 years across the state of Orissa taking sub centres as a cluster and distributing cluster proportionately allocated to all the 30 districts. The sample allocation was done adopting Probability Proportionate to Size (PPS) methodology. Total 10150 women who experienced live birth in the last one year from 230 sub centres were covered while 175 maternal death cases were identified and studied in same 230 Sub centres to arrive at findings and to provide recommendations under the study.

The **first** chapter of the report contains background information, maternal health status in the state and significance of reduction of maternal mortality and morbidity, the terminological descriptions, etc. The **second** chapter of the study tries to make an intensive review of literature on maternal mortality, its causes and consequences. The **third** chapter discusses study objectives and methodology focusing on tools and techniques used in the data collection and also the data analysis methods. The **fourth** chapter relies mostly on the finding on women experiencing live birth wherein their socio-economic and environmental

status, the birth outcome, complication faced in earlier as well last pregnancy, action taken during complication and intra post natal risk factors discussed on the basis of findings. The **fifth** chapter mostly discusses maternal mortality focusing socio-economic characteristics of deceased, status of ante natal care, complication in earlier and last pregnancy, action taken during complication, risk factors operating during delivery and confinement, major causes that led to maternal deaths, the perception and practices that contributed to maternal mortality, responsiveness of the facility etc. The **sixth** chapter discusses major findings from qualitative tools used like FGD(Focus Group Discussion). The chapter **seven** summarizes the findings from chapter **four, five and six** with prominent recommendations.

The **major findings from live birth study** that covered 10150 women are;

Out of 10150 women experienced live birth, 63% are under BPL category. Majority of the women (78%) are engaged in household work while 81% of the women married within the age group of 18-24. There were instance of below 18 years of marriage at about 12% while 20% are completely illiterate, only 9% studied above matriculation. Socio-economic condition of most of these women is very poor Out of 10150 live births assessed, 40% babies were born first birth order while 11% of babies from 4th to 9th birth order. Looking at the birth spacing, only 16.2% of them spacing of 2 years between births, while 65% of them had more than 2 years. Nearly 1% of new born could not survive after birth. With regard to complication to earlier pregnancy, 41% of the women reported to have faced complications. Most of the complications are due to poor ANC, lack of birth planning and complication readiness. During the last pregnancy, complications like blurred vision, paleness, convulsion, swelling of ankle and knees, and also vaginal bleeding etc. were noticed. Anemia was found to be the major source of complications. However, 1.3% of the women were found to have suffered from chronic diseases like heart disease, diabetes, and malaria, etc. Although ANC coverage is reported to be 88%, quality ANC coupled with regular follow up and counseling to women is still missing. The action taken during the last pregnancy was also very discouraging as only 30% of women were able to take extra food and some cultural and traditional barriers did not allow nearly 18% of women to take certain nutritious food. In tribal areas also 12% of women found chewing tobacco. About 87% of deliveries ended in birth in right term while post term delivery was only 8%. Induced labour was found in case of 27% of live births which can be considered as complicated cases while 43% of cases delivery at home, institutional delivery was 51%, and role of sub centers in conducting deliveries is still insignificant. In about 53% of the cases skilled birth attendants like doctor was present while ANM attended only 16% of the cases. Village dai still attending deliveries in rural and tribal areas up to 16%.

Recommendations from Live Birth study:

The study on live birth during the last one year reveal local practices, responsiveness of facility and complications faced by the women which can be taken into consideration in programme designing and planning for reduction of maternal mortality. The recommendations that follow from the findings of the study on live births are as follows:

- There is still need for health education as rural and tribal areas are still influenced by social and cultural stigmas and practices contravening the healthy pregnancy and child birth.
- Birth Planning and Complication Readiness should be promoted with the active involvement of ANM, ASHA and other grassroot service providers with regular follow up and constant counseling.

- ANC coverage should not be on rather it should comprehensive, qualitative and need based.
- Community participation and family support for a safe health pregnancy and child birth should be promoted through more IEC measure.
- Sub centres should be upgraded and strengthened with positioning ANM 24 x 7 for providing ANC and PNC.
- The complication should be identified and appropriate action should be taken with timely referral to the appropriate facility for better birth outcome.
- Public-Private Partnership in sensitization of community and transportation during complication is required for timely action to address complications.

The major **findings from Study on MMR** are;

Out of 175 maternal deaths covered under the study, most of the deaths found happened at home(51%) while only 38% deaths happened in the facility. On further inquiry, it is found that 61% of deliveries were conducted at home while 34% happened in the facility. This indicates that some women after delivering at home experienced complications and at the at the last moment sought formal care which could not save their lives. The magnitude of home delivery is still a challenge.

About 63% of the maternal deaths occurred after the child birth which denotes poor PNC care and complications accentuates after the child birth when the women and their family members do not seek appropriate care giving least importance in the post partum period. Only 12% deaths took place during child birth which also denotes facility based deliveries are safe as under JSY institutional deliveries picked up the death during delivery slowed down. Investigating socio-economic status of the women who died maternal death it is found that 88% of the total maternal deaths were living under BPL which is 95% in tribal areas. Most of the families of deceased were found to be landless and family source of income for 73% of deceased was daily wage earning. More than half of the deceased (58%) were illiterate and nearly 69% of deceased were living in nuclear families which indicates household works was rested on the woman which affected nutrition and rest during ANC period.

When asked on the ANC taken, it was found that only 35% of the deceased had taken 3 ANC check up and most of the women found to have anaemia while 60% of the women in rural areas consumed 100 or more IFA tablets, only 39% in tribal areas consumed 100 or more IFA during their pregnancy. So consumption of 100 IFA tablets by all the deceased women was not ascertained.

It was also found that 53% of these deceased women had faced complication during their earlier pregnancies and also 32% of them faced complication during their child birth. This history of complications was not taken into consideration in their last pregnancy or child birth. Delay in decision making and identification of appropriate health facility, accessing timely services are found to be the areas of concern in the study.

In their last pregnancy, 51% cases had paleness, swelling of feet and ankles in 44% of cases, while 20% of cases experienced vaginal bleeding during last pregnancy. Abdominal pain also found in 37% of cases which shows anaemia, APH / PPH, Eclampsia and sepsis are the major causes behind maternal deaths.

Lack of rest, lack of nutritious / extra food and social stigmas in accessing care were the major bottlenecks that ended in a maternal death

While 32% of deliveries were attended by specialized doctor, the involvement of ANM was marginal in case of 7.2% cases. Locally available dai conducted 31% of delivery at home which also accumulated complication and ended in maternal death. 61% deliveries were at home while 34% were in the facility which necessitates more attention for community mobilization towards institutional delivery. 38% of women died in during their first birth order which was 53% in rural areas while in tribal areas it was only 22%. 30% of women died in their 2nd birth order. The birth interval which is also important in case of safe pregnancy and delivery, it was found that only 40% of women had birth interval of 2 years. The birth interval is affected with a preference of a son and the high parity is found a dynamic factor that plays with the life of the women. About 29% of new born babies could not survive after the maternal death.

During child birth, complications noticed that led to maternal deaths like PPH found in 40% and obstructed labour in 23% of cases. 28% of deliveries experienced retention of placenta while 27% of women suffered severely from fever and collapse. C-Section was conducted only in case of 9% of deliveries.

Only 5 numbers of maternal deaths out of abortion were reported. 3 abortions happened at home mostly conducted by untrained traditional quacks. 1 case took in health institution while 1 case was spontaneous abortion. Within 42 hours of abortion, 4 women reported to have died.

Cause of death due to fatal illness like PPH, obstructed labour, eclampsia and convulsion was also assessed in each maternal death. It was found that death due to PPH was 31% while 10% of women died for retention of placenta culminating in severe complication after delivery. 6% of maternal death caused due to prolonged / obstructed labour. 44% of the deceased family sought care as soon as complication was found which shows 56% of families delayed in accessing care during complication which is an area of great concern.

While 10% of the informants expressed that transportation was major problem in accessing care, poverty and also lack of money prevented some of the families to seek care during complication. So decision making during complication was delayed on different grounds for seeking care due to lack of complication readiness and birth planning.

While 32% of deceased women visited district hospital, 22% visited sub division hospital and 30% of women visited PHC level hospital which also shows lack of appropriate birth planning and lack of knowledge on appropriate facility during complication.

Transportation was found to be a big problem in remote rural areas where 38% faced problems to arrange transportation and took 1 to 8 hours for locating transportation. Although 87% of the deceased family sought formal care after complication, 8% complicated cases were provided any medical care for lack of specialist at facility.

While 28% stayed at facility from one to five hours. 38% were at facility for more than 1 day which shows even in the facility quality appropriate health care is not available for which maternal deaths continues to prevail. Only 33% of cases referred to higher facility but still the maternal death happened for lack of delay and inappropriateness of facilities/services.

One-third of the families could not go to the referred facility on grounds that their poor, they could not arrange transportation, they thought she will die, they did not feel facility will provide better services.

Recommendations from findings of MMR study;

On the basis of findings of maternal death study, the following recommendations are made:

- Comprehensive ANC with counseling, birth planning and complication readiness and ensuring consumption of IFA tablets, minimum rest and nutrition should be taken care of.
- Regular ANC and PNC visit should be ensured
- Institutions upgradation for quality maternal health services is essentially needed and capacity and skilled building of ANMs/Nurses and LHVs with MBBS doctors through Skilled Birth Attendant training should be geared up so that obstetric complications can be identified and managed properly.
- As PPH is a major factor, blood transfusion facilities and PPH management with skilled person needs to be ensured in each block.
Post natal death is still a matter of great concern and sincere efforts should be made to provide quality PNC care through counseling, health check up and regular home visits.
Transportation being a major issue should be addressed linking local transportation system with PRI and birth planning should be done with active involvement of ANM, ASHA and Anganwadi worker.
- To address the Anemic condition of the women in the reproductive age group (14-49.yrs), the de-worming process must be initiated for all women & all pregnant women & lactate mothers must undergo the de-worming process in the ANC & PNC coverage.
- The Public-Private-Partnership (PPP) has also significant role to play in tribal as well as rural areas especially in the field of community sensitization, birth planning, mitigation of transport problem etc.

The study also collected some qualitative information through Focus Group Discussion which substantiate the findings of the study and supported the recommendation for addressing maternal health challenges and arresting maternal death incidences in the state of Orissa.

CHAPTER-1: INTRODUCTION

1.1. Genesis of the study:

Maternal mortality is one of the world's most neglected problems, and progress on reducing the maternal mortality ratio (MMR) has been far too slow. The issue was given prominence in Millennium Development Goal-5, to improve maternal health, with one of its boldest targets the reduction of the MMR by three quarters between 1990 and 2015. The international community agreed to address the issue of maternal mortality, and that focusing on maternal health would have an obvious and significant impact. This has proved to be far from easy. Maternal mortality in India continues to be a major concern given the reduced social, cultural and economic status of Indian women that inhibits them from adequate access to health facilities. Though it is a major social concern, there are no reliable estimates available on maternal mortality.

The estimates available are from the National Family Health Surveys and by the Sample Registration System (SRS) for few years. The average maternal mortality ratio at the national level estimated for 1998-99 in NFHS II was 540 per 100,000 live births which was higher than the previous estimate of 424 maternal deaths for 1992-93 (NFHS I). Though estimates are indicative, they reflect the relative neglect of women's health in India. There are several causes attributed to maternal deaths. Some of the direct causes, such as hemorrhage, puerperal sepsis, obstructed labour, abortions and toxemia account for more than three fourth of the maternal deaths while other related causes such as anaemia, pregnancy with TB/malaria, viral hepatitis and others account for rest of the deaths. Studies have shown that haemorrhage, sepsis and severe anaemia are the major causes of maternal deaths more so in rural areas. NFHS II reveals that moderate and severe anaemia among pregnant women (28 %) is almost double that of non-pregnant women (16 %). The maternal mortality ratio continues to be high in Orissa since last one decade in spite of sincere efforts by Government and development partners. However, there is a positive trend in decline of maternal mortality ratio as per SRS 2008 data, which stands at 303 in 2008 from 357 in 2006. The reported maternal deaths as per HMIS data of H&FW Department seems under reported, and reliability on this data for policy and program design is under scrutiny.

The most common causes of maternal deaths are hemorrhage, eclampsia, pre-eclampsia, infection, obstructed and prolonged labour, complications of abortion, disorder related to high blood pressure and anaemia. Most maternal deaths are preventable if the complications are diagnosed and managed effectively and in time. The classical three delays include delay in decision to seek help, delay in getting transport, and delay in providing effective treatment. Maternal mortality ratios in India are still higher than in many parts of the world, and maternal mortality is largely due to conditions which require basic hospital services, such as surgery for complications of pregnancy, control of infections, transfusion, intravenous fluids, oxygen, and intensive antibiotics.

Most of these can be made available in very simple and unsophisticated hospital facilities. It has wrongly been assumed that the cost of such facilities would be high, and the cost effectiveness much less than that of preventive, educational, and home care programs.

1.2. Socio-demographic and health profiles of Orissa:

1.2.1. Geography: Orissa extends from 17° 49'N to 22° 34'N latitude and from 81° 29'E to 87° 29'E longitude on the eastern coast of India. It has an area about 155,707 Sq Km. It is bounded by West Bengal in the north-east, Jharkhanda in the north, Chhatisgarh in the west, Andhra Pradesh in the south and the Bay of Bengal in the east. Orissa was separated from Bihar and came into existence on 1 April 1936. Physiographically, Orissa can be divided into three broad regions 1) The Coastal plains, (2) The Middle mountainous country (3) The Plateaus and rolling up lands.

1.2.2. Population: The state of Orissa has an area of 155,707 sq. km. and a population of 36.80 million. There are 30 districts, 314 blocks and 51349 villages. The State has population density of 236 per sq. km. (as against the national average of 312). The decadal growth rate of the state is 16.25% (against 21.54% for the country) and the population of the state is growing at a slower rate than the national rate.

1.2.3. Health Indicators of Orissa: The Total Fertility Rate of the State is 2.4. The Infant Mortality Rate is 71 and Maternal Mortality Ratio is 303 per 100000 live births (SRS 2004 - 2006) which are higher than the National average. The Sex Ratio in the State is 972 (as compared to 933 for the country). Comparative figures of major health and demographic indicators are as follows:

Table 1 : Demographic, Socio-economic and Health profile of Orissa State as compared to India

S. No.	Item	Orissa	India
1	Total population (Census 2001) (in million)	36.80	1028.61
2	Decadal Growth (Census 2001) (%)	16.25	21.54
3	Crude Birth Rate (SRS 2007)	21.5	23.1
4	Crude Death Rate (SRS 2007)	9.2	7.4
5	Total Fertility Rate (SRS 2007)	2.4	2.7
6	Infant Mortality Rate (SRS 2007)	71	55
7	Maternal Mortality Ratio (SRS 2004 - 2006)	303	254
8	Sex Ratio (Census 2001)	972	933
9	Population below Poverty line (%)	47.15	26.10
10	Schedule Caste population (in million)	6.08	166.64
11	Schedule Tribe population (in million)	8.15	84.33
12	Female Literacy Rate (Census 2001) (%)	50.5	53.7

Table 2 : Health Infrastructure of Orissa

Particulars	Required	In position	shortfall
Sub-centre	7283	5927	1356
Primary Health Centre	1171	1279	-
Community Health Centre	292	231	61
Multipurpose worker (Female)/ANM at Sub Centres & PHCs	7206	6768	438
Health Worker (Male) MPW(M) at Sub Centres	5927	3392	2535
Health Assistant (Female)/LHV at PHCs	1279	726	553
Health Assistant (Male) at PHCs	1279	168	1111
Doctor at PHCs	1279	1353	-
Obstetricians & Gynaecologists at CHCs	231	NA	NA
Physicians at CHCs	231	NA	NA
Paediatricians at CHCs	231	NA	NA
Total specialists at CHCs	924	NA	NA
Radiographers	231	8	223
Pharmacist	1510	1984	-
Laboratory Technicians	1510	311	1199
Nurse/Midwife	2896	637	2259

(Source: RHS Bulletin, March 2007, M/O Health & F.W., GOI)

Table-3: The other Health Institution in the State are detailed as under:

Health Institution	Number
Medical College	4
District Hospitals	32
Ayurvedic Hospitals	8
Ayurvedic Dispensaries	624
Unani Hospitals	-
Unani Dispensaries	9
Homeopathic Hospitals	6
Homeopathic Dispensary	603

1.3. Maternal Health – Concept, definition, and components:

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. While motherhood is often a positive and fulfilling experience, for too many women it is associated with suffering, ill-health and even death. Maternal health care is a concept that encompasses family planning, preconception, prenatal, and postnatal care. Goals of preconception care can include providing education, health promotion, screening and interventions for women of reproductive age to reduce risk factors that might affect future pregnancies. Prenatal care is the comprehensive care that women receive and provide for themselves throughout their pregnancy. Women who begin prenatal care early in their pregnancies have better birth outcomes than women who receive little or no care during their pregnancies. Postnatal care issues include recovery from childbirth, concerns about newborn care, nutrition, breastfeeding, and family planning.

1.4. Maternal morbidity and mortality – definitions, causes and magnitude of the problems:

1.4.1. *Maternal deaths:* A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the site or duration of pregnancy, from any cause related to or aggravated by the pregnancy or its management. Maternal deaths are subdivided into direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of pregnancy, labour, or the postpartum period. They are usually due to one of five major causes - haemorrhage (usually occurring postpartum), sepsis, eclampsia, obstructed labour, and complications of unsafe abortion - as well as interventions, omissions, incorrect treatment, or events resulting from any of these. Indirect obstetric deaths result from previously existing diseases or from diseases arising during pregnancy (but without direct obstetric causes), which were aggravated by the physiological effects of pregnancy; examples of such diseases include malaria, anaemia, HIV/AIDS, and cardiovascular disease.

1.4.2. *Measures of maternal mortality:* There are three main measures of maternal mortality - the maternal mortality ratio, the maternal mortality rate, and the lifetime risk of maternal death.

- **Maternal mortality ratio** represents the risk associated with each pregnancy, i.e. the obstetric risk. It is calculated as the number of maternal deaths during a given year per 100 000 live births during the same period. Although the measure has traditionally been referred to as a rate it is actually a ratio and is now usually called such by researchers.

Note: The appropriate denominator for the maternal mortality ratio would be the total number of pregnancies (live births, fetal deaths (stillbirths), induced and spontaneous abortions, ectopic and molar pregnancies). However, this figure is seldom available, either in developing countries where most births take place or in developed countries, and so the number of live births is generally used as the denominator.

- **Maternal mortality rate** measures both the obstetric risk and the frequency with which women are exposed to this risk. It is calculated as the number of maternal deaths in a given period per 100000 women of reproductive age (usually 15--49 years).

The terms "ratio" and "rate" are often used interchangeably; for the sake of clarity it is therefore essential, when referring to either of these measures of maternal mortality, to specify the denominator used.

- **Lifetime risk of maternal death** takes into account both the probability of becoming pregnant and the probability of dying as a result of the pregnancy cumulated across a woman's reproductive years.¹

The first estimates of the extent of maternal mortality around the world were made in the late 1980s. They indicated that globally some 500 000 women die each year from pregnancy-related causes. In 1996, WHO and UNICEF revised the estimates for 1990 on the basis of the growing volume of information that has become available in recent years. These new estimates showed that the scale of the problem was significantly greater than had originally been suspected and that closer to 600 000

¹ Lifetime risk can be estimated by multiplying the maternal mortality rate by the length of the reproductive period (around 35 years). (See Campbell OMA, Graham WJ, Measuring maternal mortality and morbidity: levels and trends, London, London School of Hygiene and Tropical Medicine, 1990.) The lifetime risk can also be approximated by the product of the total fertility rate and the maternal mortality ratio.

maternal deaths occur each year, with the overwhelming majority of them in developing countries. In developed countries, the maternal mortality ratio averages around 27 maternal deaths per 100 000 live births; in developing countries the ratio is nearly 20 times higher, at 480 per 100 000, and may be as high as 1000 per 100 000 in some regions.

The maternal mortality ratio is a measure of the obstetric risk faced by a woman each time she becomes pregnant. Where women have many pregnancies, the risk of maternal death is magnified. In some developing countries one woman in 12 may die from a pregnancy-related problem compared with one in 4000 in industrialized settings. The discrepancy between these two figures marks one of the starkest and most telling differentials in development. It also reflects huge differences in national commitment, not only between developed and developing countries, but also between different developing countries, where it is far wider than differentials in infant or child mortality.

1.5. Gender inequality, human rights and its effects on maternal health:

Despite the country's growing economy and an [ambitious rural health initiative](#), over 100,000 women **die from pregnancy-related causes** each year, more than anywhere else in the world. Many more suffer debilitating complications that they endure in silence due to impunity and lack of accountability in the health system. *Maternal Mortality in India: Using International and Constitutional Law to Promote Accountability and Change* assesses the crisis and urges a human rights approach to solving it. The medical causes of maternal mortality are well known and largely preventable, yet government policies have failed to have an impact. There are several reasons for this: the prevalence of **child marriage** and early pregnancy, malnutrition, poor quality **healthcare**, complications from **unsafe abortion**, and inadequate access to **family planning** information and services. At the root of India's maternal mortality crisis is **gender inequality**, implying that the problem cannot be resolved merely through the nation's health policies. Solutions must be grounded in broader recognition of women's human rights to health, non-discrimination, equality, and most of all, life. Human rights of relevance to safe motherhood can be grouped into the following four principal categories:

- **Rights relating to life, liberty and security of the person**, which require governments to ensure both access to appropriate health care during pregnancy and childbirth, and women's rights to decide whether, when, and how often to bear children. Governments must therefore address factors within the economic, legal, social, and health systems that deny women these fundamental rights.
- **Rights relating to the foundation of families and of family life**, which require governments to provide access to health services and other facilities that woman, need to establish families and to enjoy life within a family.
- **Rights relating to health care and the benefits of scientific progress, including health information and education**, which require governments to provide access to good sexual and reproductive health care with appropriate referral systems. The measures needed to ensure safe motherhood can be provided through primary health care irrespective of a country's level of economic development. Central to these rights is information on a range of reproductive health issues, including family planning, abortion, and sex education.

Rights relating to equality and nondiscrimination, which require governments to provide access to services such as education and health care without discrimination on grounds such as sex, marital status, age, and socioeconomic class. Discriminatory policies include requirements for a woman to obtain the consent of her husband for particular healthcare interventions, requirements for parental authorization which have a differential impact on girls, and laws that criminalize medical procedures that only women need. Governments are in violation of their obligations when they fail to implement laws that effectively protect women's interests or to allocate health resources to meet women's particular need for safe pregnancy and childbirth.

Many studies have indicated that women carry a high burden of chronic ailments in the absence of care or total neglect of illnesses. This situation is mainly due to women's health needs getting the least priority in the family. Gender bias in nutrition and health care in childhood, early marriage and conception, lack of voluntary check on family size and poor state of pre-natal and maternal health care services only intensify women's health problems.

Out of the total population, 120 million are women who live in abject poverty. The maternal mortality rate in rural areas is among the world's highest. From a global perspective India accounts for 19% of all live births and 27% of all maternal

deaths. The deaths of young girls in India exceed those of young boys by over 300,000 each year and every 6th infant death is specifically due to gender discrimination. Women face discrimination right from the childhood.

Gender disparities in nutrition are evident from infancy to adulthood. In fact, gender has been the most statistically significant determinant of malnutrition among young children and malnutrition is a frequent, direct or underlying, cause of death among girls below age 5. Girls are breast-fed less frequently and for a shorter duration in infancy. In childhood and adulthood, males are fed first and better. Adult women consume approximately 1,000 fewer calories per day than men according to one estimate.

The death of a woman during pregnancy or childbirth is not only a health issue but also a matter of social injustice. Of the human rights currently acknowledged in national constitutions and in regional and international human rights treaties, many can be applied to safe motherhood. Many such treaties and conventions are based on the 1948 Declaration of Human Rights (1); they include the Convention on the Elimination of All Forms of Discrimination against Women (2), the Convention on the Rights of the Child (3), the European Convention for the Protection of Human Rights and Fundamental Freedoms (4), the American Convention on Human Rights (5), and the African Charter on Human and Peoples' Rights (6).

1.6. National and state policies, legislation and strategies for reduction of maternal mortality:

1.6.1. National goals: The [Maternal Health Programme](#), which is a component of the Reproductive and Child Health Programme aims at reducing internal mortality to less than 100 by 2010 through a number of interventions. They are essential obstetric care which intends to provide the basic maternity services to all pregnant women by ensuring early registration of pregnant women, at least three ante-natal checkups for taking preventive and promotive steps and to detect complications early for prompt action and at least three post-natal check ups to monitor the post-natal recovery. The provision of emergency obstetric care is through establishment of First Referral Units; Institutional delivery is by providing round-the-clock delivery services in PHCs/CHCs. The other interventions include provision of safe abortion services, prevention and management of RTI/STI, holding of RCH Camps in remote areas and training of Dais for clean and safe delivery.

Major policy and program goals in MM

Year	Document	Goals
1983	Health policy statement by Govt of India	MMR reduction by 200-300 by 1990 and below 200 by the year 2000
2000	National population policy	MMR reduction to less than 100 by 2010
2002	National health policy	MMR reduction to less than 100 by 2010
2002-007	Tenth Five year plan	MMR reduction to less than 200 by 2007

1.6.2. Global learning in MMR reduction:

Historical records demonstrate the significant improvements that can be achieved when key interventions are in place. Reductions in maternal mortality took place in Sweden during the 1800s, for example, as a result of a national policy favouring professional midwifery care for all births, coupled with establishment of standards for quality of care. By the beginning of the 20th century, maternal mortality in Sweden was the lowest in Europe - around 230 per 100000 live births compared with over 500 per 100000 in the mid-1880s. In Denmark, Japan, Netherlands, and Norway, similar strategies produced comparable results. In England and Wales, significant reductions in maternal mortality were not apparent until the 1930s; at the national level, political commitment to the strategy was achieved only slowly and the introduction of professional midwifery was correspondingly delayed. In every case, however, the key to these improvements was the institution of fully professional maternity care.

In the USA, where strategy focused on hospital delivery by doctors, maternal mortality remained high because it proved difficult to establish adequate regulatory frameworks and mechanisms to ensure quality of care. In 1930, the maternal mortality ratio in the USA was still 700 per 100000 live births compared with 430 in England and Wales.

More recently, Sri Lanka witnessed significant reductions in maternal mortality in a relatively short period. From a level of over 1500 per 100000 live births in 1940--1945, maternal mortality fell to 555 per 100000 in 1950--1955, 239 per 100000 within 10 years, and 95 per 100000 by 1980. The figure is now 30 per 100000. These improvements followed the introduction of a system of health facilities around the country allied to an expansion of midwifery skills and the spread of family planning. During the 1950s most births in Sri Lanka took place at home with the assistance of untrained birth attendants. By the end of the 1980s over 85% of all births were attended by trained personnel.

Similar evidence of the effectiveness of health care interventions is available from China, Cuba, and Malaysia. These countries established community-based maternal health care systems comprising prenatal, delivery, and postpartum care and a system of referral to a higher level of care in the event of obstetric complications.

What these examples clearly demonstrate is that a country's overall economic wealth is not in itself the most important determinant of maternal mortality. There are numerous other examples of countries with modest levels of GNP which have achieved low maternal mortality.

Long-term political commitment is an essential prerequisite. When decision-makers at the highest levels are resolved to address maternal mortality, the resources needed will be mobilized and the essential policy decisions will be taken. Without this level of commitment over the long term, projects cannot become programmes and activities cannot be sustained.

A supportive social, economic, and legislative environment allows women to overcome the various obstacles that limit their access to health care, such as distance from their homes to appropriate health facilities, lack of transport and, more critically, financial and social barriers. Proper maternal health care is limited when women have to pay for services and essential drugs, and when they must bear substantial hidden costs such as time lost for housework, paid employment, food production, and child care. Legislation that supports women's access to care must be formulated to permit health workers at the periphery of the health system to perform specific life-saving functions. Failing this, only highly skilled health professionals,

based largely in urban centres, can provide such care, and only women with sufficient money and the means to reach such centres can benefit from it.

1.6.3. Maternal mortality intervention: Promotion of maternal and child health has been one of the most important objectives of the Family Welfare Programme in India. The current Reproductive and Child Health Programme (RCH) was launched in October 1997. The RCH Programme incorporates the components covered under the Child Survival and Safe Motherhood Programme and includes an additional component relating to reproductive tract infection and sexually transmitted infections. In order to improve maternal health at the community level a cadre of community level skilled birth attendant who will attend to the pregnant women in the community is being considered.

The need for bringing down maternal mortality rate significantly and improving maternal health in general has been strongly stressed in the National Population Policy 2000. This policy recommends a holistic strategy for bringing about total intersectoral coordination at the grass root level and involving the NGOs, Civil Societies, Panchayati Raj Institutions and Women's Group in bringing down Maternal Mortality Ratio and Infant Mortality Rate.

In the last decades, the life expectancy of the population in India has shown remarkable improvement from 41 at birth in 1961 to the present day of 65 years. Yet, over a 100,000 women in India continue to die of pregnancy related causes every year. The Maternal Mortality Ratio in India is 407 per 100,000 live births (SRS, RGI 1998). The major causes of these deaths have been identified as hemorrhage (both ante and post partum), toxemia (Hypertension during pregnancy), anemia, obstructed labor, puerperal sepsis (infections after delivery) and unsafe abortion.

Maternal Mortality is a cause of great concern. However, reliable estimates of maternal mortality are not available. Any intervention to check it will only be effective if we know reasonably accurate data on maternal mortality. An expert group has been constituted in the Department of Family Welfare, which is looking into the modalities of carrying out a survey for collection of data on Maternal Mortality. A Pilot Survey for this has already been completed.

Reduction of maternal mortality is an important goal. The Department of Family Welfare has taken several new initiatives, during the current Ninth Plan period, to make the programme broad based and client friendly. The focus was, accordingly, shifted from individualized vertical interventions to a more holistic and integrated life cycle approach giving more focused attention to the reproductive health care. The Maternal Health Programme which is a component of the Reproductive and Child Health Programme aims at reducing maternal mortality to less than 100 by the 2010. The major interventions include:

Essential Obstetric Care: Essential obstetric care intends to provide the basic maternity services to all pregnant women. The RCH Programme aims at providing at least 3 antenatal check ups during which weight and blood pressure check, abdominal examination, immunization against tetanus, iron and folic acid prophylaxis as well as anemia management are provided to the pregnant women. Data from the Rapid Household Survey (RHS) 1998-99 indicate that at the national level 67.2 per cent pregnant women received at least one check up but only 10.6 per cent had three ante natal check ups. In Uttar Pradesh and Bihar, the content and quality of antenatal care was poor as compared to Haryana and Tamil Nadu.

Keeping in view the already known weakness in programme implementation and in order to improve the delivery of services, all category C districts of 17 States, are being supported for providing additional ANMs in 30% of sub-centre of these districts. In addition, Delhi has been permitted for appointing 140 ANMs for extending services to slum areas. Rs.10988.73 lakhs have been released to the States for appointment of additional ANMs since 1997-98. Public Health/Staff Nurses on contractual basis are also provided to 25% PHCs/CHCs in C category districts and 50% PHCs in B category districts. Under this scheme Rs.3104.73 lakhs have been released to 25 States/UTs.

Emergency Obstetric Care: Complications associated with pregnancies are not always predictable. Therefore, emergency obstetric care is an important intervention to prevent maternal morbidity and mortality. Under the RCH Programme, efforts are being made to strengthen the emergency Obstetric Care Services and make the FRUs operational.

Under the RCH Programme FRUs are also being strengthened through supply of drugs in the form of emergency obstetric drug kits and skilled manpower on contractual and hiring basis. The sub-district hospitals, CHCs and FRUs are entitled to hire services of Private Anaesthetists for conducting emergency operations for which they are to be paid Rs.1000 per case. Rs.83.73 lakhs have been released to the States; however, Private Anaesthetists have been hired only for 1059 operations so far.

24-Hours Delivery Services at PHCs/CHCs : To promote institutional deliveries, provision has been made under the current RCH Programme to give additional honorarium to the staff to encourage round the clock delivery services at PHCs and CHCs. This is to ensure that at least one medical officer, nurse, and cleaner is available beyond normal working hours. Under this scheme Rs.1168.88 lakhs have been released to 21 States based on the proposals received from them.

Referral Transport : Time is an important factor for obstetric emergencies. Women who undergo deliveries at home and develop complications often find it difficult to be transported to a referral unit. Under the current RCH Programme Provision has been made to assist women from indigent families in 25% of the sub-centre in selected States to provide a lump sum corpus fund to Panchayat through District Family Welfare Officers. Since 2000-2001, the scheme has been extended to all the States and UTs. Rs.595.65 lakhs have been released 16 States based on the proposals received from them.

Safe Abortion Services : Abortion is a significant medical and social problem worldwide. It is estimated that half the abortions taking place around the world every year are performed outside authorized health services and or by unauthorized often unskilled providers and most take place in the developing world. Whether spontaneous or induced, abortion has been a matter of concern over many decades now, particularly because of sepsis and other complications which lead to maternal morbidity and mortality. In India, abortion is a major cause of maternal death and accounts for 8.9% of maternal mortality every year (RGI 1998).

The Medical Termination of Pregnancy Act, 1971 : The Medical Termination of Pregnancy Act, 1971 has been under implementation since 1972. Over the years, the number of centre where pregnancy can be terminated has increased and at present there are 11025 recognized MTP clinics in the country. However, considering the fact that a large number of unsafe abortions still take place providing for more facilities for MTP services has been taken into consideration under the ongoing Reproductive and Child Health Programme. Efforts are being made to provide for the unmet need of safe abortion services and to improve utilization of existing facilities and further expand the MTP facilities so as to make safe abortion services accessible to all women in the country including the women in rural areas. At present, Government of India under the RCH programme is undertaking training of medical personnel in MTP technique, and undertaking IEC activities for improving the awareness and knowledge of the community. The MTP Act, 1971 has also been amended with the objective of delegating power to a Committee at the district level to facilitate recognition of more centres where MTPs can be undertaken.

Amendments to the Act : The provision of the Act has now been amended to delegate the powers for approval of places, from the States to the District level through a committee headed by Chief Medical Officer or District Health Officer.

Amendment to MTP Rules : Medical Method of Abortion – Termination of early pregnancy with two drugs Mifepristone (RU 486) and Misoprostol have undergone extensive research and is considered extremely safe under supervision with appropriate counseling. Use of Mifepristone (RU 486) followed by Misoprostol is an established and safe method for terminating early pregnancy. In April 2002, Drug Controller of India approved marketing of Mifepristone for termination of early pregnancy, a method also known as Medical Abortion. Currently its use in India is recommended upto 7 weeks (49 days of amenorrhea) in a facility with provision for safe abortion services and blood transfusion.

- Termination of early pregnancy with RU 486 and Misoprostol is offered to women under the purview of the MTP Act, 1971 and Rules 2003 which specify to whom, by whom and where pregnancy is to be terminated.

- Manual Vacuum Aspiration (MVA) : The Department of Family Welfare is considering the introduction of Manual Vacuum Aspiration (MVA) technique in the Family Welfare Programme. Manual Vacuum Aspiration is a safe and simple technique for termination of early pregnancy that makes it feasible to be used in Primary Health Centres or comparable facilities, thereby increasing access to safe abortion services. The project of introducing the MVA technique is being piloted in two identified districts of each of the eight selected states initially.

Prevention and Management of Reproductive Tract Infection (RTI) and Sexually Transmitted Infections (STI): Reproductive Tract Infections pose grave threats to women's Life throughout the world. RTI includes sexually transmitted infection, men also experience RTIs but prevalence and a consequence for women are much more severe. Services for the prevention and treatment of RTI/STI are integral part of the Reproductive Child Health Programme. All community based prevalence studies of women and men's health conducted in India indicate that rates of RTI are very high.

RTI/STI linked to HIV/AIDS, therefore, the planning and implementation of services for RTI/STI has been done in close collaboration with National AIDS Control Organization (NACO). All STD clinics at the district level are being assisted by NACO while incorporating the RTI component. The assistance from Govt. of India is in the form of training, laboratory equipments, RTI/STI drug kit and financial assistance for disposable laboratory items.

Training of Dais: A scheme for training of Dais was initiated during 2001-02. The scheme is being implemented in 156 districts in 18 States/UTs of the country. The districts have been selected on the basis of the safe delivery rates being less than 30%. The Scheme has been extended to all the districts of EAG States i.e. Bihar, Orissa, Madhya Pradesh, Rajasthan, Uttaranchal, Uttar Pradesh, Jharkhand and Chhatisgarh. On the request of the State Governments the scheme has also been extended to Andaman & Nicobar Island and more districts of J&K. The aim is to train at least one Dai in every village with the objective of making deliveries safe. Till date, Rs.881.30 lakhs have been released to the States and 59,296 Dais have been trained so far under this Scheme.

The endeavor of the Department of Family Welfare is also to implement Dai Training projects through NGOs. Funds amounting to Rs.27.56 lakhs were released for Dai Training to two mother NGOs during March, 2000. They have completed training of 1990 Dais in their project area. During 2001-02, an amount of Rs.49.22 lakhs have been released to eight NGOs for undertaking training of Dais.

RCH Camps: In order to provide the RCH services to people living in remote areas where the existing services are underutilized, a scheme for holding camps have been initiated during the year 2001. The scheme is implemented in the 10 weak states and also in the Eastern States. Report received from the States suggested that the scheme is well appreciated in the Rural Community and large number of people is attending these camps. On the request of the State Governments, the scheme has been extended to 76 additional districts during 2001-02 for which an amount of Rs.1887.40 lakhs to the States have been released. According to the information received from different States, 7283 camps have been organized in the States upto date.

As a result of these interventions, a recent survey results of which have come for 50% of the districts indicates that Institutional Delivery has increased from 33.6% (NFHS-II) to 46.9% and Safe Delivery has increased from 42.3% (NFHS-II) to 62.1%.

1.6.4. New initiatives:

Training of MBBS doctors in Anesthetic Skills for Emergency Obstetric Care at FRUs: To alleviate shortage of specialist manpower Government of India launched. Training of MBBS doctors for gaining Anaesthetic Skills in Emergency Obstetric Care at FRUs. The 18 weeks training Programme for the first batch has been pilot tested at AIIMS and will soon be disseminated to the States.

Obstetric Management Skills: Government of India is also considering introducing training of MBBS doctors in Obstetric Management Skills. Federation of Obstetric and Gynecological Society of India has prepared the training for 16 weeks in all obstetric management skills including Caesarian Section operation and is at present under consideration.

Setting up of Blood Storage Centers (BSC) at FRUs: Timely treatment for complications associated with pregnancy is sometimes hampered due to non-availability of Blood Transfusion services at FRUs to facilitate establishment of Blood

Storage Centers at such FRUs the Drugs and Cosmetics Act have been amended and guidelines for these Blood Storage Centers (BSCs), have been prepared and disseminated to the States. Initial funding and equipment will be provided by Government of India under RCH-II.

Developing a cadre of Community Level Skilled Birth Attendant: The major causes of maternal deaths are due to hemorrhage (ante partum and post partum), anemia, infection, unsafe abortion, obstructed labour and hypertensive disorders of pregnancy. A large number of these causes are preventable through improved maternal care and ensuring appropriate treatment of complications, ideally all the deliveries should be conducted by trained health functionaries, however, presently the health care system is not in a position to provide all pregnant women, services of a trained health functionary at the time of delivery. Therefore there is a need for developing a cadre of Community level skilled birth attendant who will attend to the pregnant women in the community.

A 'Community Level Skilled Birth Attendant' is a person who will be trained in midwifery to provide maternal care at the community level. She will be selected from the community where she will set up her practice after completion of her training of one year in midwifery. The community level skilled birth attendant will not be a financial or administrative obligation to the health system in any way. They will be left in the villages to practice the skills provided. They will serve in the same community for a minimum period of three years and will not be given government services. They will be given stipend for the training period and hostel facility will be provided at ANM training centres. This scheme will be taken up during Phase II of RCH Programme.

Janani Suraksha Yojana: The scheme is a modification of National Maternity Benefit Scheme, referral transport etc. and is at present under consideration.

Accredited Social Health Activist (ASHA): Government of India has recently announced a National Rural Health Mission (NRHM) with a clear goal of addressing the health needs of rural population especially vulnerable sections of the society. Such community level link workers may be called as **Accredited Social Health Activists (ASHAs)**. ASHA will act as a link among beneficiary at village level, Anganwadi Worker and ANM.

Operationalisation of Primary Health Facilities under Reproductive and Child Health Programme (RCH-2nd Phase): RCH Programme which started in the year 1997-98 is likely to end by the March 2005. From 1st April, 2005 RCH 2nd phase is likely to begin and at this stage the programme is under consideration for approval. The focus of the programme will be to reduce the Maternal & Child Mortality & Morbidity with emphasis on rural health care. This time more flexibility have been given to the States for planning their own interventions for achieving the goals, accordingly the states have been requested to make their own project implementation plan with indications for achieving the desired milestones. Under RCH Phase-II, it is envisaged to operationalise about 2000 FRUs for providing Emergency Obstetric Care. Besides this all CHCs & 50% of the PHCs are to be made functional for providing 24 Hrs. delivery services

CHAPTER-2: REVIEW OF LITERATURE

- 2.1. Maternal mortality is a major public health problem, particularly in sub-Saharan Africa, where half (50.4%) of all maternal deaths worldwide occur.¹ One objective of the Millennium Development Goals is to reduce maternal mortality by 75% between 1990 and 2015.² In 2005, the maternal mortality ratio in sub-Saharan Africa, estimated at 900 maternal deaths per 100 000 live births, was by far the highest in the world.¹ Unlike other regions, sub-Saharan Africa has not seen improvements in indicators linked to maternal mortality, leading to fears that the Millennium Development targets will not be met.³ In response to this disquieting situation, many African countries have adopted measures towards reducing maternal mortality.
- 2.2. The context and causes of maternal mortality and morbidity are well known,⁴ and strategies to ameliorate them were recently reported.⁵ One proven effective strategy is to provide access to basic emergency obstetric services (parenteral oxytocics, antibiotics and anticonvulsants; assisted deliveries; manual extraction of the placenta; removal of retained products) and, if necessary, to comprehensive emergency obstetric services (basic services plus Caesarean sections and blood transfusions).⁶ Access to these services is a key element of the WHO Making Pregnancy Safer programme.⁷ Ensuring timely Caesarean delivery when needed is a priority in sub-Saharan Africa.
- 2.3. In western Africa, maternal mortality is highest in rural areas where access to emergency obstetric care is limited by large geographic distances to health facilities and scarce resources.⁸ While progress has been made in reducing maternal mortality rates in urban areas, the situation in rural areas is not improving. In Mali, for example, the population-based rate of Caesarean delivery in urban areas rose from 1.6% to 3.5% between 1991 and 1998, while in rural areas it remained unchanged (1.6% and 1.5%, respectively).⁹ Implementing emergency obstetric care programmes, and maternity referral systems in particular, is complicated in settings where resources are scarce.¹⁰ In western Africa, where the Bamako Initiative has made cost recovery in health care the standard,¹¹ the costs of comprehensive emergency obstetric care represent a major outlay for households^{12,13} and several strategies have been attempted to reduce this financial burden.^{14,15}

2.4. In 2002, the Government of Mali launched a nationwide maternity referral system¹⁶ aimed at improving the quality and accessibility of comprehensive emergency obstetric care services and at reducing the danger of death associated with obstetric complications. In this study, we aim to evaluate the effects of the system in a rural population of more than one million inhabitants.

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- 2.5. Forty percent or more of pregnant women may experiences acute obstetric problems during pregnancy, childbirth and the postpartum period; an estimated 155 of pregnant women develop life threatening complications. Long term complications of pregnancy and childbirth include uterine prolapsed, fistulae, incontinence, pain during intercourse and infertility (WHO, 1994: Implementing Safe Motherhood in Countries). Death and disability related to maternal causes account for 18.5% of the burden of disease among women of reproductive age in developing countries (WHO, 1996: Safe Motherhood Progress Report).
- 2.6. Most women do not have access to the health care and sexual health education services that they need. In many developing countries, [complications of pregnancy](#) and childbirth (mainly at the level of preconception and prenatal care) are the leading causes of death among women of reproductive age. More than one woman dies every minute from such causes; 585,000 women die every year (WHO). Less than one percent of these deaths occur in [developed countries](#), demonstrating that they could be avoided if resources and services were available (WHO). Any woman can experience sudden and unexpected complications during pregnancy, childbirth, and just after delivery. Although high-quality, accessible health care has made maternal death a rare event in developed countries, these complications can often be fatal in the [developing world](#).

- 2.7. Consequently, mothers in developing nations die in childbirth at a hundred or more times the rate in developed nations (MDG). Access to emergency obstetric care, the most important remedy for women in these regions is not highly regarded as a priority. According to Rafiqul Chaudhury and Zafrullah Chowdhury, in countries like [Bangladesh](#), 68.7% of the women give birth without the assistance of trained birth attendants. Instead relatives or traditional midwives, who are often not capable of handling complications during the delivery serve as birth assistants^[1].
- 2.8. Factors that prevent women in developing countries from getting the health care they need include distance from health services, cost (direct fees as well as the cost of transportation, drugs, and supplies), multiple demands on their time, and women's lack of decision-making power within the family. The poor quality of services, including poor treatment by health providers, also makes some women reluctant to use services. According to the World Health Report in 2004, bad maternal conditions account for the fourth leading cause of death for women after HIV/AIDS, malaria, and tuberculosis. Ninety-nine percent of these deaths occur in low-income countries; while only 1 of 4,000 women have a chance of dying in pregnancy or childbirth in a developed nation, a woman in Sub-Saharan Africa has a 1 in 16 chance of dying. Furthermore, maternal problems cause almost 20% of the total burden of disease for women in developing countries.
- 2.9. Almost 50% of the births in developing countries take place without a medically skilled attendant to aid the mother and the ratio is even higher in South Asia (UNICEF). Women in Sub-Saharan Africa mainly use [traditional birthing attendants](#), with little or no medicinal training. This largely accounts for the high numbers of maternal deaths in this region.
- 2.10. The [World Bank](#) estimated that a total of 3.00 US dollars per person a year can provide basic family planning, maternal and neonatal health care to women in developing countries.^[2] Many non-profit organizations have programs educating the public and gaining access to emergency obstetric care for mothers in developing countries. The services needed are said to include:

- Routine maternal care for all pregnancies, including a skilled attendant (midwife or doctor) at birth. Medical training for traditional birthing attendants might be one way to help provide this service.
- Emergency treatment of complications during pregnancy, delivery and after birth
- Postpartum family planning and basic neonatal care
- Educating women and their communities about the importance of maternal health care, and according women the social status to make health care decisions and seek medical attention.
- Any form of education, even 6 years worth of education for girls can drastically improve overall maternal health (UNICEF)
- Research on social and psychological factors affecting maternal health
- Development of better interventions (and evaluations of interventions) for complex problems (e.g., behavioral, social, biological, cultural) arising in marginalized communities

2.11. Maternal death is defined as death of women while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by pregnancy or its management. The maternal mortality ratio is maternal death per 100,000 live births in one year. Reliable estimates of maternal mortality in India are not available. WHO estimates show that out of the 529,000 maternal deaths globally each year, 136,000(25.7%) are contributed by India. This is the highest burden for any single country. There are variations in MM by region and state.

2.12. The indirect estimate done by Bhat (Maternal mortality in India: An update. Studies in Family planning, 2002) show that MMR is higher in eastern and central regions and is lower in north-western and southern region. Similar picture is also shown by data collected under Sample registration system by Registrar General of India in 1997. Socio-economic variations in MM are known but not well documented in India. Study of Bhat shows that generally MMR is more in scheduled caste and tribe community and those living in less developed villages. Variation with income is somewhat inconsistent with the expectation that the poor will have higher mortality. There are no precise estimates of MM it is difficult to say with certainty that maternal mortality has gone down over time. But data shown by various studies as those by Bhat show that there is a gradual decline in MMR. However direct measurement (RGI and NFHS) are inconsistent and do not show any decline.

2.13. In the 60s and 70s maternal health services under MCH focused on ante-natal care and high risk approach. It was thought that good antenatal care along with high risk approach will help in reducing maternal mortality. As traditional birth attendants were conducting many deliveries, it was thought that by training them MMR will decline. But after several years of implementing these approaches it was realized in mid-80s that MM was still very high in many developing countries including India. A re-look at the causes of maternal death and the socio-medical factors contributing to maternal death brought out a completely new understanding of how to prevent maternal mortality. This showed that

- It is not possible to predict which mother will develop complications and hence the high-risk approach does not help much.
- Most complications cannot be prevented by good antenatal care. Hence ANC alone cannot prevent maternal mortality.
- If obstetric complications are handled effectively the mortality could be substantially reduced.
- It was also shown that once major obstetric complications which can cause death develop, even a trained TBA or a nurse cannot do much at home as many of these complications require surgical interventions, injections of antibiotic, blood transfusion and other aggressive treatment.
- Cost-effective approach to reducing maternal mortality was by ensuring high quality emergency obstetric care (EmOC) to mothers who develop complications during delivery.

It was proposed that development of First Referral Units where emergency obstetric care can be provided would be required to reduce maternal mortality. It was also argued that development of FRUs was the most cost effective way of reducing maternal mortality. This approach was also accepted by many international donors and became the main strategy for many country programs for preventing maternal mortality.

2.14. The review of national laws and policies are discussed in subsequent sections:

2.15. **Family planning:** Statutes that restrict women's access to family planning services (e.g. by requiring that a woman be married or that she should have her husband's approval) should be repealed. Policies must ensure that all couples and individuals have access to good-quality, voluntary, client-oriented, and confidential family

planning information and to services that offer a wide choice of effective contraceptive methods. Policies should address regulatory, social, economic, and cultural factors that limit women's control over sexuality and reproduction, in order that pregnancies that are too early, too late, or too frequent may be avoided.

- 2.16. **Adolescents and children:** Policies and programmes should encourage later marriage and childbearing and an expansion of the economic and educational opportunities for girls and women. Promotion of good nutrition in childhood and adolescence, as well as supplementation if necessary during pregnancy, provides protection for both women and their future children. Policies should also enable adolescents to take responsibility for and protect their sexual and reproductive health, and facilitate their access to health information and services. All children, before they reach the age at which they become sexually active, need to be taught the risks of unprotected sex and helped to develop the skills needed to protect themselves from sexual coercion.
- 2.17. **Barriers to access.** Assigning health workers trained in midwifery to village-based health facilities can help overcome problems of distance and transport. Health workers should also be trained to deal sympathetically with women patients. Policies should support the provision of services at minimum cost; at the same time, health workers should have job security, be paid adequate wages, and be provided with sufficient supplies to do their jobs. Policies that will increase women's decision-making power, particularly in regard to their own health, are also essential.
- 2.18. **Regulation of practice.** Protocols and statutes aimed at providing both routine maternal care and referral facilities for obstetric complications at each level of the health system need to be developed. Responsibilities at each level for supervision, deployment of healthcare personnel, remuneration, and reporting procedures must be defined nationally. Development and promotion of education and training curricula are important, as is the setting of national norms and standards to govern the selection of trainees, trainers, and supervisors.
- 2.19. **Delegation of authority.** Services should be decentralized so that facilities are available as close to people's homes as possible. Adequate supplies and equipment and trained staff should be available in all health facilities, particularly in rural and remote areas, together with written policies and protocols to guide service provision and to allow certain functions to be delegated to personnel at lower levels (when appropriately trained).

- 2.20. **Abortion.** Availability of services for management of abortion complications and post-abortion care should be ensured by appropriate legislation. Where abortion is not prohibited by law, facilities for the safe termination of pregnancy should be made available. National policy can discourage unsafe abortion practices by promoting protection against unwanted pregnancy, and national health campaigns to publicize the risks of unsafe abortion and the need to recognize and seek treatment for abortion complications.
- 2.21. **The support of families and communities is a key to maternal mortality reduction.** The long-term commitment of politicians, planners, and decision-makers to safe motherhood programmes depends on popular support. Input from a wide range of groups and individuals is therefore essential, including community and religious leaders, women's groups, youth groups, other local associations, and healthcare professionals. National, regional, and district safe motherhood committees should be set up as appropriate and where they will be most effective. Health facility and community committees can be established to investigate maternal deaths and to help identify and implement strategies for improvement in such areas as referral, emergency transport, deployment and support of healthcare providers, and cost-sharing. Local committees also have a key role to play in monitoring and evaluating programmes - identifying weaknesses and taking appropriate action.
- 2.22. **Women need support in obtaining access to essential care.** Raising awareness of the need for women to reach emergency care without delay if complications arise during delivery is particularly critical. Because many women deliver alone or with a relative, community members must be trained to recognize danger signs and develop plans for emergencies, including transport to hospitals or health centres, and local insurance funds to help cover the costs of care. Communications - radios, telephones and transportation for emergency cases - can be organized with financial support from communities. Cheap and simple delivery kits can be distributed to pregnant women for home births and deliveries in primary healthcare facilities; these kits will help to ensure that deliveries take place in clean conditions and to prevent at least some infection-related deaths.
- 2.23. **Training of TBAs alone, in the absence of back-up from a functioning referral system and support from professionally trained health workers, is not effective in reducing maternal mortality.** In many places, the services of skilled professional healthcare providers are not available and traditional birth attendants (TBAs) may be women's only source of care. For many years, governments and

international agencies have been investing in TBA training. However, there is no evidence that such training alone leads to reductions in maternal mortality, although TBAs can provide culturally appropriate nurturing in the community setting, offer a first-line link with the formal healthcare system, and provide some simple services such as the distribution of nutrition supplements. A useful strategy in a range of settings has been to train TBAs to recognize problems during delivery and, when necessary, to guide women to and through the formal healthcare system. Where TBA training is undertaken, it should be part of a broader strategy that includes a built-in mechanism for referral, supervision, and evaluation.

- 2.24. **A diet that provides sufficient calories and micronutrients is essential for a pregnancy to be successfully carried to term. Supplementation and/or fortification can help where micronutrient deficiencies are endemic.** The term malnutrition includes both protein--energy malnutrition and the lack of specific nutrients. Where malnutrition is endemic or severe food shortages arise as a result of seasonal fluctuations or agricultural crises, food supplementation can help to ensure both that adolescent girls continue to grow during pregnancy and that all women have a sufficient intake of calories for successful pregnancy and lactation. Deficiencies in iron/folate, calcium, iodine, and vitamin A can give rise to poor maternal health and to pregnancy complications. Focused supplementation of particular micronutrients can therefore be an important component of health services for pregnant women, particularly in cases where communities suffer from extreme poverty and malnutrition.
- 2.25. In the long term, improvement in women's nutrition is essential to solving the problem of malnutrition and its impact on pregnancy and childbirth. Such a change can take place only at the community level and in the household, where women often eat less, less often, and less nutritiously than their children and other family members. Community education efforts are essential to reverse widespread beliefs and practices that militate against adequate nutrition for pregnant women and to raise awareness that preparation for successful pregnancy and childbirth begins well before adulthood, with adequate nutrition for girls.
- 2.26. **Women's overall health influences maternal health. Key issues are HIV/AIDS and other major diseases, depending on local epidemiological patterns.** Infection with HIV is a rapidly growing threat to women's health, and AIDS is an increasingly common cause of maternal death in many countries. The HIV/AIDS pandemic highlights the need for women to be able to resist sexual

coercion, to be informed about the health risks of unprotected sex, and to have access to services and counselling if they fear they are at risk. About 15--35% of all infants born to HIV-infected women are themselves infected with the virus before or during birth or through breastfeeding. Tuberculosis is also a growing problem in many countries and is closely linked to HIV/AIDS. Malaria contributes in several different ways to poor maternal and neonatal health. In some countries hypertension, heart disease, and kidney disease are relatively common and all contribute to maternal deaths. Where female genital mutilation is practised the resultant scarring often leads to problems during labour and delivery. Addressing such issues, many of which are known contraindications for pregnancy, is an essential element of all efforts to reduce maternal mortality.

- 2.27. **Prevention of unwanted pregnancy and prevention and management of unsafe abortion are key interventions for safe motherhood.** Enabling women and families to choose whether, when, and how often to have children is central to safe motherhood. The availability of family planning information and services to women, including adolescents, helps to limit pregnancies in which complications may occur. Pregnancies among very young women and women with many children, and unwanted pregnancies are all associated with increased likelihood of mortality. Women whose pregnancies are unwanted may seek terminations, even when safe termination is prohibited by law or unavailable. Complications of unsafe abortion are responsible for 13% of all maternal deaths, yet these deaths are among the most easily preventable. Whatever a country's legal position on abortion, all women suffering from abortion-related complications have a right to treatment and high quality post-abortion care, including family planning counselling and services, offered with compassion and full confidentiality. Safe motherhood programmes should include promotion of family and community support for delayed marriage and childbearing, timely and planned pregnancies, and improved health, nutrition, and education for all girls and women.
- 2.28. Health sector actions: The role of the health sector in reducing maternal mortality is to ensure the availability of good-quality essential services to all women during pregnancy and childbirth. With a minimum of good care most women will complete their pregnancies uneventfully; without it, women frequently suffer avoidable complications, which are sometimes life-threatening and often have long-lasting consequences. There is a growing understanding that, while certain pregnancy complications can be prevented, a large proportion that occur particularly around the

time of birth can be neither prevented nor predicted. Clearly, the presence of skilled birth attendants is crucial for the early detection and appropriate, timely management of such complications.

2.29. Maternal deaths can be prevented through one of three mechanisms: prevention of pregnancy, prevention of complications during pregnancy, and appropriate management of any complications that do occur. Essential services related to pregnancy and childbirth focus mainly on these three areas, and the health-care sector should therefore ensure that the following services are in place and functioning effectively:

- **Client-centred family planning information and services**, which offer women, men, and adolescents choices that meet their needs.
- **Contraceptive counselling for women who have had an abortion**, appropriate care for women who experience abortion complications, and, where abortion is not prohibited by law, safe services for termination of pregnancy.
- **Basic antenatal and postpartum care**, focusing more on detection and treatment of complications than on schedules of risk assessment which fail to identify many women who have complications. The preconceptional and pregnancy periods offer opportunities to detect and manage nutritional deficiencies and to treat endemic diseases such as malaria, helminth infestations, and sexually transmitted diseases, as well as to offer prophylactic care such as tetanus toxoid immunizations, iron/folate supplementation, and voluntary and confidential counselling for HIV. It is important to plan the place of birth and maximize the chances that a skilled attendant will be present. Every opportunity must be taken to educate women and their families about when and where to seek care. More emphasis is needed on care in the days after birth, a sensitive but neglected period: postpartum care should include the prevention or early detection of maternal or newborn complications, as well as contraceptive advice to permit adequate maternal recuperation before the next pregnancy.
- **A skilled attendant**, that is a person with midwifery skills, present at every birth. This requires long-term planning of human resources development. Midwifery skills include the capacity to initiate the management of complications and obstetric emergencies, including life-saving measures where needed.

2.30. **Good-quality obstetric services at referral centres for complications.** As 15% of all births are complicated by a potentially fatal condition, emergency services, including facilities for blood transfusion and caesarean section, must be available. Health planners and managers have key roles in implementing services:

- **Inform, educate, and mobilize** the community regarding danger signs and **work with communities** to improve access to care - for example, through transport schemes, better communications, maternity waiting homes, or local insurance schemes - and in local safe-motherhood committees.
- **Strengthen the referral system** through supportive supervision, regular communication, and logistic/managerial support, including ensuring the availability of essential drugs and supplies.
- **Improve human resources** by offering community-based, hands-on midwifery training programmes and, for personnel already trained, in-service training/updating for skills maintenance.
- **Strengthen midwifery skills** of relevant staff - midwives, nurses, and doctors - and **intensify counselling skills training** for all health workers.
- **Develop and use case management protocols** for obstetric emergencies at each level and **monitor standards** for practice in maternity services.

2.31. **Use health information to improve quality of care;** improve reporting and record-keeping; **analyse** maternal and perinatal deaths and "near misses" on a case-by-case basis (audit) to increase understanding of the pathways to survival and death; make local improvements, identifying substandard care and avoidable factors.

CHAPTER-3: OBJECTIVES AND METHODOLOGY OF THE STUDY

3.1 Objectives of the study

The main objective of the study is to ascertain the level and pattern of maternal mortality among the selected Rural, Tribal & Urban Slum population groups in Orissa. More specifically the study tries to

- determine the level of maternal mortality among the selected population groups in Rural/Tribal/Urban Orissa
- identify the Risk Factors of Maternal mortality, know their operational mechanism and find out their related risks;
- examine the inter-relationship between Maternal mortality and fertility and the manner in which they tend to influence each other
- study the abortion Behaviour of the community and its impact on maternal death.
- study community perception of high-risk pregnancy and obstetrical emergencies.
- study the maternal health perception and health seeking behavior of the community.
- understand the need for Public / private partnership to provide obstetric care Services
- understand various Socio-cultural practices followed by the various population groups during different stages: Ante-natal, Natal and Post-natal
- recommend appropriate intervention modes to prevent and control risk factors in order to reduce maternal mortality.

3.2 Universe of the study

The study coverage was 230 subcentres as sub-centre was taken as a cluster for last four years reference period. The sub centres under the study were proportionately allocated to all the 30 districts and stratified as rural, urban and tribal. The sample allocation was done on Probability Proportion to Size (PPS) methodology. From the selected enlisted clusters all households were surveyed for identifying the maternal death reporting during the preceding four years and household reporting live births during the last one year. As such all the households reporting maternal deaths and alternative household reporting live birth was studied for the total population.

3.3 Tools and techniques of data collection

Integration of both quantitative and qualitative data collected through techniques as :

Quantitative Methods

- Census enumeration of Households
- Sample survey of households using structured questionnaires.

Qualitative Methods

- Focus Groups Discussion
- In-depth Interviews
- Case studies

Prior to the data collection, investigators were selected and orientation training on the use of instruments like questionnaires, guideline for conducting Focus Group Discussions and also on the very purpose of study was conducted. The questionnaires were also pre-tested during orientation training and necessary changes/ modifications done on the basis of field observations.

Formal discussion with PHC level functionaries and sub centre level service providers about the purpose and process of the study was also made to ensure their participation and cooperation.

Secondary information on all live births occurred during last financial year and also maternal deaths occurred in the last three years was collected from the records of community based service providers.

3.4 Data analysis, statistical methods used and reporting

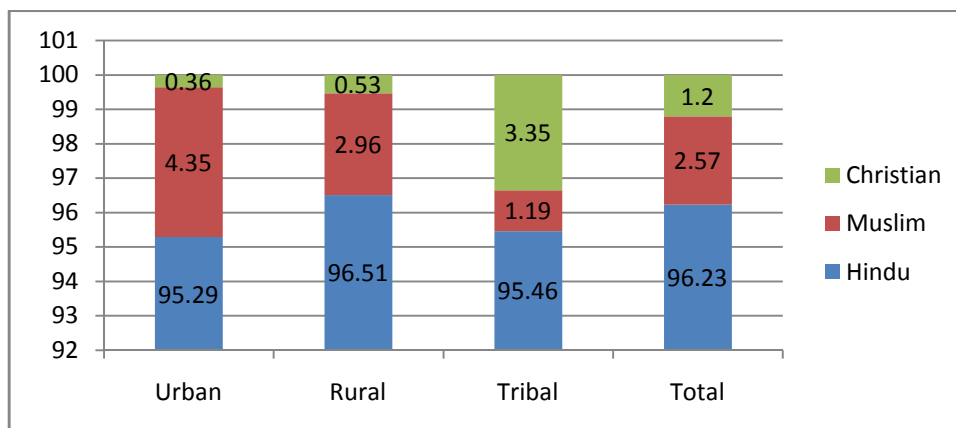
Data entry and analysis was done using simple statistical methods. For this purpose SPSS package was used. Necessary coding, data cleaning and cross tabulation done to arrive at accuracy of information collected under the study.

CHAPTER-4: FINDINGS ON WOMEN EXPERIENCING LIVE BIRTH

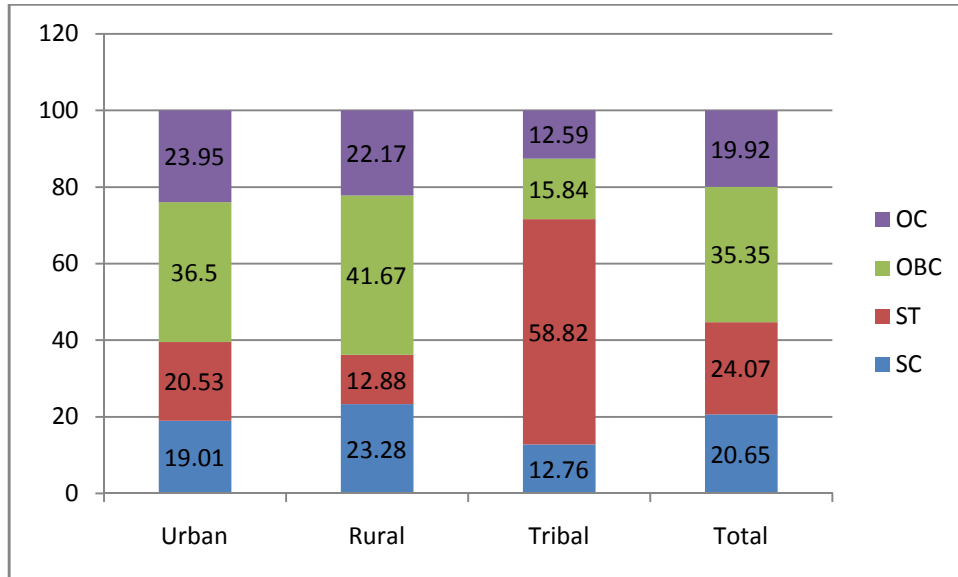
A comprehensive analysis of a good proportion of live birth occurring both in rural and tribal regions was an integral part of the study on maternal mortality in Orissa. Effort was made to find out some critical portion of live birth such as complication in new born and mothers and some other related factors including social, economic and geographical condition. To be precise this process aimed at accumulating views of mothers / fathers, service provides and above all the community so far as maternal morbidity and survival status of new born is concerned. The study also tried to explore the health seeking behavior of community, status of birth planning and complication readiness and also the birth out come in the prevalent situations, which also provide a good understanding on determinants of maternal mortality in Orissa. The study covered 230 sub centers covering tribal, urban and rural regions across the state from which 10150 women experienced live births in the last one year were interviewed and findings are enumerated below.

4.1. SOCIO-ECONOMIC & ENVIRONMENTAL STATUS:

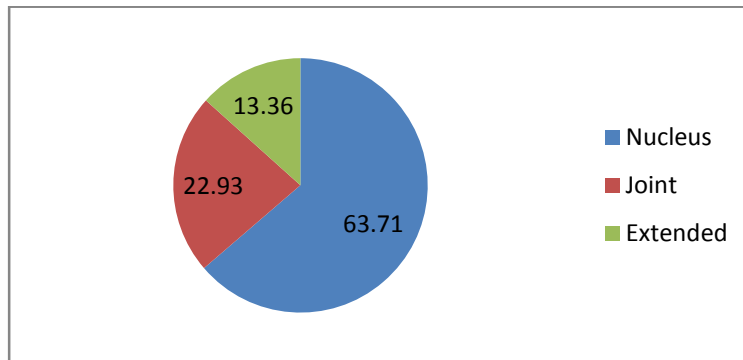
Religion: About 96.2% experiencing live birth during the last 1 year belonged to Hindu religion. Only about 2.5% of them were muslims while only 1.2% of them were from Christian community. During FGDs and interview with service providers facts regarding observing rituals and fasting during pregnancy and after child birth were expressed as part of social custom in the community. Indirectly it has an impact upon healthy outcome of pregnancy.



Caste: Nearly 21% of families were from schedule caste, followed by 24.07% of women who belonged to schedule tribe community. Similarly a majority of women 35.36% belong to other backward classes. And about 20% of women belonging to other castes experienced live birth during the last 1 year.



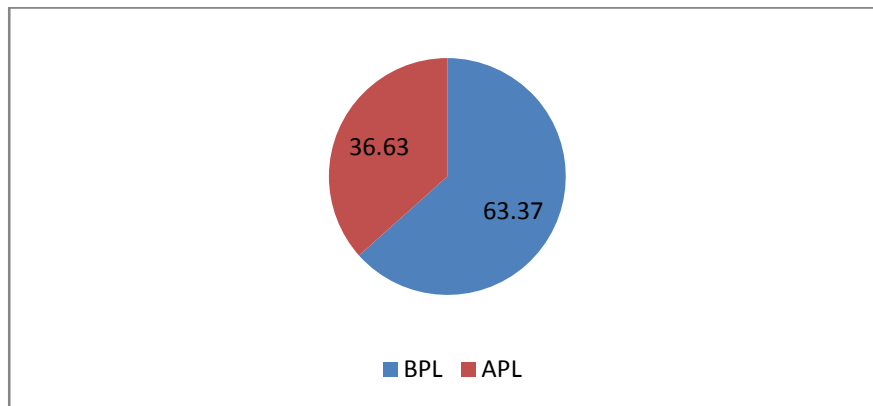
Type of family: About 63.7% of women have been dwelling in nucleus families with a family size of 3 to 5. Similarly about 23% of women have been dwelling in a joint family constituted by 7 to 12 members. Nearly 13% of women extended from the original one. There is a more chances of complication to be found in case of women who are dwelling in a nuclear family in comparison to those dwelling in joint families. It so happens that the husband and wife in a nuclear family often have to work for livelihood leaving their home and child with no body to look after. When in case of pregnancy there is maximum possibility of complication arising in them.



Land holding Size: Nearly half of the households(44.7%) covered in the study did not have any land, they either work as daily labourer or seasonal agricultural labour in other's

land. About 10% of them have own a land of upto 1 acre.. About 40% of household are owner of 2 to 5 acres of land and rest 6% have a land of 5 acres or more. The ownership pattern itself indicates the poor socio-economic condition of families whose income is highly irregular and uncertain.

BPL Status: Coinciding to the above land holding status, large proportion (63%) of families are categorized under Below Poverty Line(BPL) list whereas about 36% of families live Above Poverty Line(APL) who are mainly service holders, large farmers and petty traders. It should be categorically mentioned that families coming under the BPL list do not always avail all the benefits of all the govt. welfare programmes like SJSY, Antodaya Yojana, Indira Awas Youjana, etc.



Major Sources of income: About 33% of families earn their livelihood from agricultural source either from their own land or working in others farm land. Similarly 36% earn by working as wage labourer which is purely uncertain and underpaid whereas about 28.6% of families earn from various sources like petty trading, driving, painting, unskilled mechanical work, etc which is not easily available.

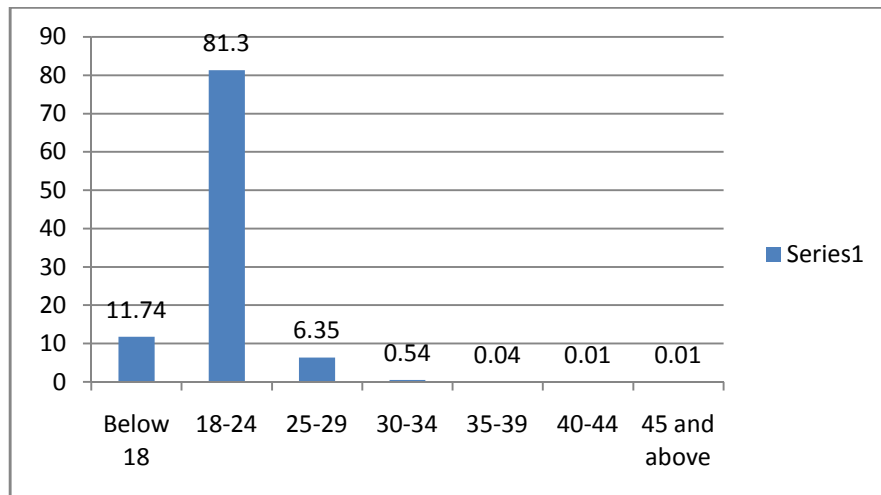
Age of Respondents: It was found in the study that only 0.6% of women are in the age group below 18 years. About 39% in the age group were between 18 to 24 years. Among this, the tribal proportion is as high as 57% while in rural areas it is 34%. Similarly about 42% were in the age group between 25 to 29 years of age. Only 13% of women were in the age group between 30 to 34 years whereas only 5% women were in the age group between 35 to 44 years.

Education of respondent: Women to the extent of 20.46% are illiterate whereas about 15% of women had education up to primary standard; similarly about 30% of women

studied up to middle class and 25% had an education up to High school. Only 9% of them studied above matriculation. It is found from the study that most of the women are not literate enough to have adequate knowledge about signs and symptoms of complication and its treatment during appropriate hour.

Occupation of woman: Since the educational level of most of the mother is not so high, most of the women engage themselves in the day to day household chores without giving any attention to the health of their children and self. Majority of the women (77.7%) has been engaged in household work. It is clearly evident that heavy workload at household level do not permit them not to take adequate rest and diet. About 18% of women worked as wage labour even during their pregnancy period.

Age at marriage of women: Age at marriage is crucial as it determines the health status of the pregnant women in the conceiving and pregnancy period. Women were interviewed to assess the age at which they married, It was revealed that about 12% married below 18 years of age. In tribal areas 27% of women married below 18 years. This happened because of their traditional living pattern and social customs. As a result they become more vulnerable to suffer from pregnancy related complication at an early stage after marriage. Majority of women get married during the age between 18 to 24 years (81.30%). This happens to be a good sign that marriage age is enhanced after a series of IEC Programmes being taken up at community level. Widening of BCC activities have boosted up awareness of women in the community so as not to marry until they reach at reproductive age.



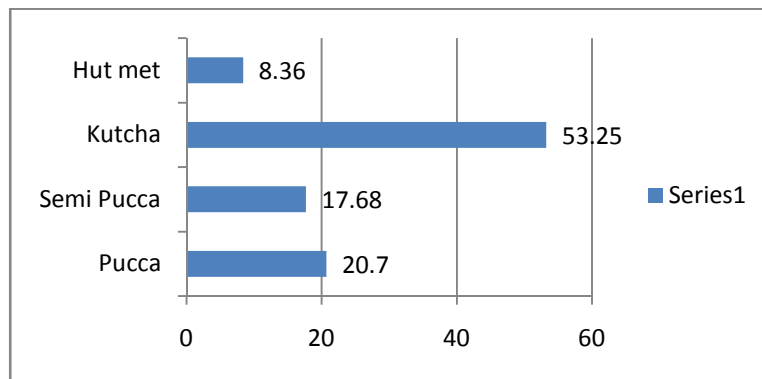
Age of Husband: The age of husband was also assessed to ascertain their role, knowledge, attitude and practices as far as birth preparedness is concerned. Majority of the husbands (73%) were in the age group of 25-34 years when their wife conceived and delivered.

Education of Husband: Education of a husband helps in promoting informed decision making in the family particularly when to conceive and where to avail health services. It was found that about 50% of the husband studied up to middle class level and only 35% studied up to high school level. Only 16% attained +2 and above educational level. About 12.6% of husbands were illiterate.

Occupation of the husband: Education and occupation of a person is co-related. Since most of the husbands are illiterate or semi literate, they generally engaged in traditional occupation like agriculture (26%) and wage labourer (41%). Only 12% of the husbands are into small business and 6% of them are engaged in government and company service.

Age at marriage of husband: A majority proportion (90%) of men got married at age group between 18 to 29 years which signifies that marriage age of a person is fairly appropriate. An education on complete family life and life skill should be imparted to them so that they make a family which is ideal and free of all complication related to infant and maternal morbidity.

Type of house: Nearly half of the respondent (53%) owns a kutcha house, while 21% of respondents have been living in pucca house concentrated in urban areas(39%) followed by 25% in rural areas and a very small proportion(5%) in tribal areas. Traditional housing pattern in many cases reflect unhygienic living condition of pregnant woman. Since nearly half of the respondents expressed that they had delivered their baby at home, it is obvious that 5 cleans were not ensured which led to different complication during and after child birth.



Is the house Electrified: It is revealed that electricity is still a dream for about half of the respondents (50.3%). Rest 50% of respondents expressed that there is an electricity facility in their houses. Supply of electricity to the houses makes way for accessing media like television and radio etc. Families get opportunity to watch and listen different awareness

programmes and current news related to maternal health which makes them assertive to seek quality health care.

Places of defecation: It was reported that about 74% of women still in a practice of defecation in open field. About 25% of families had their own latrine. However, it is yet to be asserted whether the women in the household actually make use of it or not. Some of respondents said that toilet at home is meant for guest and it is used at night time only. Poor sanitary condition in the family is characterized by maximum number of women using open field for defecation which is not advisable during pregnancy or post partum period. However, in a very limited occasion (0.1%) community latrine was used.

Source of Drinking Water: Since safe and clean water is of great importance for pregnant women, questions were asked about sources of drinking water available for the respondent. So far tube well serves as a major source of drinking water(77%) while about 20% of respondents used open well for getting drinking water. It is quite obvious that people in tribal region do not find tube well nearby due to their scattered housing pattern. Majority of the tribal people depend on open well in comparison to that of rural and urban areas. Notably during interview process, maximum number of women expressed that tube well water is safe and clean than any other source. In a very meager proportion also used chuan for sources of drinking water. .

Watch and Clock

Time factor plays a vital role in formulating a realistic birth preparedness measure and arrangement of emergency transportation. Expected date of delivery some times is either misunderstood or not taken care of properly by family members. In the event of complications arising in women the whole family gets panic-stricken and can not decide what to do. In this connection about 69% of women expressed that they have clocks at home where as 29.7% families do not a clock. For deliveries expected at night, a clock is of big help to arrange immediate transportation and also to address complication within given time where by maternal mortality could be avoided.

Radio & Transistor

Around 61% of women listen to different audio programs on awareness and emergency obstetric complications in regional languages through radio. In this way they are assured that many such complications during pregnancy and child birth could be avoided. About 25% of families do not have radios.

So far bicycle is the most common and widely used means of transportation both in tribal and rural areas. About 73% of families have bicycle while about 20.8% of families own motorcycle.

BIRTH OUTCOME:

Sex of New Born: From among 10150 live births assessed, less than a half(48.8%) were male child and slightly more than half(51.2%) were female child

Birth Order: About 40.3% of the babies were born in first birth order whereas about 34.3% born in 2nd order. Similarly about 15% of babies born in third birth order and rest about 11 % of babies born from 4th to 9th birth order. It was found that most of the complication in women arises in the beginning of their motherhood. It is somehow due to unplanned ante natal care coupled with lack of birth preparedness measures taken up at household level

Birth Spacing: During interview with women who experienced live birth, it was revealed that a majority of them had maintained normal spacing between two births. For instance about 64.7% of them had 2 to 3 years of spacing between two births where as about 16.2% of them had spacing of two years between births. It is important to be mentioned that only about 0.4% of women had birth spacing of less than 1 year. About 16.64% of women reported birth spacing of more than 3 years. This birth spacing within one year is found to be high in tribal areas in comparison to rural. Out of 24 women reported spacing within one year, 16 women were from tribal areas. This necessitates community education and more sensitization of tribal people on usefulness of birth spacing. Spacing methodology should be more pronounced in these areas adopting PPP mode.

Even though the birth spacing is normal, still morbidity among women is seen towards later part of pregnancy. Because most of them often are found reluctant to seek full ANC. Certain problems like social restriction and migration to other areas in search of livelihood. stand as barriers.

Survival status of Newborn: There was almost 99% of survival of new born reported in the study. Only about 0.9% (91/10150) new born could not survive in the neonatal period.

If new born dead age at death: It is most important and urgent to take proper care of new born babies. Because survival of new born is at threat in the neonatal period. Most of the complications arise because women still delivered at home. In other cases although there are women delivering at health facilities, families have a tendencies to bring back women and newborn to their own native villages soon after delivery which is on many occasion against the medical advise.

As reported 41.47% of new born died on the very first day of birth. This indicates lack of availability of skilled health workers at accessible points. Similarly about 17.5% of new born died on the second day after birth, where as 36% of new born death cases were reported between 3 days to 24 days after birth. Another pertinent result is that in tribal areas newborn death in the ist day of birth is reported to be 53%.

PROFILE OF COMPLICATION IN EARLIER PREGNANCIES:

Out of total women who experienced complications in earlier pregnancies, about 40.77% of women reported about complication faced during pregnancy. Either it was not shared before health worker or ANC care was not appropriately available for women in pregnancy. It is required that ANC should be provided to woman inclusive of partner and family members with a friendly, culturally appropriate and individualized approach. In a similar manner about 20 % of women had complications during delivery such as: hemorrhage obstructed labor etc. whereas about 14.51% of women faced complications during Puerperium /confinement etc.

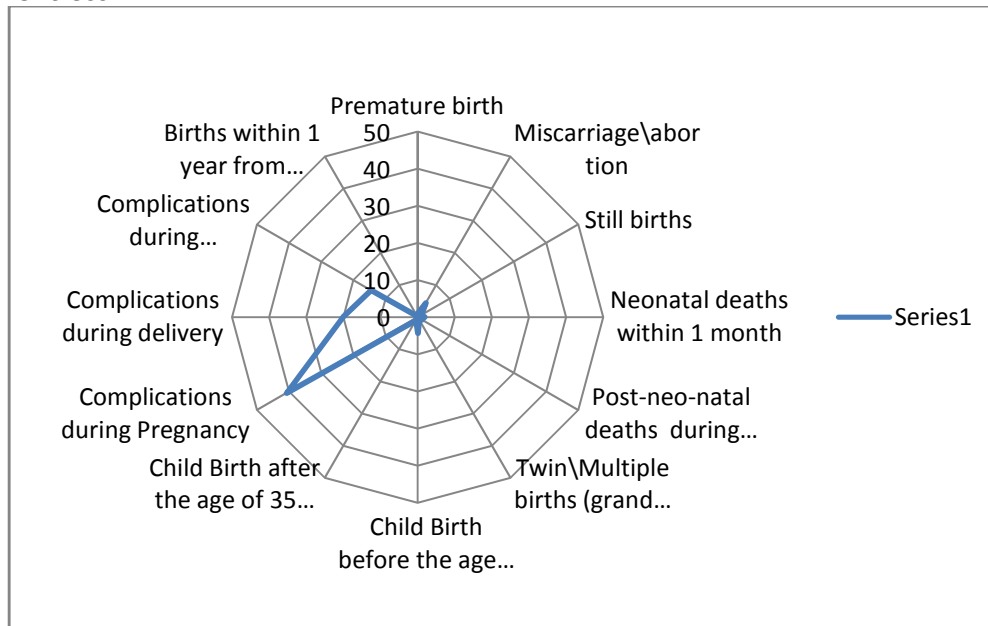


Table: Stages of complications in earlier pregnancies:

Complications	Urban	Rural	Tribal	Total
Complications during Pregnancy	249(90.22)	2950(39.72)	939(38.37)	4138(40.77)
Complications during delivery	107(38.77)	1334(17.96)	604(24.68)	2045(20.15)
Complications during Puerperium/Confinement	72(26.09)	778(10.48)	623(25.46)	1473(14.51)

*. Figures in parenthesis are percentage of the total

From the table it is found that complications during delivery among tribal women is high at 24.68% while in rural areas it was 18%. Even in post delivery stage more tribal women faced complication (25.46%) in comparison to rural women (10.48%).

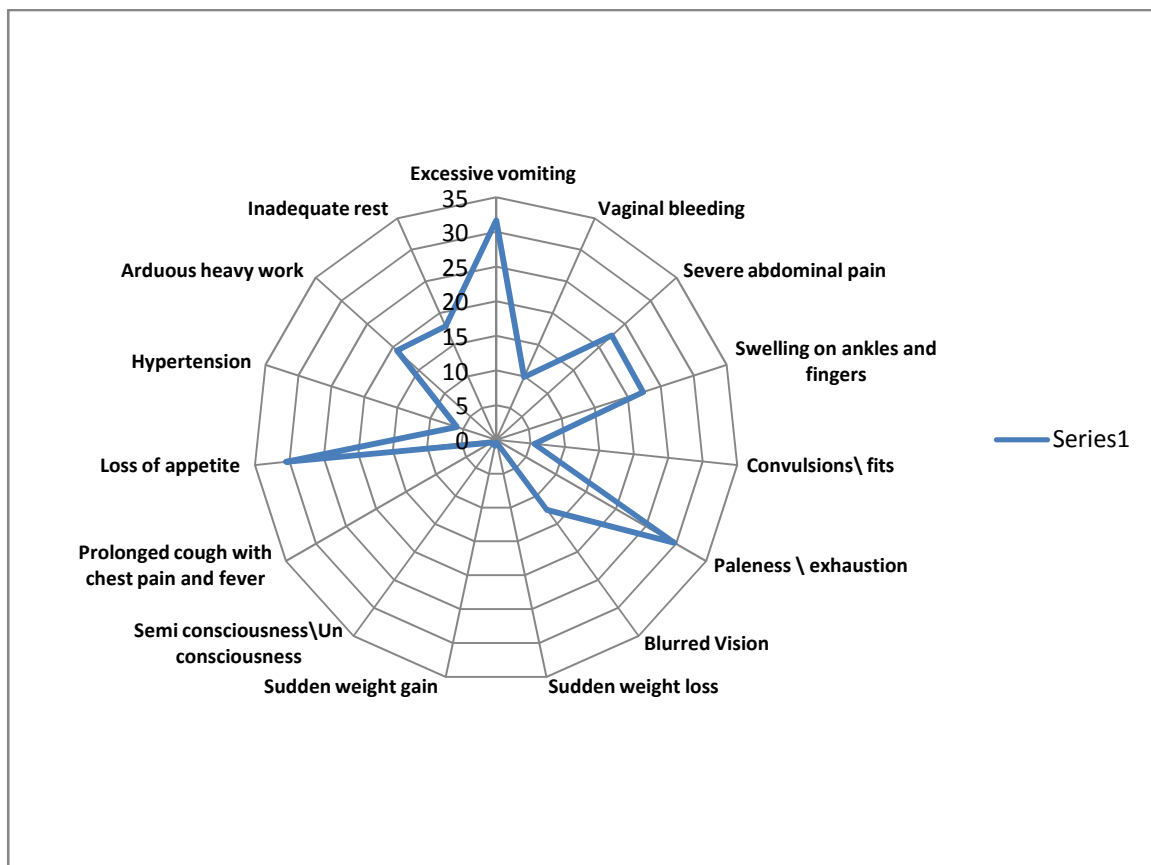
With increased IEC on gender sensitization, right age of marriage, community have become conscious, only about 4.28% of women delivered before the age of 18 years. Whereas only 1% of women delivered after 35 years miscarriage and abortion happened in the occasion 4.38%.

Around 4% of neonatal/post natal death and still births were reported

PRE-NATAL COMPLICATIONS FACED DURING THE LAST PREGNANCY

Complications associated with pregnancies are not always predictable. Hence it is desirable that women in pregnancy gets skilled touch of a health worker who is available as and when complication is noticed. It was revealed in FGDs with different SHGs and interaction with micro level service providers, that women from working class are found anemic right from conceiving stage which is not adequately supplemented by both quality diets in sufficient quantity available at home. Moreover, women are also found to be reluctant in taking full doses of IFA supplement.

Consequently, about 12.47% of women had the problem of blurred vision, 29.73% suffered from paleness and exertion, about 5.54% convulsion and fits and about 22.3% suffered from swelling on ankles and knees respectively. Inadequate rest is reported by 37% of tribal women against 12% in rural areas which indicates that lack of awareness and limited scope for taking rest in tribal household is the major cause. Tribal women do engage themselves in daily wage earning even after being pregnant to support their family sustenance.



In 0.81% cases women frequently became unconscious/semi-conscious which was a danger sign during pregnancy.

Excessive vomiting and vaginal bleeding, abdominal pain was reported by 31.67%, 9.91% and 22.48% of women respectively. Even during pregnancy about 19.25 % had to perform heavy physical work which was a factor leading to complications. In the same way they were not taking rest (17.95%). Around 17% of women lived in anxiety/tension during pregnancy.

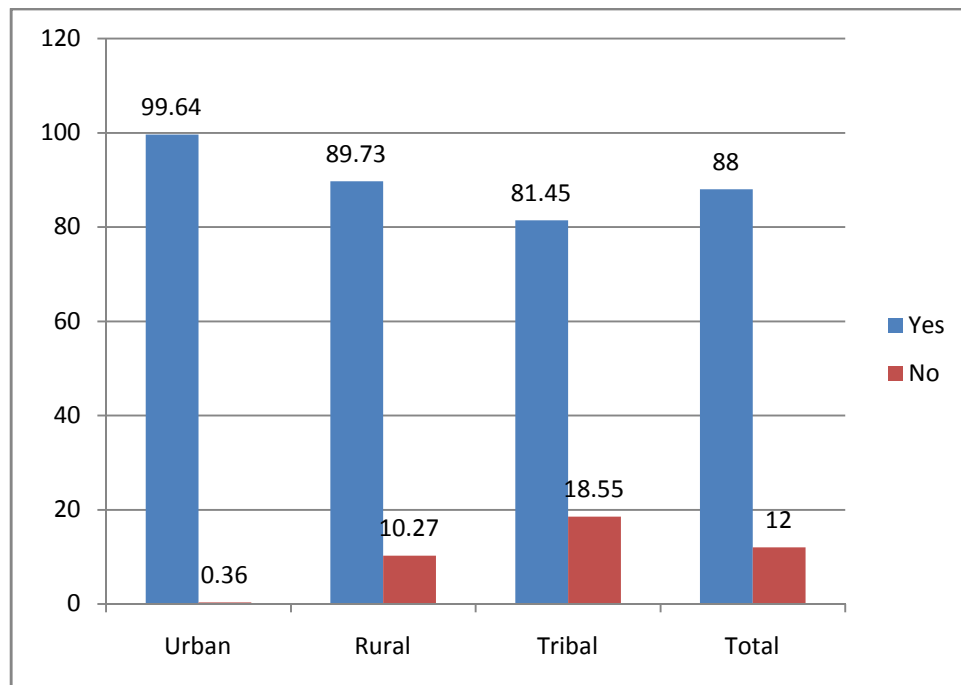
To be precise women, were not clearly aware on different possible danger signs during pregnancy. Moreover, each and every complication was not beginning stage, which consequently led to severe morbidity.

Only about 1.3% of women suffered from chronic disease like heart disease, diabetes, cancer, TB and malaria etc.

There should be integrations of different health programs which will serve in the ensuring greater benefit to women in pregnancy.

ANTENATAL RISK FACTORS

With widening of health services as part of program implementation plan of NRHM and re-filling of vacant posts of health workers has given rise to significant increased in the ANC coverage. Further, training being imparted on skilled attendant births (SAB) to those health functionaries has helped in improving quality of ANC gradually. As reported about 88% of women avail ANC both in tribal and rural regions. The ANC coverage was more (89.7%) in rural areas than 81.45% in tribal areas. About 12% of women shared that they could not avail Ante Natal Care on account of certain inconvenience.

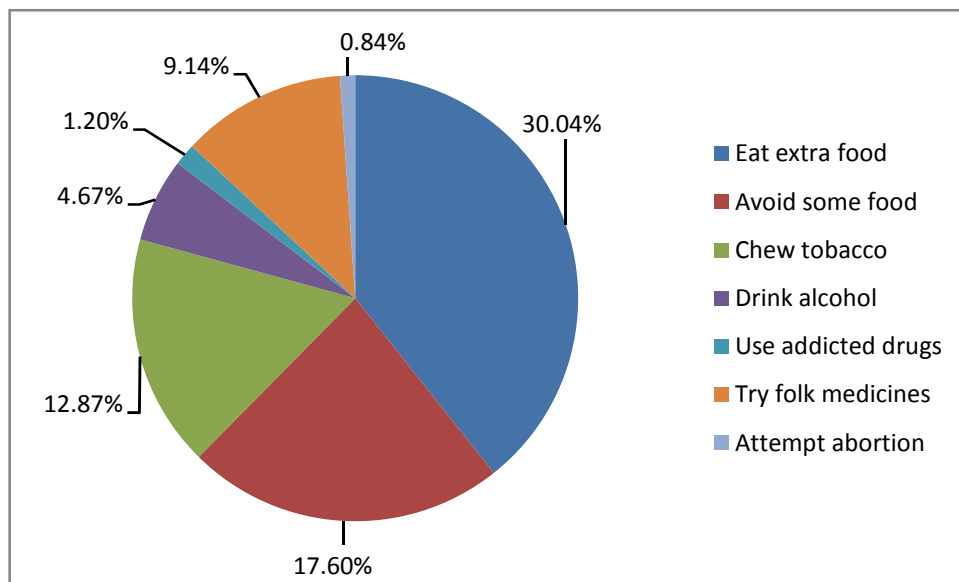


However, quality ANC coupled with regular follow and counseling to women, their husbands and family members was not adequately possible. In some cases women could not turn up to ANC camps owing to unsuitable timings and some other constraints. In some cases consumption of IFA supplements was not desirable even though they were issued in right quantity.

Ante Natal care is an essential link between household and health facilities. It can be provided at household and peripheral facility level and also helps in identifying risk factors for effective Birth Planning and Complication Readiness.

ACTION TAKEN BY WOMAN

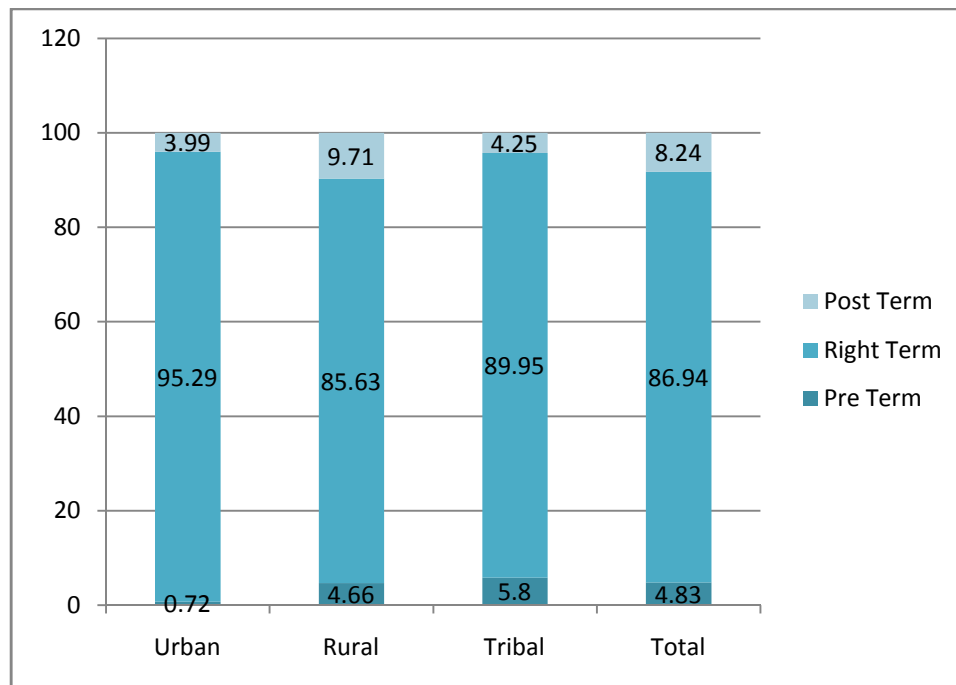
Only about 30% of women were able to have extra food in their diet during pregnancy. This was mainly due to the poor state of living in families that is caused by less income. As part of traditions and rural culture, also women are persuaded to avoid some food during pregnancy on the illusion that child birth will be safe and trouble free. In this way about 17.6% of women refrained from taking certain particular food.



Women engaged as wage labourer express that they are used to chew tobacco (12.8%), which is more or less self made. In about 4.6% occasion, women found to consume alcohol. Use of addicted drug was rarely reported only 1.2%. Still folk medicines are preferred (9.14%) women are socially pressurized to try in the 1st instance. Attempting abortion is not socially accepted in rural and tribal community. However in extreme cases 0.84% of women were advised to go for abortion to ensure their survival.

INTRA POST NATAL RISK FACTORS

Term of Pregnancy: About 87% of delivery ended in birth in right term while only 5% of had pregnancy in pre term. In the same way 8% of women faced post term pregnancy. There was lack of adequate birth preparedness and also sufficient information was nor given to men to seek their involvement for a safe delivery. It so happened that men were either away or not present at home when woman was in labour.

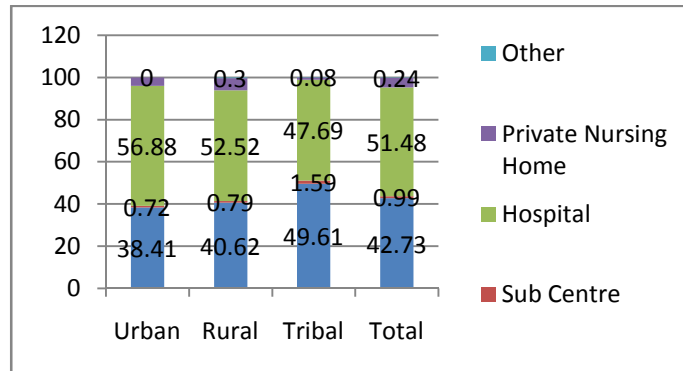


Duration of Labour: In different situation about 36.5% of women had to endure 2-5 hours of labour till child birth, while around 21.5% of women went through 1-2 hours of labour pain. Similarly about 22.1% of women faced 5-10 hours labour followed by 10.2% of women who had prolonged labour 10-24 hours. On the whole no immediate delivery care was provided in case of 30.3% of women by any skilled health worker. They had to be in deep labor pain. There was lack of seriousness among family labour, who are either away or helpless as regards to transporting the women to nearby health facility. In very few cases prompt medical care was possible. Even there were instances when about 1.2% of women were in labour for more than a day for whom

Type of labour: Induced labour was found in case of 26.77 % of live births, while 73.23 live births were spontaneous.

PLACE OF DELIVERY

In different situations, place of delivery is influenced by the type of ANC availed by the pregnant women. Because appropriate ante natal care facilitates individualized care to help maintain normal progress including preventive measures, supportive care, health messages and counseling (including empowering women and families for preferring delivery at institutions along with birth preparedness and complication readiness, birth planning etc). Place of delivery is also an indicator that can explain the safety and local knowledge, practices associated with child birth.

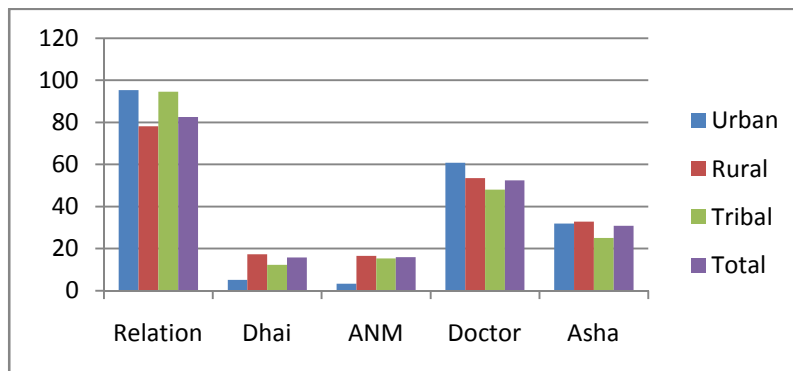


Implementations of different maternal health promotion measures being taken up through NRHM like (JSY) has helped in enhancing institutional delivery in past few years. As revealed about 42.7% of women delivered at home. On the other hand, institutional delivery was availed by 51.4% of women.

However, only 1% of woman about (100 nos.) delivered at sub-centers. This depicts that there is need for upgrading facilities at sub-centre with positioning of skilled personnel to facilitate skilled attendance at birth particularly in tribal regions of Orissa where communications is a great challenge.

PERSONS ATTENDING DELIVERY

About 82.6% of women during interview expressed that, their relatives were present at the time of delivery. In about 53% of cases, doctors attended delivery, while ANM attended 16% of the cases. In about 31% of live births ASHA was present. Nearly same proportion of live births attended by ANM was also attended by Dhai in rural and tribal areas.



The most significant finding is that the locally available Dais was present during deliveries taken place at home.

CHAPTER-5: FINDINGS ON MATERNAL DEATH INVESTIGATION

Rising trend in maternal mortality in recent years is a great challenge both for intellectuals, policy makers, influential persons at community level and catalyst too. Each year, more than 75,000 women die from complication and conditions during pregnancy, delivery and post-partum period in India. When we talk of India, in every seven minutes one woman dies in similar conditions. In Orissa also it carries a dismal figure to the extent of 7 to 8 numbers of maternal deaths per day.

One could realize the seriousness of maternal and infant mortality from the fact that care for maternal and child health has remained as an integral part of family welfare programmes in India. To improve the accessibility and affordability of quality health care especially for those residing in rural areas particularly the poor and vulnerable women + children, the government has launched National Rural Health Mission in 2005.

With a view to assess present maternal health scenario, the pattern of services to being provided for improving maternal child health status and overall response of the community towards causes, situations and effect of maternal mortality and morbidity, the epidemiological study was carried out in randomly selected 230 sub centers spreading over 30 districts of Orissa sponsored by Planning Commission of India. The study covered 230 numbers of sub centers out of which 172 from rural areas, 73 from tribal areas and 5 from urban cities (slum areas).

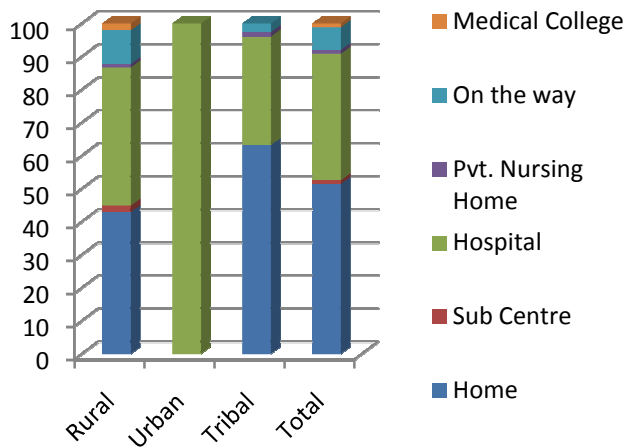
Maternal Death Coverage:

The study included analysis of 175 maternal death cases ascertained from the sources like secondary data collected from the concerned ANMs of sample Sub Centres and also from Medical Officers at PHC level in urban, tribal and rural regions of Orissa. Out of 175 Maternal deaths investigated, 98 cases were found from rural areas, 1 case from urban slum whereas 76 number of death cases are from tribal areas. The table below describes the year wise maternal deaths in three regions investigated under the study.

Year of the birth	Rural	Urban	Tribal	Total
2005	16	0	12	28
2006	25	0	15	40
2007	35	1	22	58
2008	22	0	27	49
Total	98	1	76	175

Place of Death

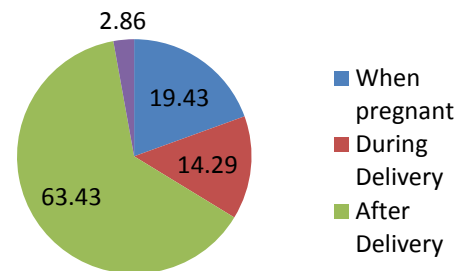
It was revealed from the study that most of death took place at home (51.43%) which indicates that home delivery is still in practice due mainly for lack of access to health facility and poor socio-economic condition of the people. Similarly institutional delivery is reported less (32.89%) in tribal areas than that of rural areas (41.84%). It is because of the fact that the tribal areas are situated in hilly forest locations where poor health infrastructure and facility are more evident and people also do not have easy access to these inadequate facilities. Even the service providers like ANM and MOs are not regular in attendance at the facility.



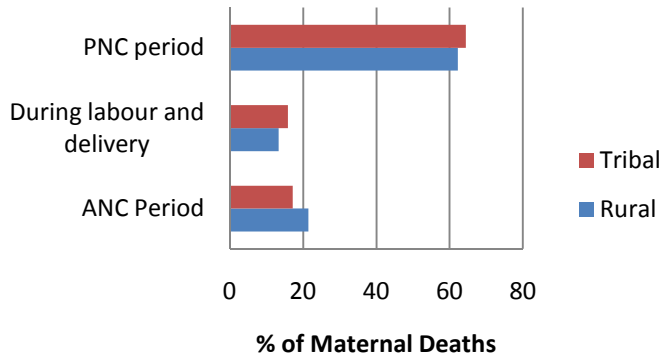
STAGES OF MATERNAL DEATHS
(N=175)

Stages of Death

When asked about the time of death of the deceased, it was found that 63.43% deaths took place after the child birth while only 12% deaths took place during labour or delivery. Similarly, about 22% deaths occurred during ante natal period and only 3% of women died during or after abortion. It is obvious that maximum number of maternal deaths have been reported after delivery as there is no definite or needful action for PNC. Least importance is given to the mother in case of complication in the post partum period. It is a fact that with the implementation of JSY, the pressure for institutional deliveries have gone up and the hospitals have no much beds and accommodation facilities to retain the women after delivery.



Stages of Maternal Deaths in Rural and Tribal Regions



Even the family members do not allow the women to stay in hospital for a considerable period owing to poor financial condition. PNC is grossly neglected resulting in post partum deaths highest in proportion.

Another finding shows in tribal areas proportion of maternal deaths during child birth and PNC period is comparatively higher than

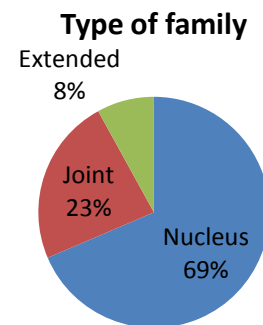
that of rural areas. This mainly is due to lack of care and poor institutional deliveries. PNC is highly neglected. Steps need to be taken for strengthening Post natal care to mother and child.

Age of women

About 58% of the deceased were in the age group of 25 to 29. While 18% were in the age group of 30-34, early pregnancy in the age group of 15-19 accounts 5.71% of the total deaths investigated.

SOCIO ECONOMIC PROFILE OF DECEASED:

All most all the women who died maternal deaths were married. While 98% were Hindu, only 1.7% belongs to Muslim community. 47% of deceased women belonged to Scheduled Tribe community where as only 27% of women belonged to OBC and other caste. Similarly only 26.16% of women are reported to be SC community.



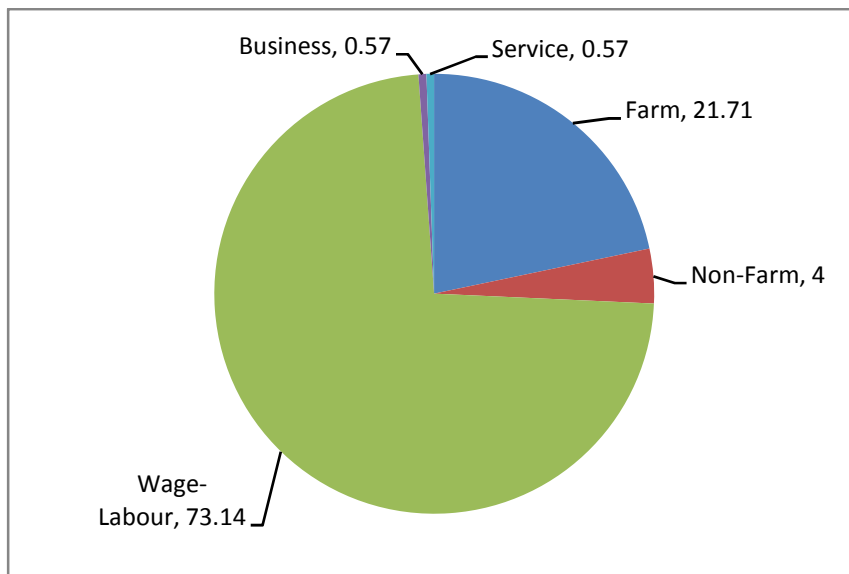
Type of family: it is reported that nearly 69 % of

deceased women dwelt in nucleus family, while 23% of women stayed in joint family and 8% stayed in extended family. It is worth mentioning here that in case of complication, the extent of care supposed to be provided to the woman was not possible in nucleus families and results in more maternal death events in these families.

Size of Family: Since most of the families belonged to nucleus family so the average family size did not exceed 6 to 7. In case of joint family, the family size was maximum 13.

BPL Status: Maximum families were living Below Poverty Line (94.7%) in tribal areas, while in rural areas it is 84.69%. The socio-economic status of rural families (15%) are reported to be better in comparison to that of tribal areas (5%).

Major Source of Income: Since majority of respondents were landless, they do not have any other option to earn and maintain their families. They are compelled either to work as a wage labour or seasonally engaged in share cropping of local landlords for which they are financially exploited and earn a very low wage and live in a precarious situation. So access to quality health care is a dream for them. About 73% of deceased's families source of income was wage labourer.



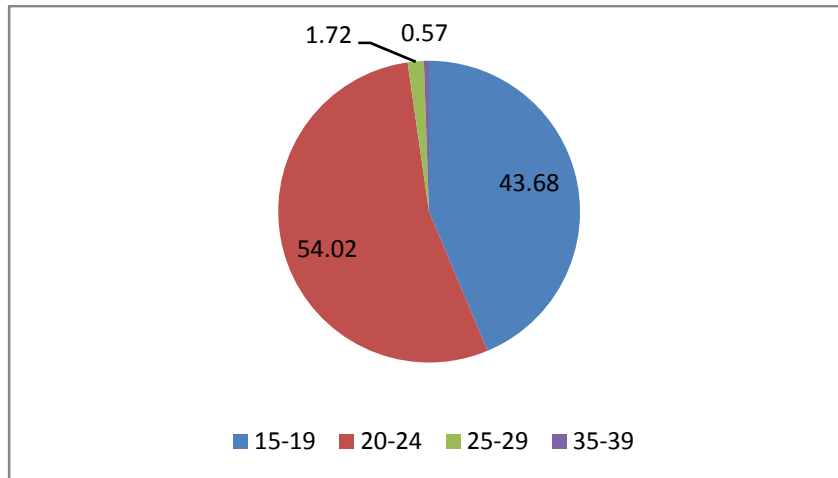
Education of Women: It was revealed from the study that more than half of the respondents (57.7%) were illiterate and other half are literate from which nearly 40% of respondents have read upto High school level and a meager proportion (1%) had read upto +2 level. Because of these poor educational status of women, several IEC programmes undertaken by the Government from time to time do not put impact on enhancing health seeking behaviour of people.

Occupation of the deceased women:

Occupation is determined by level of education and literacy of the families. Since most of the respondents were illiterate, 60.5% of maternal deaths were house wives doing only household works. However in tribal areas the proportion of women as housewives is less at 35.5% as nearly 63 of maternal deaths in tribal areas were found to have engaged as daily wage labourer.

Occupation of deceased	Rural	Urban	Tribal	Total
Household work	79.59	100.00	35.53	60.57
Farmer	1.02		1.32	1.14
Wage labour	19.39		63.16	38.29
N=	98	1	76	175

Age of Marriage of Women: More than half of women(54.2%) marry during the age group of 20-24 years and rest 44% marry during the age between 15 to 19 years and less than one percent married in the year 35 and above. This also substantiates the fact that early marriage and early pregnancy led to increasing number of maternal deaths.

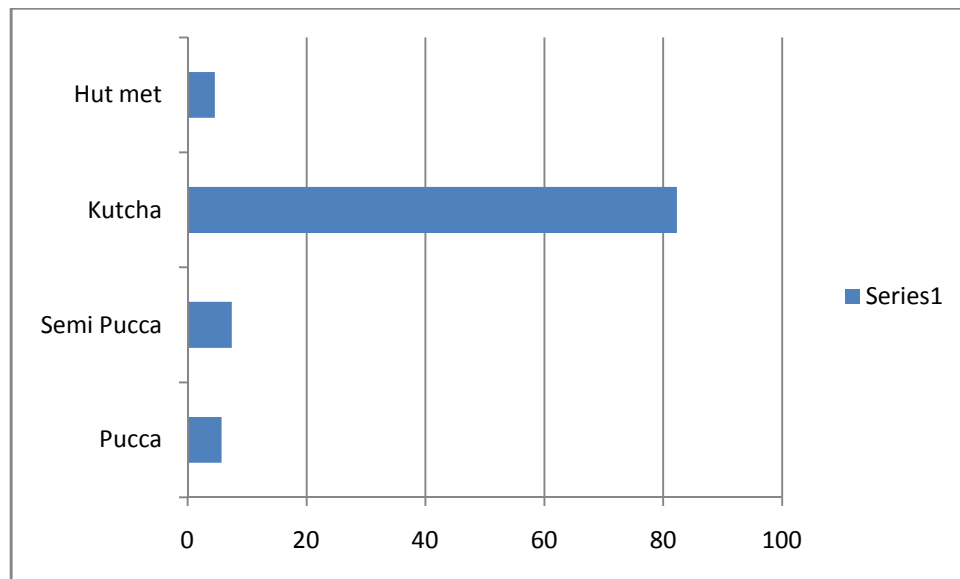


Education of husband: Education plays a vital role in decision making in a family. Further level of education of a community is a determining factor for collective action particularly in case of emergencies and obstetric complications. Male participation is also significant in maternal health care service delivery. Husband has important roles to play in birth planning and complication readiness. So education of husbands of the deceased was assessed and it was found that nearly half of the respondents (48%) are semi literate. Maternal death occurred in case of such women whose husbands were either illiterate or semi literate as a result they do not understand the seriousness of complication during different stages of pregnancy which led to death of the women.

Occupation of Husband: It was revealed from the in depth interview that most of the husbands working as wage labour fail to take proper care of their wives during pregnancy particularly addressing anaemic condition of their wives, low weight and other chronic diseases like TB, Malaria, etc. Further 69% of husbands in rural areas work as wage labour who are ignorant about the essence of emergency maternal health care. In tribal areas 84% of the husbands were found wage labourer.

Type of house

Capacity of household to avail basic amenities such as proper housing , safe drinking water and sanitation is not only a determinant of socio-economic status of the household but also fundamental to the health of family members. In the study effort was made to trace out the actual housing condition of the people in the community. Information of household characteristics is based upon a answer given by key informant and observation of interviewer. As reported about 62.29% of families live in kuchha houses. A kutchha house can be defined as purely temporarily made up of locally available material mud and bamboo and which is very short and thinly ventilated. It shows poor and miserable living condition of families. About 96% of houses in tribal regions were kutchha houses were maternal death occurred. In comparison to this, rural areas bear less nos. of kutchha houses.



Sources of drinking water

An improved source of drinking water includes, available from a public tap, tube well or bore well protected dug well etc. in addition to this, some houses keep drinking water in bottles. The most common source of drinking waters both in rural and tribal areas is from

tube well. However, during the study a good number of tube well were found to be defunct. About 82% of household collected drinking water from tube well. When asked about the reasons, they told it is safe and pure and also easily fetched. About 15% of household were still found depending upon open well. Pipe water supply was seen in very specific areas where only 2% of houses had access.

Is the house Electrified

It was reported 80% of households and families still do not have access to electricity. Further, they are far away to get information on the day to day development and various welfare programs being launched by the from time to time. The proportion of household with electricity varies widely by the place and housing pattern. It should be noted that till now electricity is not required as a means to fulfill some other basic needs of life about 20% of household could enjoy the charm of electricity.

Place of Defecation

A majority of household i.e 88% both in rural and tribal areas do not have toilet facilities. The proportion of household without in toilet facilities is higher in rural areas (90.82%) than in tribal areas which stood at (85%) . Very few families About (12%) had their own toilet. When enquired about the extend of use they say, it was meant for guest and also used whenever somebody's ill to go for open defecation. They also used toilet when the weather was very top and during night time. Overall, it has been reported that improved toilet facilities is still not ensured to families, in spite of several schemes of government including water and sanitation mission and others. Till date most of the families do not accept the need of toilet to serve as a means to ensure better health of family members.

ANTE NATAL STATUS OF DECEASED:

Ante natal care is generally implies that either a doctor, ANM or any other trained health personnel provides pregnancy related health care so as to avoid complication during pregnancy and child birth. Proper and effective counseling is also an integral part ANC such as preventive care, diet during pregnancy, delivery and postnatal care. According to guideline envisaged in Reproductive and Child Health Programme, ANC should include at least 3 health checkup, measurement of weight, height and blood pressure, administration of 2 TT, consumption of IFA tablets and preventive measures for malaria.

Both in rural and tribal regions, it was reported that 35.4% of Pregnant Women (PW) underwent 3 ANC check up. Similarly 34.86% PWs availed ante natal care for 4 consecutive

times. Moreover, PWs staying close to Sub Centre village are regularly counseled on the need for ANC and possible signs of complication during pregnancy. In some cases PWs also availed 5 and above times ANC because of complications. It is also noted that PWs availed only 1 or 2 times of ANC during pregnancy which led to maternal morbidity in consequent days of pregnancy. On the whole a majority of PWs died who had availed ANC.

No. of TT, IFA, Malaria Chemoprophylaxis given to Pregnant Women

As part of ante natal care, components like 2 doses of tetanus toxoid vaccine, iron supplementation for pregnant women, and above all malaria prophylaxis drugs are prescribed by trained health personnel. More than 60% of women in rural areas are reported to have consumed 100 or more IFA tablets during pregnancy whereas it was reported less to the extent of 38.6% in tribal areas which implies the significance of counseling and supervision as regards to consumption of prescribed number of IFA tablets in tribal areas is not emphasized where as in rural region the extent of IFA consumption is slightly better in comparison to tribal region. Although most of the regions covered under the study were malaria endemic, still the consumption of preventive doses of malaria chemoprophylaxis has been less than satisfactory. There exists a strong resistance from women to consume malaria chemoprophylaxis tablet until the period they are not sick. Nearly 28.26% of PWs consumed at least 10 tablets during pregnancy.

COMPLICATIONS DURING EARLIER PREGNANCIES:

It has been reported that about 53% of women faced complications during earlier pregnancies. Among such complications anemia, low weight, hyper tensions, swelling etc. are common signs of complication during pregnancies. Many women are not spontaneously receiving high quality Anti Natal Care. Particularly, in Bolangir, Kalahandi and parts of Keonjhar complications among women were found to be more acute. While about 62% of deceased in tribal areas faced complications during pregnancies, in rural areas it was almost 47%.

According to the facts drawn in the study the incidence of premature birth among all the reported cases of maternal death is very less which stands only 5 numbers and that is 2.9%. Similarly of the instances of miscarriage/abortions is also reported very less that is only 2.3%. Further frequency of still birth is only 3.4%. In case of 15 maternal deaths, there was incidence of neo natal deaths in earlier deliveries. What is most significant is the experience of complications in earlier pregnancies reported in 53% of cases, while complications noticed during delivery in 33% of cases. These shows that the pregnancy history of women

is most important for the current pregnancy where the service providers need to give attention with proper advice. Besides obstetric care by a trained and efficient service provider during delivery is an important factor that helps in reduction of maternal and neonatal mortality. Delivery at home is more likely to have complications than delivery at hospital and in that situation assistance by trained health personnel to a larger extent reduces pregnancy related complications.

Table:- Complications in earlier pregnancies

Complications	Rural	Tribal	Total
Complications during Pregnancy	46(46.94)	47(61.84)	93(53.14)
Complications during delivery	31(31.63)	25(32.89)	56(32.00)
Complications during Puerperium/Confinement	38(38.78)	29(38.16)	67(38.29)

(Figures in parenthesis are percentage of case totals)

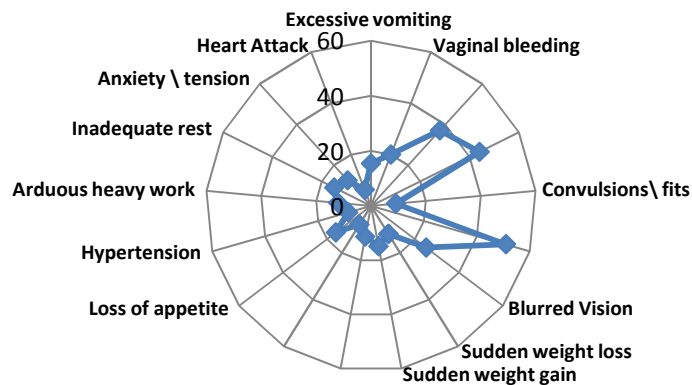
About 38.29% of women faced complication after child birth in their confinement period while complications during pregnancy period are as high as 53%. More tribal women faced complications during pregnancy (62%), while complications after child birth in the confinement period was almost at same proportion in both rural and tribal areas.

Post partum hemorrhage is a major cause of Post natal maternal deaths. Often the family members are ignorant about causes and symptoms of post partum hemorrhage. The complication like heavy bleeding after delivery is not considered as serious problem by the families. In such cases, mostly the untrained quacks are approached to assist in treatment which is not at all advisable and effective process. Further, the delay in the decision making to reach at appropriate health facilities also aggravates complications. Generally it is seen that the patient reach lately at proper health facility and waste crucial time in accessing various primary health facilities for treatment of complication en route.

Birth within one year from previous ones took place in case of 3.34% of delivery. It should be mentioned here that quality ANC plays important role to motivate woman for maintaining proper space between births. One of the objectives of such health interventions, (as depicted in RCH-II program) is that eligible couples should have a baby by choice and not by chance and that is being duly counseled among family. In this case audio-visual programs through radio and televisions also motivated families to become conscious enough to maintain birth spacing.

COMPLICATIONS DURING LAST PREGNANCY:

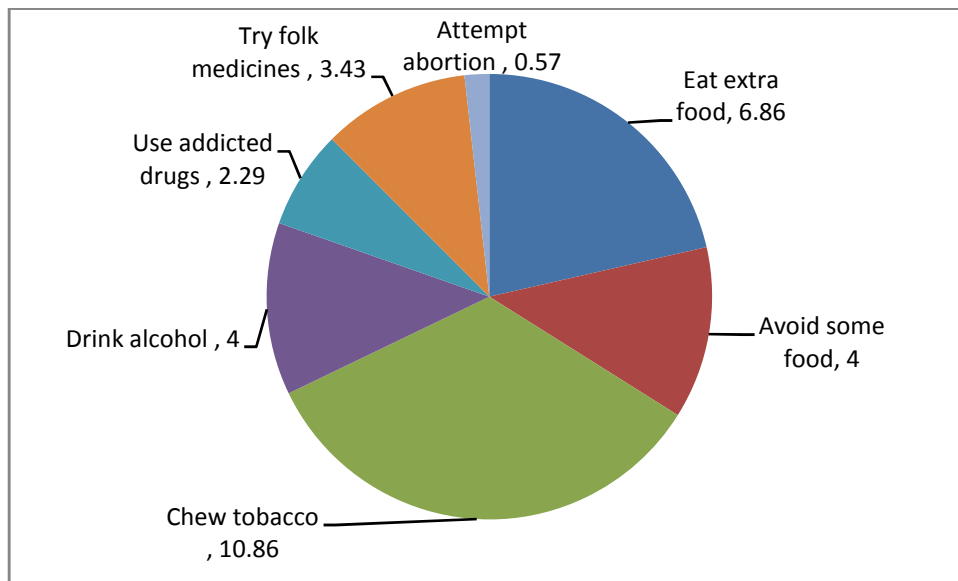
During the last pregnancy that was ended with maternal death was also investigated and it was found that 51% of cases had paleness/exhaustion while swelling of ankles and fingers reported in 44% of cases. Severe abdominal pain was found in 37% of cases while vaginal bleeding was in 20% of maternal deaths. Blurred vision was in 25% of maternal deaths. As a consequence of anemic symptoms and extended state of malnutrition about 11% of women frequently became semi-conscious or unconscious. It was sign of threat as far as survival status of women during the period of conception. However, only 9% of women had complications as convulsions/fits. Continued weakness coupled with heavy workload aggravated the health conditions of women during pregnancy too. As reported women after discharging household responsibilities also had to be engaged as wage laborers in order to earn and butter for their family for which adequate time for rest and timely food intake was not possible. As reported about 16% of women lost appetite followed by 15 of women facing the problem of hypertension. About 12% of women had to perform heavy work which was at the cost of their health and also against their willingness. Obviously these women had almost no time to take rest. About 15% of women were reported not having adequate rest during the last pregnancy. In case of 13% of women finally resulted in anxiety/tensions. These shows anemia, PPH, eclampsia and sepsis causing maternal deaths.



ACTION TAKEN DURING LAST PREGNANCY:

As already mentioned earlier, most of the families covered in the study have been living much below the poverty line. They faced problems in meeting basic livelihood need and ensuring nutritional supplement to pregnant women is a dream for the head of the household. The various government welfare schemes could hardly helped them to recover from this deficiency. Motivations for taking nutritional supplements like IFA tablets and supplementary food at ICDS/AWW centre was at marginal stage. As reported in the study,

only about 7% of women had an opportunity to eat extra food. About 4% of women avoided taking particular food. As reported earlier, women belonging to working class had to work for longer hours even during their last part of pregnancy. For instance, about 10.86% of women chewed tobacco which was injurious to the health of mother and new born. Mostly in tribal areas about 5% of women were addicted to alcohol and about 2.29% of women addicted to drugs. With the expansion of health services and supply of qualitative drugs for maternal health care and the extent of using folk medicines is gradually declining. As reported only about 3.4% of women tried folk medicines.



The incidence of attempting abortions was reported to very less both in tribal and rural sub-centre regions. There were almost no instances of Medical Termination of Pregnancies by families. Only one pregnant woman (0.5%) attempted abortions, who ultimately died in the process of medical care. In case of 5 urban sub-centers covered during the study no such case of abortion has been reported which lead to death of women. Attempting abortion are not socially desired or allowed in rural and tribal areas due to their traditional custom.

INTRA/POST NATAL RISK FACTORS OPERATING DURING DELIVERY AND CONFINEMENT:

It was revealed from the study that about 84% of women had delivered in right term whereas about 14% of women experienced pre-term delivery. Only about 1.44% of women faced delivery during the post term period. It is a fact that even though 84% of the deliveries were in right term, in most of the cases the deliveries were not attended by skilled health personnel which gave rise to complications in the post partum period leading to a maternal death.

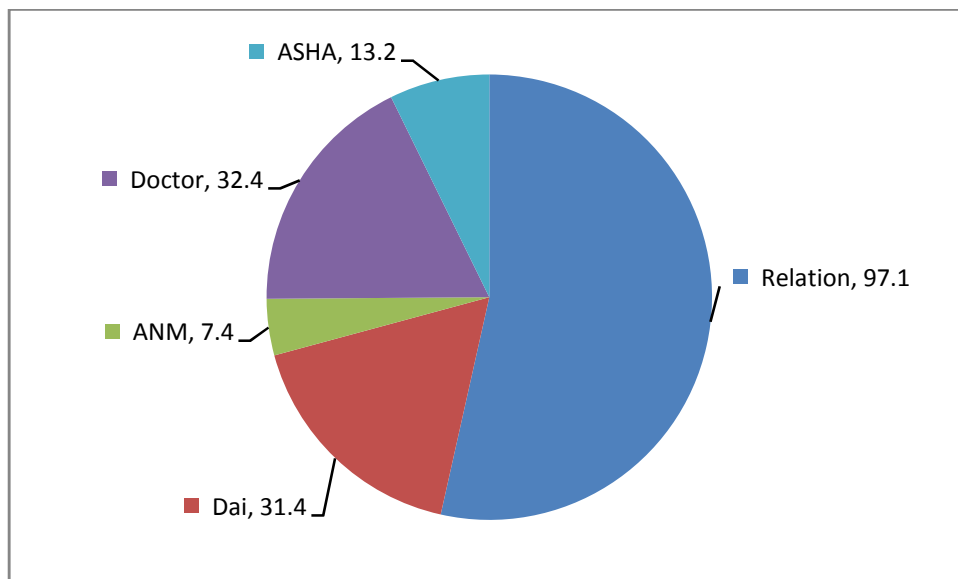
Terms of Pregnancy	Rural	Urban	Tribal	Total
Pre Term	8 (10.81)		10 (16.39)	18 (13.24)
Right Term	65 (87.84)	1 (100.00)	50 (81.97)	116 (85.29)
Post Term	1 (1.35)		1 (1.64)	2 (1.47)
N=	74	1	61	136

Also it is seen that 78 % of the labour was spontaneous, while 22% of it was induced because of complications associated with it.

Type of labour	Rural	Urban	Tribal	Total
Induced	20		10	30
%	27.03		16.39	22.06
Spontaneous	54	1	51	106
%	72.97	100.00	83.61	77.94
N=	74	1	61	136

Personnel attending delivery

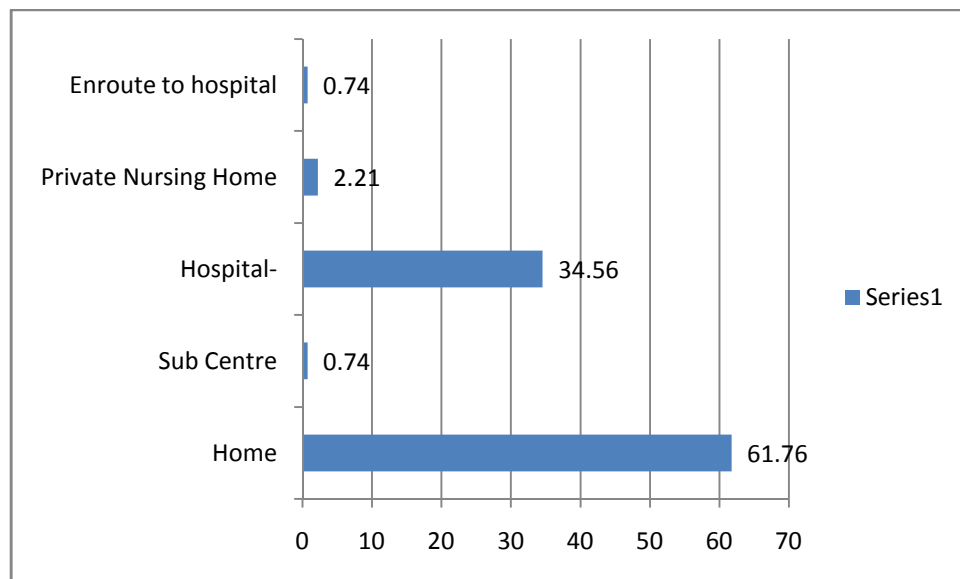
In the event of 97% of deliveries, close relatives of women more particularly husbands, mother-in-laws etc were present with them. In case of all the home deliveries obviously the family members were present to provide possible assistance. Moreover, during delivery at health institutions, these members accompanied and stayed with woman during labour. In case of home deliveries, locally available Dais rendered their services (31%) in a traditional way.



During the interaction with service providers at grass root level and PHC level, it was realized that institutional deliveries is gradually being preferred and popular. As drawn in the study in case of 32% of delivery it was a specialized doctor who provided immediate medical care, whereas local ASHAs accompanied pregnant women for conducting 13% of delivery. The study report indicates a marginal involvement of ANM (7.2%) assisted during delivery. It is important to mention that most of the sub-centers do not have adequate infrastructure and equipments for conducting safe institutional delivery. Adding to this issue all the ANMs are not fully trained in SAB. As a consequence, it is difficult on the part of community to bear a sense of confidence on the local sub centers as far as safe delivery is concerned. Absence of ANM at sub centre and long distance to PHC compel rural and tribal people to depend upon locally available untrained health personnel who are not skilled enough in identifying complication during delivery without any alternative

Place of delivery:

Out of the 175 maternal deaths assessed, it was found 136 maternal deaths occurred during and after delivery. Of these 136 deaths, 61% of deliveries conducted at home. In tribal areas home delivery is higher at 67%. Only about 34% of deliveries were conducted in the hospital. Particularly 2.21% of deliveries were found at private nursing home. About 2% of deliveries took place on the way. In many occasions both service providers and SHG members have expressed that there were delay in deciding as regards to the place of delivery. Since the sub centers fails to cater to the needs of the family, other health centers such as hospitals and private nursing homes are preferred on the basis of seriousness. In spite of the provision of cash assistance under JSY scheme several families found to have conducted deliveries at home.



Time of delivery

The area being remote and inaccessible from proper health institutions, there are instances that families opted for home deliveries. As reported about 42.34% of delivery to place during night. Possibly, this could be the reason for non availability of appropriate transportations and lack of birth preparedness measures that compelled them to go for home delivery. Similarly about 57% of deliveries were conducted during day time.

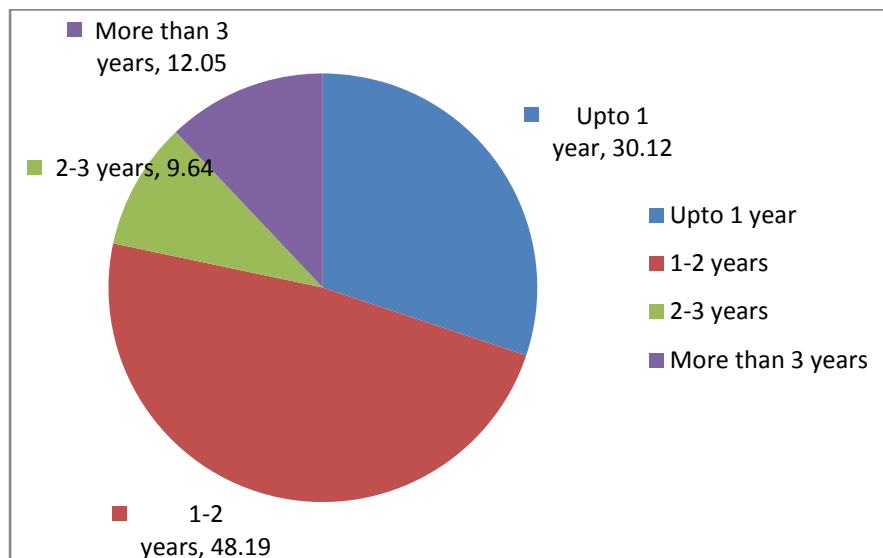
Sex of Newborn:

In 49 % cases, there were male child born as the outcome of delivery, while 40.5% cases reported birth of female child. It is becoming prominent that gradually ratio of male and female children is becoming unstable with less nos.of female children taken birth. About 3.5% of children died before delivery and 7.4% of foetal deaths noticed. .

Birth order: The variation of birth by birth order is also another factor that indicates maternal health status. The table shows that about 38.46% of women died during the 1st birth order. It happened more in rural areas to the extent of 53% whereas in tribal areas it was only 22.39%. Similarly 29.68 % of women died in the 2nd birth order. There is need for defined counseling program to women while going for 1st and 2nd delivery.

Birth interval

Birth interval to be explained as the length of time between two consecutive live births. Minimum birth interval may adversely affect mother’s health and survival status of children. It is already proved that the judicious birth interval is 3 to 5 years which allows growth of children and better child rearing, which ultimately helps in reducing maternal and infant mortality. The longer the birth interval, the lower is the risk of maternal and infant mortality. The table indicates percentage distribution of birth of children. Maximum about 40% of women had birth interval up to 2 years. Further it is more happening in tribal areas i.e. 43% in comparison to that of 31% in rural areas. Similarly about 29.89% of women at birth interval up to 1 year. However, it was only 1% in case of less than 1 year and also 7 years respectively. Birth interval to some extent is affected by what we called as preference “for a son”. Women are also less likely to adopt temporary method of contraception to post term fertility if the previous child died unfortunately. The extent of birth interval is reported to be higher in tribal areas in comparison to rural regions.



Survival status of newborn

About 58% of newborn were reported to be alive in the post delivery period whereas only 29% of newborn babies could not survive. It is to mention that in many of the health institutions are not properly equipped to provide neo-natal care. On the other hand, there was lack of health education program on the aspect of effective neo-natal care and a role of service providers towards community.

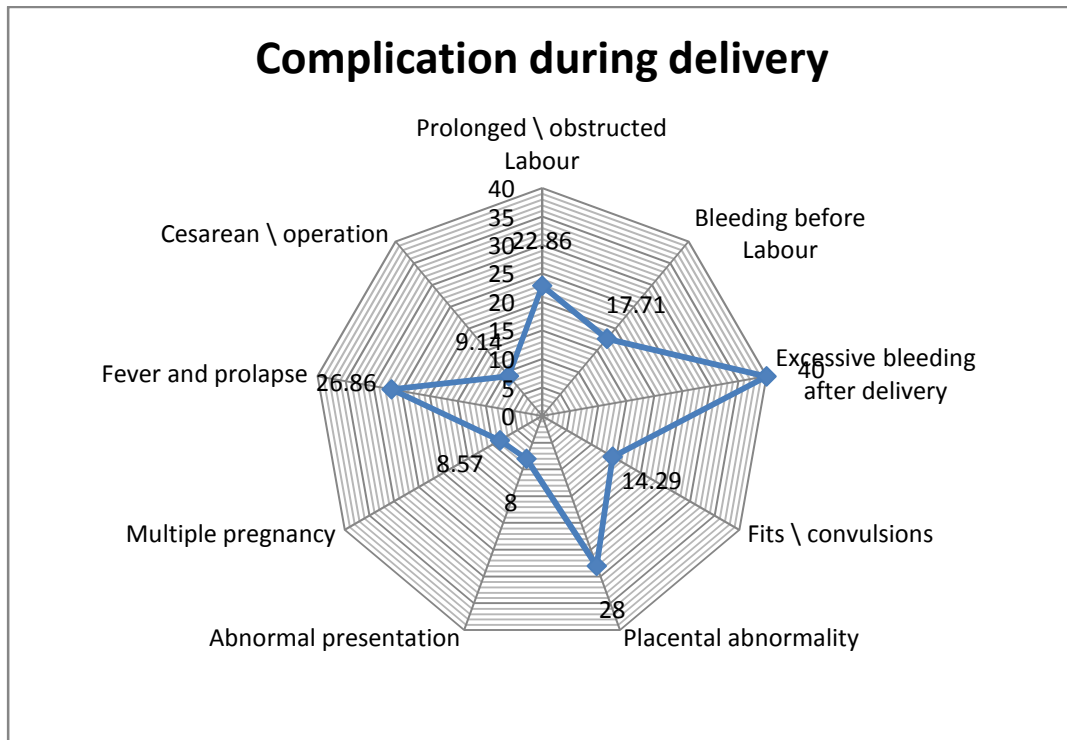
Age at death of newborn

About 22% of newborn babies were reported dead within two hours of birth. Further 28% of newborn could not survive beyond 4 hours of delivery. The table also indicates that the longer is the period after delivery the more is the survival status of newborn. Therefore, it is important that proper care for newborns must be provided to those sick during neo-natal period. Unfortunately, it was found that the micro level service providers lack adequate skill for addressing sick newborns. In the community also families and locally available traditional/untrained service providers do not have desirable information/skill in identifying signs of complication in sick newborns. As a consequence of which neo-natal death is prevalent both in tribal and rural regions of Orissa. There is need for improvement in sectoral coordination among different cadre of service providers which will definitely reduce neo-natal death in future.

If Newborn Dead, Age at Death	Rural	Tribal	Total
1 day	8	1	9
%	26.67	11.11	23.08
2 days	6	2	8
%	20.00	22.22	20.51
3 days	5		5
%	16.67		12.82
4 days	2	3	5
%	6.67	33.33	12.82
5 days and above	9	3	12
%	30.00	33.33	30.77
N=	30	9	39

COMPLICATION DURING DELIVERY:

It was evident from all the interviews conducted with Key Informant of deceased women that, skilled attendance at birth was not possible in maximum number of deliveries which is resulted in different type of complications during labour and delivery. For instance 22.86% of women suffered from prolonged/obstructed labor. More than 17% of women experienced bleeding before labor. Post Partum Hemorrhage has been a key factor leading to maternal mortality. About 40% of women suffered from PPH. Similarly 14% of women suffered from fits/convulsion. In case of 28% of deliveries, there was incidence of delayed placenta. Further, about 8% of deliveries ended with multiple pregnancies and abnormal pregnancies. About 26.86% of women suffered severely from fever and collapse. Considering the complications by doctors cesarean was conducted in case of 9% of deliveries.



ABORTION RELATED MATERNAL DEATHS:

Out of total 5 number of reported death cases, about 59% of abortion related maternal deaths occurred during 5th month of pregnancy which implies that proper ante natal care in few cases is not ensured to women facing complication. However, in the later part of pregnancy less number of death cases were reported.

Place of abortion

Both in tribal and rural region, there was very less instances of abortion. Socially it is not accepted and allowed in the community. During the Focus Group Discussion conducted among SHGs and community leaders, it was realized that usually abortion is rare case happening in their areas. Only in case of severe complications to save the lives of mothers, abortion is advised. In the study it is found that only 4 cases of abortions took place at home mostly conducted by untrained health providers which led to fatal death of women. Similarly, only 1 case which took place in health institution also led to death of women.

Who performed abortion?

As already mentioned quack / untrained health practitioners in most cases act as health service providers without having due technical knowledge and skill. While three abortions were conducted by quack, one abortion was by doctor in health facility. Only one abortion was spontaneous.

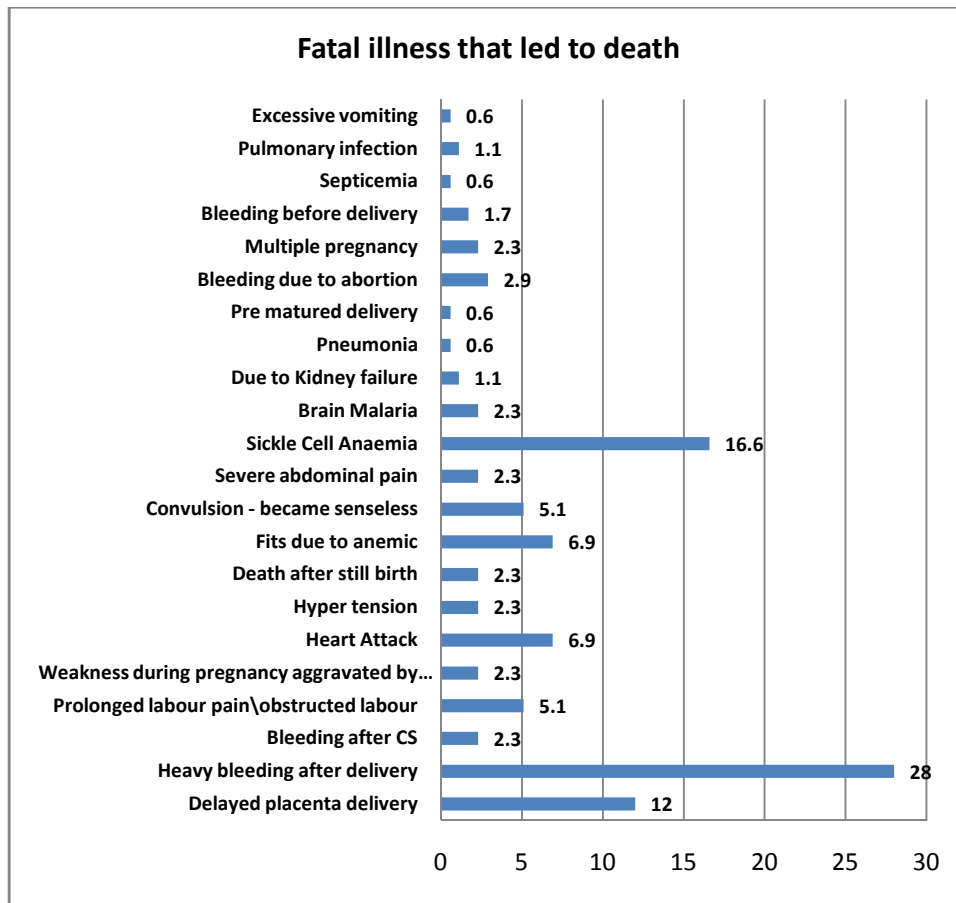
How many days after abortion she died

While 4 women were reported to have died within 48 hours of abortion, one abortion related death took place on the third day of abortion.

FATAL ILLNESS THAT LED TO MATERNAL DEATHS:

Post partum hemorrhage so far has been the main reason for causing maternal death. About 31% of maternal death occurs due to PPH which could have been prevented by using low cost safe and evidence based practices. During the study process it was observed that most of the families were not aware about causes and seriousness of PPH. This information must be translated into action while implementing essential maternal and newborn health care and basic emergency obstetric care. The community should be mobilized to help women and their families prepare for birth with a skilled service provider and to be ready for complications as and when faced.

Similarly, about 10.4% of women died due to delay in placenta delivery. Mostly, in case of home delivery the traditional service provider like village Dhai and relatives often failed to provide appropriate care in such situations. In the early stage they do not motivate family members to go for specialized health care which possess big threat to the life of women. It is also reported that about 3.2% of women died because of bleeding after CS. About 6% of maternal death was caused due to prolonged/obstetric labor. The death of about 3.2% of women happened in a situation aggravated by heavy bleeding.



Sometimes prolonged illness and severe health problem is a barrier in ensuring safe delivery and survival status of the women. As reported about 9% of women died of heart attack while only 2.5% died of hypertension. Unhygienic and unsafe treatment by locally available health practitioner resulted in death of 3.2% of women after still birth. As it is evident during the field work that anemic symptom is found most among women during pregnancy which leads to number health complication leading to maternal mortality and morbidity. At the community level, the knowledge is poor about the nutritional value of different indigenous vegetables and fruits. Further due to lack of motivation and counseling women often do not consume optimum doses of IFA tablet which is a just supplement to meet the physical deficiency during pregnancy. As the table depicts about 7.2% of women died of such problems.

Proper ante-natal care during pregnancy helps to ensure healthy outcomes for women and newborn. Antenatal care is crucial for a pregnant woman to receive different types of health promotion and preventive health services including nutritional support and addressing anemic symptoms. It was observed from study that full ANC is still not ensured for all women. As part of ANC, abdominal check up by a skilled health provider is reported very

less in practice. In the later part of pregnancy and during delivery women suffered painfully from abdominal pain. As reported about 3.2% of death happened on account of similar problems.

In the same way, intake of prescribed dose of malaria prophylaxis tablets was found to be very irregular. About 2% of women died of malaria. Another problem like kidney failure forced about 1.6% of women to die. Among other complication that led to death were pneumonia (0.8%) pre-mature (0.8%) delivery bleeding due to abortion (0.8%) multiple pregnancy (1.6%) and bleeding before delivery (0.8%) respectively. The more ANC visits that women had during pregnancy. The greater was the likelihood that her delivery took place in a health facility. All the above mentioned problems mainly due to delay in decision making by the relatives and family members. Involvement of the community in addressing such typed of health issues is not taken into account. During the focused group discussion most of the community members were found strange enough to know different maternal health issues and needful community initiatives.

FIRST STEP TAKEN AFTER ILLNESS:

During the in depth interview, in most of the cases key informants were observed to be quite thoughtful and repenting about the sorrowful maternal death that happened. In all the events they confessed that skill attendants at proper health facility are always important as far as safety of women and newborn is concerned. But during the time of pregnancy and delivery their initiatives mismatched with the way they spoke during the interview. One reason could have been their financial inability for taking immediate steps for appropriate care. Adding to this problem, it was found that lack of information about proper referral to health facilities also limited the scope of accessing institutional services. As depicted in the table, about 42% of women in the first instance of complications sought care at home. In the initial stage of complication family members initiated treatment by themselves assuming that a complication would be overcome in course of time. About 57% of women sought formal care to get rid of complications. It has been observed that intensive process of Anti natal care in villages has given rise to seek care at health institutions. In few cases women in fatal illness had to rushed down to tertiary hospital or private. Several factors are likely to contribute to the positive relationship between ante natal care visits and delivery in health facilities. As observed in the interview, anti natal care providers on many occasions might have advised pregnant women to seek formal care during complication in the first step. Here it is important to mention that support of other members of the villages also

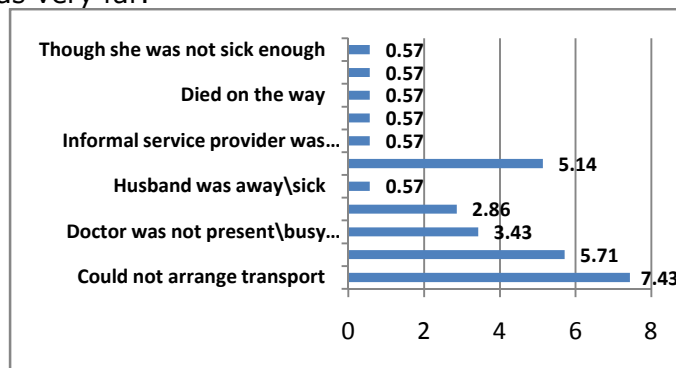
contributes to the high degree of seeking formal care by families. Particularly in decision making, arrangement of transportation with carries a crucial role.

How long after the illness care was sought

About 44% of families sought care as soon as complications were found. It has been observed that a substantial proportionate of women and men in all the sub center region study, were not convinced about the need to have a delivery or seeking care at the time of complication in proper health facilities. It was felt to be an urgent need to inform both elderly members and husbands even the community members too about the benefits of seeking care at the health facility and to help in overcoming traditional attitudes and hurdles that discourage addressing complication at health institutions. Further, there should be improved accessibility and utilization of health services at the micro level. This could be ensured by lowering direct and indirect cost and patient centered attitude of

Reason for delay in seeking care: About 10% of key informants expressed that they were unable to arrange transport as their villages are placed in high remote areas and lack emergency transportation facilities. Communication was a big problem at the time of complications. About 6% of families were too poor to arrange money for seeking care immediately during complications. Although, 3% of families could manage to transport the women in fatal illness to hospital, immediate medical care was not possible. They could not convince the doctor who was either busy with attending other patients or was not present at the health institutions at particular time. These shows that in many cases there exists a big communication gap and lack of quality health care which worsens aggravate the complications in women.

Finding no other options of care about 3% of families relied upon home based care to sick woman. In the same way about 1% of families tried to look for and informal service provider but ultimately could not trace him out. There was a single instance of delay where the husband was away or sick. About 5% of families were delayed in taking immediate care as health facilities was very far.



Few cases were reported that medicine was not available (1%) and the Patient died on the way. It should be mentioned that in some cases the location of hospital from nearby villages is not convenient for patients to reach either there were seasonal problem like flood, or the road being very tough that made delay. In similar condition 1 woman died on the way to hospital. About 2% of families took it very casually. They thought it would automatically be relieved. In the same way some families thought it was just like normal sickness. It is sad to note that while being interviewed about 72% of families were not certain about the reason for delay. They are not even aware about different aspect of maternal health care and complications. In most cases they expressed it was not in their hand to do any immediate steps for addressing complications.

What were the facilities visited before death?

While analyzing all the 175 maternal death cases, it was evident that there was a big gap in counseling for appropriate referral in different stages of complications. All the families expressed that they were panic stricken as regards where to take for appropriate health care to get rid of complication. In the process they had to try their best to seek care at proper health facility. Undoubtedly sub centre health facility did not have requisite health infrastructure to address their complication. They had to opt for higher hospital among which, PHC was the first preference. However, certain grave complication like PPH was beyond the capacity of PHC to handle this type of complication. About 32% of women visited District Headquarters Hospital to seek appropriate health care while 22% of women visited Sub-Divisional Hospital. As mentioned already 30% of women visited PHC level hospital. About 14% of them tried their luck but in the end better facility could hardly helped them survive. In few cases, about 9% women died on the way as the journey to hospital is very long and painful.

What transports were used to take women to health facility?

Proper and fast means of transportation plays a vital role in transporting women to proper health facility to address complication by a skilled health provider. Till date, in rural and tribal region, good transportation system is rarely available. During the complications, more particularly for poor and marginal families Bullock cart is commonly found in those areas as a means of transportation, but has helped only 2% of families. Similarly, cycle/rickshaw were availed by only 5% families. Private transport and auto rickshaws were used by more than 80% of families to reach at facility. However, as majority of families used private

transportation, there was a significant delay in arranging private transportation which was dearer to afford.

How long did it take to arrange the transportation?

About 40% of families were able to arrange transportation within half an hour. Next 18% of families arranged transportation between half an hour to one hour where as rest 38% faced problem to arrange transportation and took one hour to eight hours for locating a transportation. It is a common delay in the rural areas as far as certainty of transportation is concerned. Although there is a provision of Janani Express at block level for easy transportation of pregnant women to nearest health facility, it is not accessible to all families at the time of need. Sometimes the number of Janani Express is not sufficient to meet the urgent need of transportation for which the families had to depend on commercial transportation. Families from economically poor faced problem to make quick deal for transportation for which more time is consumed and finally the women succumbed to death.

How long it took to travel?

About 65% of families managed to reach hospital within one hour while rest 35% was able to reach at health facility ranging from one hour to eight hours. But the complication aggravated on account of time gap between reaching facility and proper treatment by specialized health personnel.

What care was provided at facility?

In the instance of 87% of families sought formal care during the complication and 8% of complicated cases were not provided any medical care either due to absence of specialized doctor or the facilities were over burdened by more number of patients. In some cases BP was checked up (2.5%), oral medicines were prescribed(1%). Though it was found that bigger proportion of families availed formal care, but in maximum cases there was a lack in diagnosing of cause of complication which delayed the complicated process and finally led the women to die. Even at present, there are some FRUs and 24 x7 PHCs equipped with modern instruments but due to lack of specialist and technicians, these are not helping women to overcome the complication.

How long was the patient in the facility?

About 20% of patients were in different health facilities seeking care during complication whereas about 28% stayed between 1 hour to 5 hours in the facilities. About 19% of patients were being treated for 5 hours to 10 hours and rest 32% were at facility stayed more than one day. The gravity of complication was so high neither the care at health

facility nor the competence of health personnel could help the women to escape from death even 2% of women being admitted to hospital for delivery could not survive.

Did the facility refer to another facility?

It was also enquired whether one facility refers to another facility in case of complication which is beyond the capacity of that particular facility. It was found that only 33% of cases were referred to higher facility and about 67% of cases were not referred.

If referred where and why?

Generally complicated cases are referred to higher facility where the facility is equipped with necessary instrument and adequate number of specialized health providers. It was also revealed from the study that about 60% of cases were referred to tertiary hospital like Burla Medical College and only 25% of cases referred to District Head Quarters Hospital and only 14% of families tried in different private nursing home with an expedition that women could survive. In this process much of time was wasted in travel from different health facility to tertiary hospital which made the patient extremely serious while reaching at higher facility and there was a least chance of survival of sick women. It was also enquired why the patients were taken to those facilities and it was revealed that all of them went for better treatment only. Some of key informants expressed that they had to dispose of their valuable assets and livelihood sources to seek better treatment at tertiary level which ultimately ruined their living status.

Whether the patient taken to the facility referred?

About two third of the families somehow managed to take the serious patient to different health facilities they were referred to where as other one third of families could not go to the facilities referred because they thought that the patient would die any way and even in some cases the poor economic status of families compelled them to take back the patient to home and finally the patient died.

If not taken, what was the reason?

It was also enquired why the deceased women were not taken to the facility referred. About 43% thought that the women would no matter die. It might be due to the vulnerable condition of families to bear the cost of treatment at higher facility and the condition of deceased women did not permit to take to a higher facility covering a long distance for treatment. About 29% of families had no money to bear the expenses of medical treatment. They did not have requisite birth preparedness measures to meet such situation. Moreover, the contribution of community was not also solicited. About 15% of women die during the arrangement of vehicle. Sometimes in few occasion, it took a very long time to arrange vehicle from other areas which made delay resulting the death of the woman.

CHAPTER-6: FINDINGS OF FOCUS GROUP DISCUSSIONS & INDEPTH INTERVIEW OF SERVICE PROVIDERS

Under the study, attempt was made to collect qualitative informations pertaining to maternal mortality and challenges faced by the households, community, service providers etc. Members in the focus group discussions in all the Sub-centre villages were House wives who actively participated in the process of discussion. On an average they were 5 to 10 in numbers in each meeting. In all cases SHGs leaders as well as AWW/ ANM moderated the focus group discussion. The findings from each focus group discussion on the pre set theme has been enumerated below.

6.1 Community perception/ behaviour and practices on maternal health, with respect to marriage, miscarriage, abortion, family planning, maternal death etc.

The community is tribal. People are much below in poverty line but still their belief in God is very strong. There is male dominance in the community as it is traditional most of the decisions as regards marriage and other things are taken by elderly people. So they have become superstitious. Early marriage is quite in prevalence. Either people are not aware or there are insufficient initiatives at Govt. or NGO level to sensitize on this core/ key issue. That's why they said "Early marriage and maternal death takes place in our area". People consider abortion as bad and unethical. Many of them know about utility of family planning methods but as of today limited number of families does agree to adopt.

6.2 Rites & Rituals observed during conception, delivery and after delivery.

Pregnancy is considered as gift of God. Families be happy and aspire for the child birth. Pregnant women are given varieties of food to eat from 7th months to onwards. They worship God for healthy outcome of pregnancy and child birth. The 7th & 21st day of newborn baby is celebrated amidst joy and happiness. Friends and relatives are invited to join in the occasion.

6.3 Work and diet prescriptions and taboos during pregnancy

There was mix response from participants i.e some people allow PWs to take rest during pregnancy while others indirectly prompt them to do house hold work or other type of work like picking of Mahula and other forest products. However during pregnancy some women drink country liquor (tribal community).

6.4 Eating habits, smoking, drinking among women

In general pregnant women take normal food in their daily diet. Which includes rice, dal & curry. Smoking and drinking is assumed to be injurious to health still some women do take country liquor some times.

6.5 Personal hygiene/ cleanliness observed before/ after child birth.

Well before the expected date of delivery a PW is advised to maintain personal cleanliness as well as stay in a neat and clean place where she can take rest adequately. After child birth the baby is washed in water and then cover with clean clothes but tribal women during pregnancy are not able to maintain personal cleanliness/ hygiene.

6.6 Use of indigenous system of medicines herbal (psychotherapy)/ folk medicine.

Besides being under medical treatment a good number of women during pregnancy also try folk as well as tribal herbal medicines, either on their own or as per suggestions of elderly people in the community as a customary system.

6.7 Knowledge and attitude to practices of modern health care services.

Women are to some extent aware about modern system of medicines to be followed during pregnancy, Child birth as well as after child birth but as the said "it is not available to us" it can be followed that some areas are too inaccessible or not having required numbers of health workers to render needful health care services to PWs.

6.8 Causes of Maternal morbidity and deaths

Lack of awareness among people on basic information about safe motherhood, and superstitious attitude are considered to be major causes for maternal morbidity and mortality happening in their area. Therefore women being the core members in the family should show interest to know and be aware.

However according to their views adequate and appropriate maternity services are not available to women particularly from vulnerable and tribal community. That's why maternal mortality is happening. In few cases women in pregnancy do not take medicines as prescribed, rather they believe in God for relief and solution from health problem. This is happening as women leave in a marginal economic status and are not literate.

6.9 Suggestions for reduction of maternal morbidity and deaths

Suggestions to reduce maternal morbidity and mortality came like,

- All PWs should take nutritious food\
- They should take medicine in time.
- Medicine should be supply to PWs from poorer community free of cost.
- Each and every health worker posted at the grass-root level should perform a good job and generate awareness among women.
- Proper care of PWs should be taken up. In case of any complications it should be ensured that they reach appropriate health care institutions on time and are properly treated by physicians.
- Women should be literate enough to know about different aspect of safe motherhood.

The major findings from Service Providers (Health Worker Female) interview are:

1. What are services being provided to women during pregnancy, delivery and after delivery?

In course of interaction with ANM particularly, among different services being provided include conducting survey to trace out pregnant women for early registration. They also try to provide to full ante natal care to all the women registered in the sub centre area. Further they also generate awareness on nutritional food precaution during pregnancies to avoid complications. Periodical home visits also being taken up to extend counseling both to PWs and other veteran family members. To prevent PWs suffering from malaria doses of choloroquin tablet is given to all the pregnant women. Similarly those who are weak in health and vulnerable we also provide nutritional support as measure of food security. The ANC process also includes periodically measurement of to weight and blood pressure. It is also insured that qualified medical officer examines whether there is any sign of complication during pregnancy.

2. What are the problems faced by you to provide appropriate and quality services during pregnancy, delivery and after delivery?

Provision of appropriate services to PWs were very difficult in the past. Now-a-days with different sensitization programme coming up in television people have become conscious to know about the facts related to improved maternal health care. Our area is highly in accessible, it is difficult for us to provide antenatal care and necessary medical treatments to all PWs whenever it is required. Sometimes this might be a reason for complications among them. Some PWs are is someway or other do not pay attention to quality food during pregnancy. Proper PNC and exclusive breast feeding for six months is advised but it is dismal that the family system is putting a check in the process. Some women in some cases face problems to receive JSY benefits from Hospital. In a way it is a fact that the effectiveness of hospital to give proper medical care is on decline. In case of complication patients prefer to seek treatment in private clinic rather than sub divisional medical.

3. Types of morbidity/ complications faced by women during pregnancy, delivery and after delivery in our area?

Most of the PWs are anemic. In some cases there is swelling in feet. Women do not prefer to undergo deliver in hospital due to casualness of medical personnel to provide prompt service at sub divisional medical hospital. This might be one reason for worsening complication during the time which could give rise to maternal death cases.

Severe anemia is one of major cause found so far to PWs breathed last because of seeklin . One women dies from brain malaria. Key issues and particular fact of maternal deaths should be disseminated to women so that there would be no repetition of such mistakes further there should be proper counseling on healthy and safe pregnancy that will ultimately help in reducing maternal death. Those service providers at higher level particularly in sub divisional hospital should be sincere in giving attention to complicated cases. There is also need for improving transportation system for PWs to ensure timely treatment in case of complications.

4. On adequacy of knowledge and awareness on care and complication during pregnancies, delivery and after delivery.

Majority of women are aware on the gross issues but for others there is need to organize awareness meetings on different aspect of maternal health. Simultaneously there should be minimum educational programme for vulnerable and illiterate PWs. We can say, around 5 to 10% of women are still blank about the issues. Hence there is need for some special programme may be door to door counseling and regular interaction in groups will prove beneficial by using locally popular cultural and communication method.

5. On availing services of Govt. health care institutions during pregnancy, delivery and after delivery by women.

Service providers at grass root level are good and sincere as compared to those at higher level. Families in case of sickness take us in to confidence as we stay close to them and share most of the health issues in a simple and interactive way. But the sub divisional medical at Talcher(Angul) in some cases fail to provide good and prompt medical care to complicated cases. That is why the gradually people lose faith and reliance on such system of medical care. Otherwise they are force to sick private health care at higher cost which is against they are willingness and capacity.

6. Are existing Govt. health care institutions fully equipped to provide all types of maternal health services? If not what are the gaps?

No. Capacity of existing health care institutions is not sufficient to ensure proper health care to improve maternal health scenario in the area. For caesarian cases because of lack of equipments patients have to spend extra money which is not conducive looking at their financial ability. Both at the sub centre and higher level of health care it should be looked in to that equipments are regularly supervised to be functional and appropriate in all form.

7. Suggestions for reduction of maternal morbidity and mortality?

- Every PW should approach to hospital for institutional delivery. It will not only reduce morbidity but maternal mortality too.
- There should be increased awareness programme on maternal health and safe motherhood.
- Treatment at right time during pregnancy and sufficient nutritional food intake by PWs should be major responsibility of elderly members in every families including the husband.
- Services and system in sub divisional medical should improve to ensure quality maternal health care.
- It is vital for PWs to be self caring alert and maintain personal hygienic during pregnancy.

CHAPTER-7: MAJOR FINDINGS AND RECOMMENDATIONS

The major findings from live birth study that covered 10150 women

Out of 10150 women experienced live birth, 63% are under BPL category. Majority of the women (78%) are engaged in household work while 81% of the women married within the age group of 18-24. There were instance of below 18 years of marriage at about 12% while 20% are completely illiterate, only 9% studied above matriculation. Socio-economic condition of most of these women is very poor

Out of 10150 live birth assessed, 40% babies were born first birth order while 11% of babies from 4th to 9th birth order. Looking at the birth spacing, only 16.2% of them spacing of 2 years between births while 65% of them had more than 2 years. Nearly 1% of new born could not survive after birth. With regard to complication to earlier pregnancy, 41% of the women reported to have faced complications. Most of the complications are due to poor ANC, lack of birth planning and complication readiness. During the last pregnancy, complications like blurred vision, paleness, convulsion, swelling of ankle and knees, and also vaginal bleeding etc. were noticed. Anaemia was found to be the major source of complications. However, 1.3% of the women were found to have suffered from chronic diseases like heart disease, diabetes, and malaria, etc.

Although ANC coverage is reported to be 88%, quality ANC coupled with regular follow up and counseling to women is still missing. The action taken during the last pregnancy was also very discouraging as only 30% of women were able to take extra food and some cultural and traditional barriers did not allow nearly 18% of women to take certain nutritious food. In tribal areas also 12% of women found chewing tobacco. About 87% of deliveries ended in birth in right term while post term delivery was only 8%. Induced labour was found in case of 27% of live births which can be considered as complicated cases while 43% of cases delivery at home, institutional delivery was 51%, role of sub centres in conducting deliveries is still insignificant. In about 53% of the cases skilled birth attendants like doctor was present while ANM attended only 16% of the cases. Village dai still attending deliveries in rural and tribal areas upto 16%.

Recommendations from live birth study:

The study on live birth during the last one year reveal local practices, responsiveness of facility and complications faced by the women which can be taken into consideration in programme designing and planning for reduction of maternal mortality. The recommendations that follows from the findings of the study on live births are as follows:

- There is still need for health education as rural and tribal areas are still influenced by social and cultural stigmas and practices contravening the healthy pregnancy and child birth.
- Birth Planning and Complication Readiness should be promoted with the active involvement of ANM, ASHA and other grassroot service providers with regular follow up and constant counseling.
- ANC coverage should not be on rather it should comprehensive, qualitative and need based.
- Community participation and family support for a safe health pregnancy and child birth should be promoted through more IEC measure.
- Sub centeres should be upgraded and strengthened with positioning ANM 24 x 7 for providing ANC and PNC.
- The complication should be identified and appropriate action should be taken with timely referral to the appropriate facility for better birth outcome.
- Public-Private Partnership in sensitization of community and transportation during complication is required for timely action to address complications.

The findings from the Study on MMR shows;

Out of 175 maternal deaths covered under the study, most of the deaths found happened at home(51%) while only 38% deaths happened in the facility. On further inquiry, it is found that 61% of deliveries were conducted at home while 34% happened in the facility. This indicates that some women after delivering at home experienced complications and at the at the last moment sought formal care which could not save their lives. The magnitude of home delivery is still a challenge.

About 63% of the maternal deaths occurred after the child birth which denotes poor PNC care and complications accentuates after the child birth when the women and their family members do not seek appropriate care giving least importance in the post partum period. Only 12% deaths took place during child birth which also denotes facility based deliveries are safe as under JSY institutional deliveries picked up the death during delivery slowed

down. Investigating socio-economic status of the women who died maternal death it is found that 88% of the total maternal deaths were living under BPL which is 95% in tribal areas. Most of the families of deceased were found to be landless and family source of income for 73% of deceased was daily wage earning. More than half of the deceased (58%) were illiterate and nearly 69% of deceased were living in nuclear families which indicates household works was rested on the woman which affected nutrition and rest during ANC period.

When asked on the ANC taken, it was found that only 35% of the deceased had taken 3 ANC check up and most of the women found to have anaemia while 60% of the women in rural areas consumed 100 or more IFA tablets, only 39% in tribal areas consumed 100 or more IFA during their pregnancy. So consumption of 100 IFA tablets by all the deceased women was not ascertained. It was also found that 53% of these deceased women had faced complication during their earlier pregnancies and also 33% of them faced complication during their child birth. This history of complications were not taken into consideration in their last pregnancy or child birth. Delay in decision making and identification of appropriate health facility, accessing timely services are found to be the areas of concern in the study.

In their last pregnancy, 51% cases had paleness, swelling of feet and ankles in 44% of cases, while 20% of cases experienced vaginal bleeding during last pregnancy. Abdominal pain also found in 37% of cases which shows anaemia, APH / PPH, Eclampsia and sepsis are the major causes behind maternal deaths.

Lack of rest, lack of nutritious / extra food and social stigmas in accessing care were the major bottlenecks that ended in a maternal death

While 32% of deliveries were attended by specialized doctor, the involvement of ANM was marginal in case of 7.2% cases. Locally available dai conducted 31% of delivery at home which also accumulated complication and ended in maternal death. 61% deliveries were at home while 34% were in the facility which necessitates more attention for community mobilization towards institutional delivery. 38% of women died in during their first birth order which was 53% in rural areas while in tribal areas it was only 22%. 30% of women died in their 2nd birth order. The birth interval which is also important in case of safe pregnancy and delivery, it was found that only 40% of women had birth interval of 2 years. The birth interval is affected with a preference of a son and the high parity is found a dynamic factor that plays with the life of the women. About 29% of new born babies could not survive after the maternal death.

During child birth, complications noticed that led to maternal deaths like PPH found in 40% and obstructed labour in 23% of cases. 28% of deliveries experienced retention of placenta while 27% of women suffered severely from fever and collapse. C-Section was conducted only in case of 9% of deliveries.

Only 5 numbers of maternal deaths out of abortion were reported. 3 abortions happened at home mostly conducted by untrained traditional quacks. 1 case took in health institution while 1 case was spontaneous abortion. Within 42 hours of abortion, 4 women reported to have died.

Cause of death due to fatal illness like PPH, obstructed labour, eclampsia and convulsion was also assessed in each maternal death. It was found that death due to PPH was 31% while 10% of women died for retention of placenta culminating in severe complication after delivery. 6% of maternal death caused due to prolonged / obstructed labour.

44% of the deceased family sought care as soon as complication was found which shows 56% of families delayed in accessing care during complication which is an area of great concern.

While 10% of the informants expressed that transportation was major problem in accessing care, poverty and also lack of money prevented some of the families to seek care during complication. So decision making during complication was delayed on different grounds for seeking care due to lack of complication readiness and birth planning.

While 32% of deceased women visited district hospital, 22% visited sub division hospital and 30% of women visited PHC level hospital which also shows lack of appropriate birth planning and lack of knowledge on appropriate facility during complication.

Transportation was found to be a big problem in remote rural areas where 38% faced problems to arrange transportation and took 1 to 8 hours for locating transportation.

Although 87% of the deceased family sought formal care after complication, 8% complicated cases were provided any medical care for lack of specialist at facility.

While 28% stayed at facility from one to five hours. 38% were at facility for more than 1 day which shows even in the facility quality appropriate health care is not available for which maternal deaths continues to prevail. Only 33% of cases referred to higher facility but still the maternal death happened for lack of delay and inappropriateness of facilities/services.

One-third of the families could not go to the referred facility on grounds that their poor, they could not arrange transportation, they thought she will die, they did not feel facility will provide better services.

Recommendation from MMR Study:

On the basis of findings of maternal death study, the following recommendations are made:

- Comprehensive ANC with counseling, birth planning and complication readiness and ensuring consumption of IFA tablets, minimum rest and nutrition should be taken care of.
- Regular ANC and PNC visit should be ensured
- Institutions upgradation for quality maternal health services is essentially needed and capacity and skilled building of ANMs/Nurses and LHVs with MBBS doctors through Skilled Birth Attendant training should be geared up so that obstetric complications can be identified and managed properly.
- As PPH is a major factor, blood transfusion facilities and PPH management with skilled person needs to be ensured in each block.
- Post natal death is still a matter of great concern and sincere efforts should be made to provide quality PNC care through counseling, health check up and regular home visits.
- Transportation being a major issue should be addressed linking local transportation system with PRI and birth planning should be done with active involvement of ANM, ASHA and Anganwadi worker.
- The Public-Private-Partnership (PPP) has also significant role to play in tribal as well as rural areas especially in the field of community sensitization, birth planning, mitigation of transport problem etc.

The study also collected some qualitative information through Focus Group Discussion which substantiate the findings of the study and supported the recommendation for addressing maternal health challenges and arresting maternal death incidences in the state of Orissa.

ANNEXURE-I

Data Table

A. Live Birth

	Variables/ Indicators	Urban	Rural	Tribal	Total
01.	Gender of the Newborn				
	Male	147 (53.26)	3545 (47.73)	1262 (51.57)	4954 (48.81)
	Female	129 (46.74)	3882 (52.27)	1185 (48.43)	5196 (51.19)
	N=	276	7427	2447	10150
02.	Birth Order				
	1	142 (51.45)	3106 (41.82)	850 (34.74)	4098 (40.37)
	2	81 (29.35)	2625 (35.34)	782 (31.96)	3488 (34.36)
	3	36 (13.04)	1075 (14.47)	423 (17.29)	1534 (15.11)
	4	11 (3.99)	393 (5.29)	227 (9.28)	631 (6.22)
	5	4 (1.45)	141 (1.90)	89 (3.64)	234 (2.31)
	6	1 (0.36)	57 (0.77)	42 (1.72)	100 (0.99)
	7	1 (0.36)	17 (0.23)	20 (0.82)	38 (0.37)
	8		8 (0.11)	9 (0.37)	17 (0.17)
	9		5 (0.07)	5 (0.20)	10 (0.10)
	N=	276	7427	2447	10150
03.	Birth Spacing				
	Below 1 year	1 (0.75)	7 (0.16)	16 (1.00)	24 (0.40)
	1-2 years	61 (45.52)	751 (17.38)	294 (18.41)	1106 (18.27)
	2-3 years	61 (45.52)	2680 (62.02)	1174 (73.51)	3915 (64.69)
	> 3 years	11 (8.21)	883 (20.44)	113 (7.08)	1007 (16.64)
	N=	134	4321	1597	6052
04.	Survival status of the Newborn				
	Alive	274 (99.28)	7353 (99.00)	2432 (99.39)	10059 (99.10)
	Dead	2 (0.72)	74 (1.00)	15 (0.61)	91 (0.90)
	N=	276	7427	2447	10150
05.	If Newborn Dead, Age at Death in days				
	1		30 (40.54)	8 (53.33)	38 (41.76)
	2	2 (100.00)	13 (17.57)	1 (6.67)	16 (17.58)
	3		4 (5.41)	2 (13.33)	6 (6.59)
	4		6 (8.11)		6 (6.59)
	5		1 (1.35)		1 (1.10)
	6		3 (4.05)		3 (3.30)
	7		4 (5.41)		4 (4.40)
	8-15 days		10 (13.51)	2 (13.33)	12 (13.19)
	>15 days		3 (4.05)	2 (13.33)	5 (5.49)
	N=	2	74	15	91
06.	Religion				
	Hindu	263 (95.29)	7168 (96.51)	2336 (95.46)	9767 (96.23)
	Muslim	12 (4.35)	220 (2.96)	29 (1.19)	261 (2.57)
	Christian	1 (0.36)	39 (0.53)	82 (3.35)	122 (1.20)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
07.	Caste				
	SC	50 (19.01)	1669 (23.28)	298 (12.76)	2017 (20.65)
	ST	54 (20.53)	923 (12.88)	1374 (58.82)	2351 (24.07)
	OBC	96 (36.50)	2987 (41.67)	370 (15.84)	3453 (35.35)
	OC	63 (23.95)	1589 (22.17)	294 (12.59)	1946 (19.92)
	N=	263	7168	2336	9767
08.	Type of family				
	Nuclear	261 (94.57)	4307 (57.99)	1899 (77.61)	6467 (63.71)
	Joint	15 (5.43)	2059 (27.72)	253 (10.34)	2327 (22.93)
	Extended		1061 (14.29)	295 (12.06)	1356 (13.36)
	N=	276	7427	2447	10150
09.	Family Size				
	1-5	224 (81.16)	3263 (43.93)	1451 (59.30)	4938 (48.65)
	6-8	37 (13.41)	2652 (35.71)	821 (33.55)	3510 (34.58)
	9-12	14 (5.07)	1102 (14.84)	160 (6.54)	1276 (12.57)
	>12	1 (0.36)	410 (5.52)	15 (0.61)	426 (4.20)
	N=	276	7427	2447	10150
10.	Land holding size				
	Landless	275 (99.64)	3172 (42.71)	1090 (44.54)	4537 (44.70)
	Upto 1 acre	1 (0.36)	846 (11.39)	163 (6.66)	1010 (9.95)
	1-2 acres		1220 (16.43)	448 (18.31)	1668 (16.43)
	2-5 acres		1681 (22.63)	630 (25.75)	2311 (22.77)
	5-10 acres		410 (5.52)	89 (3.64)	499 (4.92)
	>10 acres		98 (1.32)	27 (1.10)	125 (1.23)
	N=	276	7427	2447	10150
11.	BPL Status				
	BPL	103 (37.32)	4521 (60.87)	1808 (73.89)	6432 (63.37)
	APL	173 (62.68)	2906 (39.13)	639 (26.11)	3718 (36.63)
	N=	276	7427	2447	10150
12.	Major Source of Income				
	Farm	1 (0.36)	2599 (34.99)	806 (32.94)	3406 (33.56)
	Non-Farm	-	97 (1.31)	62 (2.53)	159 (1.57)
	Wage-Labour	105 (38.04)	2363 (31.82)	1211 (49.49)	3679 (36.25)
	Others	170 (61.59)	2368 (31.88)	368 (15.04)	2906 (28.63)
	N=	276	7427	2447	10150
13.	Age of the respondent				
	Below 18	-	3 (0.04)	3 (0.12)	6 (0.06)
	18-24	106 (38.41)	2504 (33.71)	1391 (56.85)	4001 (39.42)
	25-29	128 (46.38)	3312 (44.59)	798 (32.61)	4238 (41.75)
	30-34	37 (13.41)	1149 (15.47)	172 (7.03)	1358 (13.38)
	35-39	3 (1.09)	404 (5.44)	74 (3.02)	481 (4.74)
	40-44	2 (0.72)	51 (0.69)	9 (0.37)	62 (0.61)
	45 and above		4 (0.05)		4 (0.04)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
14.	Education of Respondent				
	Illiterate	75 (27.17)	1353 (18.22)	649 (26.52)	2077 (20.46)
	Primary	2 (0.72)	807 (10.87)	747 (30.53)	1556 (15.33)
	Upto Middle Class	63 (22.83)	2392 (32.21)	643 (26.28)	3098 (30.52)
	Upto High school	89 (32.25)	2120 (28.54)	312 (12.75)	2521 (24.84)
	+2 and above	47 (17.03)	755 (10.17)	96 (3.92)	898 (8.85)
	N=	276	7427	2447	10150
15.	Occupation of the respondent				
	Household work	231 (83.70)	6429 (86.56)	1232 (50.35)	7892 (77.75)
	Farmer		45 (0.61)	93 (3.80)	138 (1.36)
	Priest		1 (0.01)		1 (0.01)
	Wage labour	43 (15.58)	758 (10.21)	1034 (42.26)	1835 (18.08)
	Business		27 (0.36)	10 (0.41)	37 (0.36)
	Driver		1 (0.01)		1 (0.01)
	Govt. Service		58 (0.78)	11 (0.45)	69 (0.68)
	Traditional work		27 (0.36)	8 (0.33)	35 (0.34)
	Tuition		54 (0.73)	58 (2.37)	112 (1.10)
	Company service/ private service	1 (0.36)	10 (0.13)	1 (0.04)	12 (0.12)
	Journalist		2 (0.03)		2 (0.02)
	Masson/Plumber		1 (0.01)		1 (0.01)
	Tailoring	1 (0.36)			1 (0.01)
	Electrician/mechanic		1 (0.01)		1 (0.01)
	AWW		13 (0.18)		13 (0.13)
	N=	276	7427	2447	10150
16.	Age at marriage of respondent				
	Below 18	7 (2.54)	535 (7.20)	650 (26.56)	1192 (11.74)
	18-24	263 (95.29)	6230 (83.88)	1759 (71.88)	8252 (81.30)
	25-29	6 (2.17)	608 (8.19)	31 (1.27)	645 (6.35)
	30-34		49 (0.66)	6 (0.25)	55 (0.54)
	35-39		3 (0.04)	1 (0.04)	4 (0.04)
	40-44		1 (0.01)		1 (0.01)
	45 and above		1 (0.01)		1 (0.01)
	N=	276	7427	2447	10150
17.	Age at marriage of husband				
	18-24	26 (9.42)	290 (3.90)	246 (10.05)	562 (5.54)
	25-29	94 (34.06)	2492 (33.55)	1207 (49.33)	3793 (37.37)
	30-34	126 (45.65)	2808 (37.81)	685 (27.99)	3619 (35.66)
	35-39	24 (8.70)	1278 (17.21)	189 (7.72)	1491 (14.69)
	40-44	6 (2.17)	424 (5.71)	86 (3.51)	516 (5.08)
	45 and above	-	135 (1.82)	34 (1.39)	169 (1.67)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
18.	Education of the Husband				
	Illiterate	26 (9.42)	876 (11.79)	379 (15.49)	1281 (12.62)
	Primary	5 (1.81)	287 (3.86)	244 (9.97)	536 (5.28)
	Upto Middle Class	57 (20.65)	2000 (26.93)	1052 (42.99)	3109 (30.63)
	Upto High school	89 (32.25)	2942 (39.61)	568 (23.21)	3599 (35.46)
	+2 and above	99 (35.87)	1322 (17.80)	204 (8.34)	1625 (16.01)
	N=	276	7427	2447	10150
19.	Occupation of the Husband				
	Household work		23 (0.31)	1 (0.04)	24 (0.24)
	Farmer		1878 (25.29)	744 (30.40)	2622 (25.83)
	Priest	1 (0.36)	29 (0.39)	1 (0.04)	31 (0.31)
	Wage labour	108 (39.13)	2705 (36.42)	1314 (53.70)	4127 (40.66)
	Business	95 (34.42)	997 (13.42)	168 (6.87)	1260 (12.41)
	Unemployed		26 (0.35)	4 (0.16)	30 (0.30)
	Driver	9 (3.26)	185 (2.49)	31 (1.27)	225 (2.22)
	Govt. Service	48 (17.39)	484 (6.52)	123 (5.03)	655 (6.45)
	Traditional work	2 (0.72)	169 (2.28)	21 (0.86)	192 (1.89)
	Tuition		38 (0.51)	5 (0.20)	43 (0.42)
	Company service/private service	11 (3.99)	563 (7.58)	12 (0.49)	586 (5.77)
	Journalist		13 (0.18)	1 (0.04)	14 (0.14)
	TV mechanic		11 (0.15)	1 (0.04)	12 (0.12)
	Masson/Plumber		201 (2.71)	12 (0.49)	213 (2.10)
	Tailoring	1 (0.36)	44 (0.59)	2 (0.08)	47 (0.46)
	Electrician/mechanic	1 (0.36)	16 (0.22)	4 (0.16)	21 (0.21)
	Advocate		10 (0.13)		10 (0.10)
	Doctor		4 (0.05)		4 (0.04)
	LIC agent		9 (0.12)	1 (0.04)	10 (0.10)
	PRI Member		8 (0.11)		8 (0.08)
	Contractor		5 (0.07)	2 (0.08)	7 (0.07)
	Dead		9 (0.12)		9 (0.09)
	N=	276	7427	2447	10150
20.	Age at marriage of husband				
	Below 18		19 (0.26)	24 (0.98)	43 (0.42)
	18-24	153 (55.43)	3033 (40.84)	1616 (66.04)	4802 (47.31)
	25-29	113 (40.94)	3469 (46.71)	703 (28.73)	4285 (42.22)
	30-34	10 (3.62)	777 (10.46)	81 (3.31)	868 (8.55)
	35-39		97 (1.31)	19 (0.78)	116 (1.14)
	40-44		22 (0.30)	1 (0.04)	23 (0.23)
	45 and above		10 (0.13)	3 (0.12)	13 (0.13)
	N=	276	7427	2447	10150
21.	Male child born				
	1	144 (75.79)	3717 (73.11)	1086 (61.56)	4947 (70.29)
	2	35 (18.42)	1145 (22.52)	526 (29.82)	1706 (24.24)
	3	10 (5.26)	157 (3.09)	107 (6.07)	274 (3.89)
	4	1 (0.53)	38 (0.75)	30 (1.70)	69 (0.98)
	5		21 (0.41)	10 (0.57)	31 (0.44)
	6		4 (0.08)	5 (0.28)	9 (0.13)
	7		2 (0.04)		2 (0.03)
	N=	190	5084	1764	7038

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	Variables/ Indicators	Urban	Rural	Tribal	Total
22.	Male child alive				
	1	147 (77.37)	3736 (74.81)	1113 (63.67)	4996 (72.07)
	2	33 (17.37)	1063 (21.29)	509 (29.12)	1605 (23.15)
	3	10 (5.26)	139 (2.78)	88 (5.03)	237 (3.42)
	4		32 (0.64)	27 (1.54)	59 (0.85)
	5		19 (0.38)	6 (0.34)	25 (0.36)
	6		4 (0.08)	5 (0.29)	9 (0.13)
	7		1 (0.02)		1 (0.01)
	N=	190	4994	1748	6932
23.	Male child dead				
	1	2 (66.67)	197 (92.06)	80 (89.89)	279 (91.18)
	2		13 (6.07)	8 (8.99)	21 (6.86)
	3	1 (33.33)	4 (1.87)	1 (1.12)	6 (1.96)
	N=	3	214	89	306
24.	Female child born				
	1	130 (71.04)	3244 (63.76)	963 (55.22)	4337 (61.82)
	2	46 (25.14)	1336 (26.26)	510 (29.24)	1892 (26.97)
	3	4 (2.19)	362 (7.11)	156 (8.94)	522 (7.44)
	4	3 (1.64)	107 (2.10)	85 (4.87)	195 (2.78)
	5		27 (0.53)	25 (1.43)	52 (0.74)
	6		9 (0.18)	2 (0.11)	11 (0.16)
	7			1 (0.06)	1 (0.01)
	8		1 (0.02)		1 (0.01)
	10		1 (0.04)	2 (0.11)	4 (0.05)
	N=	183	5088	1744	7015
25.	Female child alive				
	1	131 (72.38)	3261 (64.93)	970 (56.30)	4362 (62.98)
	2	44 (24.31)	1295 (25.79)	514 (29.83)	1853 (26.75)
	3	3 (1.66)	343 (6.83)	144 (8.36)	490 (7.07)
	4	3 (1.66)	97 (1.93)	72 (4.18)	172 (2.48)
	5		15 (0.30)	21 (1.22)	36 (0.52)
	6		9 (0.18)	2 (0.12)	11 (0.16)
	7		1 (0.02)		1 (0.01)
	8		1 (0.02)		1 (0.01)
	N=	181	5022	1723	6926
26.	Female child dead				
	1	4 (66.67)	167 (89.78)	88 (88.89)	259 (89.00)
	2	2 (33.33)	14 (7.53)	7 (7.07)	23 (7.90)
	3		3 (1.61)	3 (3.03)	6 (2.06)
	4		1 (0.54)	1 (1.01)	2 (0.69)
	22		1 (0.54)		1 (0.34)
	N=	6	186	99	291

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	Variables/ Indicators	Urban	Rural	Tribal	Total
27.	Terms of Pregnancy				
	Pre Term	2 (0.72)	346 (4.66)	142 (5.80)	490 (4.83)
	Right Term	263 (95.29)	6360 (85.63)	2201 (89.95)	8824 (86.94)
	Post Term	11 (3.99)	721 (9.71)	104 (4.25)	836 (8.24)
	N=	276	7427	2447	10150
28.	Duration of labour				
	Upto 1 hour	12 (4.35)	750 (10.10)	310 (12.67)	1072 (10.56)
	1-2 hours	8 (2.90)	1574 (21.19)	605 (24.72)	2187 (21.55)
	2-5 hours	60 (21.74)	2749 (37.01)	884 (36.13)	3693 (36.38)
	5-10 hours	72 (26.09)	1618 (21.79)	352 (14.38)	2042 (20.12)
	10 - 24 hours	89 (32.25)	672 (9.05)	275 (11.24)	1036 (10.21)
	>1 day	35 (12.68)	64 (0.86)	21 (0.86)	120 (1.18)
	N=	276	7427	2447	10150
29.	Type of labour				
	Induced	99 (35.87)	2299 (30.95)	319 (13.04)	2717 (26.77)
	Spontaneous	177 (64.13)	5128 (69.05)	2128 (86.96)	7433 (73.23)
	N=	276	7427	2447	10150
30.	Type of house				
	Pucca	108 (39.13)	1879 (25.30)	114 (4.66)	2101 (20.70)
	Semi Pucca	50 (18.12)	1263 (17.01)	482 (19.70)	1795 (17.68)
	Kutchra	81 (29.35)	3636 (48.96)	1688 (68.98)	5405 (53.25)
	Hut met	37 (13.41)	649 (8.74)	163 (6.66)	849 (8.36)
	N=	276	7427	2447	10150
31.	Type of house				
	Yes	213 (77.17)	4273 (57.53)	550 (22.48)	5036 (49.62)
	No	63 (22.83)	3149 (42.40)	1897 (77.52)	5109 (50.33)
	DK	-	5 (0.07)	-	5 (0.05)
	N=	276	7427	2447	10150
32.	Place of defecation				
	Open Field	94 (34.06)	5254 (70.74)	2200 (89.91)	7548 (74.36)
	Own Toilet	179 (64.86)	2154 (29.00)	246 (10.05)	2579 (25.41)
	Community latrine	3 (1.09)	12 (0.16)		15 (0.15)
	Other		7 (0.09)	1 (0.04)	8 (0.08)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
33.	Sources of drinking water				
	Open Well	6 (2.17)	1013 (13.64)	949 (38.78)	1968 (19.39)
	Tube well	234 (84.78)	6211 (83.63)	1405 (57.42)	7850 (77.34)
	Chuan	1 (0.36)	49 (0.66)	42 (1.72)	92 (0.91)
	Other	35 (12.68)	154 (2.07)	51 (2.08)	240 (2.36)
	N=	276	7427	2447	10150
34.	Place of Delivery				
	Home	106 (38.41)	3017 (40.62)	1214 (49.61)	4337 (42.73)
	Sub Centre	2 (0.72)	59 (0.79)	39 (1.59)	100 (0.99)
	Hospital	157 (56.88)	3901 (52.52)	1167 (47.69)	5225 (51.48)
	Private Nursing Home	11 (3.99)	428 (5.76)	25 (1.02)	464 (4.57)
	Other		22 (0.30)	2 (0.08)	24 (0.24)
	N=	276	7427	2447	10150
35.	Personnel attending delivery				
	Relation	263 (95.3)	5801 (78.1)	2315 (94.6)	8379 (82.6)
	Dai	14 (5.1)	1287 (17.3)	302 (12.3)	1603 (15.8)
	ANM	9 (3.3)	1235 (16.6)	377 (15.4)	1621 (16.0)
	Doctor	168 (60.9)	3984 (53.6)	1174 (48.0)	5326 (52.5)
	Asha	88 (31.9)	2436 (32.8)	614 (25.1)	3138 (30.9)
	N=	276	7427	2447	10150
36.	Factor related to earlier pregnancy				
	Premature birth	7(2.54)	76(1.02)	22(0.90)	105(1.03)
	Miscarriage/abortion	21(7.61)	316(4.25)	108(4.41)	445(4.38)
	Still births	0	82(1.10)	36(1.47)	118(1.16)
	Neonatal deaths within 1 month	3(1.09)	132(1.78)	49(2.00)	184(1.81)
	Post-neo-natal deaths during 1-12 months	1(0.36)	95(1.28)	37(1.51)	133(1.31)
	Twin/Multiple births (grand multi-parity)	1(0.36)	58(0.78)	16(0.65)	75(0.74)
	Child Birth before the age of 18 years	1(0.36)	155(2.09)	278(11.36)	434(4.28)
	Child Birth after the age of 35 years	2(0.72)	64(0.86)	35(1.43)	101(1.00)
	Complications during Pregnancy	249(90.22)	2950(39.72)	939(38.37)	4138(40.77)
	Complications during delivery	107(38.77)	1334(17.96)	604(24.68)	2045(20.15)
	Complications during Puerperium/Confinement	72(26.09)	778(10.48)	623(25.46)	1473(14.51)
	Births within 1 year from previous ones	1(0.36)	7(0.09)	25(1.02)	33(0.33)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
37.	Pre natal risk factors				
	Excessive vomiting	39(14.13)	2440(32.85)	1136(46.42)	3615(35.62)
	Vaginal bleeding	55(19.93)	688(9.26)	263(10.75)	1006(9.91)
	Severe abdominal pain	60(21.74)	1562(21.03)	660(26.97)	2282(22.48)
	Swelling on ankles and fingers	69(25.00)	1604(21.60)	590(24.11)	2263(22.30)
	Convulsions/ fits	19(6.88)	342(4.60)	201(8.21)	562(5.54)
	Paleness / exhaustion	109(39.49)	1883(25.35)	1026(41.93)	3018(29.73)
	Blurred Vision	120(43.48)	776(10.45)	370(15.12)	1266(12.47)
	Sudden weight loss	0	33(0.44)	07(0.29)	40(0.39)
	Sudden weight gain	0	60(0.81)	29(1.19)	89(0.88)
	Semi consciousness/Un consciousness	1(0.36)	50(0.67)	31(1.27)	82(0.81)
	Prolonged cough with chest pain and fever	0	55(0.74)	29(1.19)	84(0.83)
	Loss of appetite	77(27.90)	1858(25.02)	1162(47.49)	3097(30.51)
	Hypertension	41(14.86)	323(4.35)	242(9.89)	606(5.97)
	Arduous heavy work	18(6.52)	338(4.55)	998(40.78)	1354(13.34)
	Inadequate rest	15(5.43)	898(12.09)	909(37.15)	1822(17.95)
	Accident /injury	4(1.45)	74(1.00)	57(2.33)	135(1.33)
	Anxiety / tension	55(19.93)	1129(15.20)	504(20.60)	1688(16.63)
	Heart (palpitation / breathlessness)	1(0.36)	119(1.60)	11(0.45)	131(1.29)
	N=	276	7427	2447	10150
38.	Whether ANC taken				
	Yes	275 (99.64)	6664 (89.73)	1993 (81.45)	8932 (88.00)
	No	1 (0.36)	763 (10.27)	454 (18.55)	1218 (12.00)
	N=	276	7427	2447	10150
39.	Did she do the following during last pregnancy				
	Eat extra food	15(5.43)	1823(38.01)	1211(49.49)	3049(30.04)
	Avoid some food	19(6.88)	1110(14.95)	657(26.85)	1786(17.60)
	Chew tobacco	28(10.14)	796(10.72)	482(19.70)	1306(12.87)
	Drink alcohol	04(1.45)	200(2.69)	270(11.03)	474(4.67)
	Use addicted drugs	3(1.09)	48(0.65)	71(2.90)	122(1.20)
	Try folk medicines	2(0.72)	395(5.32)	531(21.70)	928(9.14)
	Attempt abortion	6(2.17)	25(0.34)	54(2.21)	85(0.84)
	N=	276	7427	2447	10150
40.	Whether the women had any other illness				
	Suffer from heart disease	2(0.72)	18(0.24)	13(0.53)	33(0.33)
	Suffer from diabetes	3(1.09)	27(0.36)	17(0.69)	47(0.46)
	Suffer from cancer	0(0.00)	8(0.11)	43(1.76)	51(0.50)
	Suffer from TB	5(1.81)	32(0.43)	98(4.00)	135(1.33)
	Suffer from malaria	9(3.26)	260(3.50)	571(23.33)	840(8.28)
	Suffer from other disease	59(21.38)	358(4.82)	245(10.01)	662(6.52)
	N=	276	7427	2447	10150

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	Variables/ Indicators	Urban	Rural	Tribal	Total
41.	Household assets (Quilt/Mattresses)				
	None	113 (40.94)	2492 (33.55)	1358 (55.50)	3963 (39.04)
	Some	160 (57.97)	4584 (61.72)	1078 (44.05)	5822 (57.36)
	Enough	3 (1.09)	351 (4.73)	11 (0.45)	365 (3.60)
	N=	276	7427	2447	10150
42.	Whether there is any mosquito net in the household				
	None	4 (1.45)	991 (13.34)	522 (21.33)	1517 (14.95)
	Some	269 (97.46)	6096 (82.08)	1912 (78.14)	8277 (81.55)
	Enough	3 (1.09)	340 (4.58)	13 (0.53)	356 (3.51)
	N=	276	7427	2447	10150
43.	Whether there is any Watch/ clock in the household				
	None	12 (4.35)	2137 (28.77)	868 (35.47)	3017 (29.72)
	Some	261 (94.57)	5069 (68.25)	1570 (64.16)	6900 (67.98)
	Enough	3 (1.09)	221 (2.98)	9 (0.37)	233 (2.30)
	N=	276	7427	2447	10150
44.	Whether there is any Radio/transistor in the household				
	None	23 (8.33)	2546 (34.28)	1219 (49.82)	3788 (37.32)
	Some	250 (90.58)	4717 (63.51)	1224 (50.02)	6191 (61.00)
	Enough	3 (1.09)	164 (2.21)	4 (0.16)	171 (1.68)
	N=	276	7427	2447	10150
45.	Whether there is any bicycle in the household				
	None	12 (4.35)	1561 (21.02)	1018 (41.60)	2591 (25.53)
	Some	262 (94.93)	5752 (77.45)	1425 (58.23)	7439 (73.29)
	Enough	2 (0.72)	114 (1.53)	4 (0.16)	120 (1.18)
	N=	276	7427	2447	10150
46.	Whether there is any motor cycle/scooter in the household				
	None	141 (51.09)	5604 (75.45)	2188 (89.42)	7933 (78.16)
	Some	134 (48.55)	1728 (23.27)	255 (10.42)	2117 (20.86)
	Enough	1 (0.36)	95 (1.28)	4 (0.16)	100 (0.99)
	N=	276	7427	2447	10150
47.	Height of respondent				
	Upto 35 Kgs	3 (1.09)	180 (2.42)	27 (1.10)	210 (2.07)
	36-40 Kgs	31 (11.23)	1088 (14.65)	283 (11.57)	1402 (13.81)
	41-50 Kgs	148 (53.62)	4977 (67.01)	1888 (77.16)	7013 (69.09)
	51-60 Kgs	93 (33.70)	1093 (14.72)	236 (9.64)	1422 (14.01)
	>60 Kgs	1 (0.36)	89 (1.20)	13 (0.53)	103 (1.01)
	N=	276	7427	2447	10150
48.	Weight of respondent				
	Below 4 ft.	1 (0.36)	30 (0.40)	10 (0.41)	41 (0.40)
	4-5 fts.	162 (58.70)	4135 (55.68)	1110 (45.36)	5407 (53.27)
	> 5 fts.	113 (40.94)	3262 (43.92)	1327 (54.23)	4702 (46.33)
	N=	276	7427	2447	10150

N..B. Figures in parenthesis are percentage of case totals

B. Maternal Death

	Variables/ Indicators	Rural	Urban	Tribal	Total
01.	Year of the death				
	2005	16 (16.33)		12 (15.78)	28 (16.0)
	2006	25 (25.51)		15 (19.74)	40 (22.86)
	2007	35 (35.71)	1 (100.00)	22 (28.95)	58 (33.14)
	2008	22 (22.45)		27 (35.53)	49 (28.00)
	N=	98	1	76	175
02.	Place of death				
	Home	42 (42.86)		48 (63.16)	90 (51.43)
	Sub Centre	2 (2.04)			2 (1.14)
	Hospital	41 (41.84)	1 (100.00)	25 (32.89)	67 (38.29)
	Pvt. Nursing Home	1 (1.02)		1 (1.32)	2 (1.14)
	On the way	10 (10.20)		2 (2.63)	12 (6.86)
	Medical College	2 (2.04)			2 (1.14)
	N=	98	1	76	175
03.	Stages of death				
	Antenatal period	21 (21.43)		13 (17.11)	34 (19.43)
	During Delivery	13 (13.27)		12 (15.79)	25 (14.29)
	After Delivery	61 (62.24)	1 100.00)	49 (64.47)	111 (63.43)
	During/After Abortion	3 (3.06)		2 (2.63)	5 (2.86)
	N=	98	1	76	175
04.	Age of women				
	15-19	4 (4.08)		6 (7.89)	10 (5.71)
	20-24			14 (18.42)	14 (8.00)
	25-29	71 (72.45)		30 (39.47)	101 (57.71)
	30-34	14 (14.29)	1 (100.00)	16 (21.05)	31 (17.71)
	35-39	8 (8.16)		7 (9.21)	15 (8.57)
	40-44	1 (1.02)		3 (3.95)	4 (2.29)
	N=	98	1	76	175
05.	Age of deceased				
	Married	98	1	76	175
	N=	100.00	100.00	100.00	100.00
06.	Religion of the deceased				
	Hindu	96 (97.96)	-	76 (100.00)	172 (98.29)
	Muslim	2 (2.04)	1 (100.00)	-	3 (1.71)
	N=	98	1	76	175
07.	Caste of the deceased				
	SC	26 (27.08)	-	19 (25.00)	45 (26.16)
	ST	33 (34.38)	-	48 (63.16)	81 (47.09)
	OBC	28 (29.17)	-	8 (10.53)	36 (20.93)
	OC	9 (9.38)	-	1 (1.32)	10 (5.81)
	N=	96	0	76	172
08.	Type of family				
	Nuclear	59 (60.20)		61 (80.26)	120 (68.57)
	Joint	26 (26.53)	1 (100.00)	14 (18.42)	41 (23.43)
	Extended	13 (13.27)		1 (1.32)	14 (8.00)
	N=	98	1	76	175

	Variables/ Indicators	Rural	Urban	Tribal	Total
09.	Size of family of the deceased				
	1	3 (3.06)		5 (6.58)	8 (4.57)
	2	2 (2.04)		10 (13.16)	12 (6.86)
	3	20 (20.41)		12 (15.79)	32 (18.29)
	4	22 (22.45)		11 (14.47)	33 (18.86)
	5	14 (14.29)		10 (13.16)	24 (13.71)
	6	10 (10.20)		13 (17.11)	23 (13.14)
	7	6 (6.12)		4 (5.26)	10 (5.71)
	8	6 (6.12)		5 (6.58)	11 (6.29)
	9	5 (5.10)		1 (1.32)	6 (3.43)
	10	4 (4.08)	1 (100.00)	3 (3.95)	8 (4.57)
	11	4 (4.08)			4 (2.29)
	12			2 (2.63)	2 (1.14)
	13	2 (2.04)			2 (1.14)
	N=	98	1	76	175
10.	BPL Status of the deceased family				
	BPL	83 (84.69)		72 (94.74)	155 (88.57)
	APL	15 (15.31)	1 (100.00)	4 (5.26)	20 (11.43)
	N=	98	1	76	175
11.	Major Source of Income				
	Farm	26 (26.53)		12 (15.79)	38 (21.71)
	Non-Farm	6 (6.12)		1 (1.32)	7 (4.00)
	Wage-Labour	65 (66.33)	1 (100.00)	62 (81.58)	128 (73.14)
	Business	1 (1.02)			1 (0.57)
	Service			1 (1.32)	1 (0.57)
	N=	98	1	76	175
12.	Education of deceased				
	Illiterate	43 (43.88)		58 (76.32)	101 (57.71)
	Upper Primary	28 (28.57)	1 (100.00)	16 (21.05)	45 (25.71)
	M.E	7 (7.14)		2 (2.63)	9 (5.14)
	High school	18 (18.37)			18 (10.29)
	+2	2 (2.04)			2 (1.14)
	N=	98	1	76	175
13.	Occupation of deceased				
	Household work	78 (79.59)	1 (100.00)	27 (35.53)	106 (60.57)
	Farmer	1 (1.02)		1 (1.32)	2 (1.14)
	Wage labour	19 (19.39)		48 (63.16)	67 (38.29)
	N=	98	1	76	175
14.	Age at marriage of deceased				
	15-19	36 (36.73)		41 (53.90)	77 (43.68)
	20-24	58 (59.18)	1 (100.00)	35 (46.10)	94 (54.02)
	25-29	3 (3.06)			3 (1.72)
	35-39	1 (1.02)			1 (0.57)
	N=	98	1	76	175

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15.	Education of husband				
	Illiterate	23 (23.47)		13 (17.11)	36 (20.57)
	Upper Primary	35 (35.71)	1 (100.00)	48 (63.16)	84 (48.00)
	Middle English	13(13.27)		8 (10.53)	21 (12.00)
	High school	25 (25.51)		5 (6.58)	30 (17.14)
	+2	2 (2.04)		1 (1.32)	3 (1.71)
	+3 and above			1 (1.32)	1 (0.57)
	N=	98	1	76	175
16.	Occupation of husband				
	Farmer	19 (19.39)		9 (11.84)	28 (16.00)
	Priest	1 (1.02)		1 (1.32)	2 (1.14)
	Wage labour	68 (69.39)		64 (84.21)	132 (75.43)
	Business	2 (2.04)	1 (100.00)		3 (1.71)
	Unemployed	1 (1.02)		1 (1.32)	2 (1.14)
	Driver	1 (1.02)			1 (0.57)
	Govt. Service			1 (1.32)	1 (0.57)
	Traditional work	2 (2.04)			2 (1.14)
	Tuition	1 (1.02)			1 (0.57)
	Company service/private service	3 (3.06)			3 (1.71)
	N=	98	1	76	175
17.	Age at marriage of husband (inYrs.)				
	15-19	2 (2.04)		8 (10.53)	10 (5.71)
	20-24	62 (63.27)	1 (100.00)	54 (71.05)	117 (66.86)
	25-29	28 (28.57)		13 (17.11)	41 (23.43)
	30-34	5 (5.10)		1 (1.32)	6 (3.43)
	40-44	1 (1.02)			1 (0.57)
	N=	98	1	76	175
18.	No. of male child born, alive and dead of the deceased				
	male child born				
	1	41 (65.08)		27 (43.55)	68 (53.97)
	2	16 (25.40)		21 (33.87)	37 (29.37)
	3	3 (4.76)		9 (14.52)	12 (9.52)
	4	3 (4.76)		2 (3.23)	5 (3.97)
	5		1 (100.00)	2 (3.23)	3 (2.38)
	7			1 (1.61)	1 (0.79)
	N=	63	1	62	126
	Male child alive				
	1	36 (70.59)		25 (45.45)	61 (57.01)
	2	11 (21.57)		17 (30.91)	28 (26.17)
	3	2 (3.92)		9 (16.36)	11 (10.28)
	4	2 (3.92)		2 (3.64)	4 (3.74)
	5		1 (100.00)	1 (1.82)	2 (1.87)
	6			1 (1.82)	1 (0.93)
	N=	51	1	55	107
	Male child dead				
	1	17 (89.47)		8 (66.67)	25 (80.65)
	2	1 (5.26)		4 (33.33)	5 (16.13)
	4	1 (5.26)			1 (3.23)
	N=	19		12	31

	Variables/ Indicators	Rural	Urban	Tribal	Total	
19.	No. of female child born, alive and dead of the deceased					
	Female Child born					
	1	28 (58.33)		23 (45.10)	51 (51.00)	
	2	10 (20.83)	1 (100.00)	23 (45.10)	34 (34.00)	
	3	8 (16.67)		3 (5.88)	11 (11.00)	
	4	1 (2.08)		1 (1.96)	2 (2.00)	
	5			1 (1.96)	1 (1.00)	
	7	1 (2.08)			1 (1.00)	
	N=	48	1	51	100	
	Female child alive					
	1	23 (63.89)		28 (56.00)	51 (58.62)	
	2	6 (16.67)	1 (100.00)	18 (36.00)	25 (28.74)	
	3	6 (16.67)		2 (4.00)	8 (9.20)	
	4	1 (2.78)		1 (2.00)	2 (2.30)	
5			1 (2.00)	1 (1.15)		
N=	36	1	50	87		
Female child dead						
1	20 (90.91)		6 (75.00)	26 (86.67)		
2	1 (4.55)		2 (25.00)	3 (10.00)		
4	1 (4.55)			1 (3.33)		
N=	22		8	30		
20.	ANC coverage					
	1	3 (3.06)			3 (1.71)	
	2	11 (11.22)		9 (11.84)	20 (11.43)	
	3	34 (34.69)	1 (100.00)	27 (35.53)	62 (35.43)	
	4	24 (24.49)		37 (48.68)	61 (34.86)	
	5	14 (14.29)			14 (8.00)	
	6	8 (8.16)		3 (3.95)	11 (6.29)	
	7	4 (4.08)			4 (2.29)	
	N=	98	1	76	175	
	21.	Whether IFA taken				
		Whether taken IFA				
Yes		96 (97.96)	-	73 (96.05)	169 (96.57)	
No		2 (2.04)	1 (100.00)	3 (3.95)	6 (3.43)	
N=		98	1	76	175	
No. of IFA taken						
<100		25 (26.04)		44 (60.27)	69 (40.83)	
100		58 (60.42)		28 (38.36)	86 (50.89)	
>100		13 (13.54)		1 (1.37)	14 (8.28)	
N=		96	-	73	169	
No. of TT taken						
2 TT	98	1	76	175		
N=	98	1	76	175		

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22.	Whether taken Malaria Prophylaxis				
	Yes	75 (76.53)	-	63 (82.89)	138 (78.86)
	No	23 (23.47)	1 (100.00)	13 (17.11)	37 (21.14)
	No. of Malaria Chemoprophylaxis taken				
	Upto 10	14 (18.67)	-	35 (55.56)	49 (35.51)
	11-30	21 (28.00)	-	22 (34.92)	43 (31.16)
	31-50	26 (34.67)	-	-	26 (18.84)
	>50	14 (18.67)	-	6 (9.52)	20 (14.49)
	N=	75	-	63	138
23.	Complications faced during earlier pregnancy				
2.86	Premature birth	4(4.08)		1(1.32)	5(2.86)
2.29	Miscarriage/abortion	4(4.08)		0(0.00)	4(2.29)
3.43	Still births	5(5.10)		1(1.32)	6(3.43)
8.57	Neonatal deaths within 1 month	8(8.16)		7(9.21)	15(8.57)
2.29	Post-neo-natal deaths during 1-12 months	3(3.06)		1(1.32)	4(2.29)
5.71	Child Birth before the age of 18 years	4(4.08)		6(7.89)	10(5.71)
2.86	Child Birth after the age of 35 years	3(3.06)		2(2.63)	5(2.86)
53.14	Complications during Pregnancy	46(46.94)		47(61.84)	93(53.14)
32.00	Complications during delivery	31(31.63)		25(32.89)	56(32.00)
38.29	Complications during Puerperium/Confinement	38(38.78)		29(38.16)	67(38.29)
3.43	Births within 1 year from previous ones	5 (5.10)		1(1.32)	6(3.43)
	N=	98		76	175
24.	Complication during last pregnancy				
	Excessive vomiting	12(12.24)		15(19.74)	27(15.43)
	Vaginal bleeding	19(19.39)		15(19.74)	34(19.43)
	Severe abdominal pain	30(30.61)		35(46.05)	65(37.14)
	Swelling on ankles and fingers	48(48.98)		29(38.16)	77(44.00)
	Convulsions/ fits	9(9.18)		7(9.21)	16(9.14)
	Paleness / exhaustion	46(46.94)		43(56.58)	89(50.86)
	Blurred Vision	20(20.41)		24(31.58)	44(25.14)
	Sudden weight loss	8(8.16)		13(17.11)	21(12.00)
	Sudden weight gain	13(13.27)		13(17.11)	26(14.86)
	Semi consciousness/Unconsciousness	10(10.20)		10(13.16)	20(11.43)
	Prolonged cough with chest pain and fever	8(8.16)		8(10.53)	16(9.14)
	Loss of appetite	16(16.33)		12(15.79)	28(16.00)
	Hypertension	8(8.16)		7(9.21)	15(8.57)
	Arduous heavy work	12(12.24)		9(11.84)	21(12.00)
	Inadequate rest	9(9.18)		17(22.37)	26(14.86)
	Anxiety / tension	15(15.31)		7(9.21)	22(12.57)
	Heart Attack	6(6.12)		5(14.47)	11(6.29)
	N=	98		76	175

	Variables/ Indicators	Rural	Urban	Tribal	Total
27.	Did she do the following during last pregnancy				
	Eat extra food	8(8.16)		4(5.26)	12(6.86)
	Avoid some food	4(4.08)		3(3.95)	7(4.00)
	Chew tobacco	14(14.29)		5(6.58)	19(10.86)
	Drink alcohol	4(4.08)		3(3.95)	7(4.00)
	Use addicted drugs	2(2.04)		2(2.63)	4(2.29)
	Try folk medicines	2(2.04)		4(5.26)	6(3.43)
	Attempt abortion	----		1(1.32)	1(0.57)
	N=	98	1	76	175
28.	Terms of Pregnancy				
	Pre Term	8 (10.81)		10 (16.39)	18 (13.24)
	Right Term	65 (87.84)	1 (100.00)	50 (81.97)	116 (85.29)
	Post Term	1 (1.35)		1 (1.64)	2 (1.47)
	N=	74	1	61	136
29.	Type of labour				
	Induced	20 (27.03)		10 (16.39)	30 (22.06)
	Spontaneous	54 (72.97)	1 (100.00)	51 (83.61)	106 (77.94)
	N=	74	1	61	136
30.	Personnel attending delivery				
	Relation	71 (95.9)	1 (100.0)	60 (98.4)	132 (97.1)
	Dai	32 (43.2)		11 (18.0)	43 (31.4)
	ANM	7 (9.5)		3 (4.9)	10 (7.4)
	Doctor	29 (39.2)		15 (24.6)	44 (32.4)
	ASHA	13 (17.6)		5 (8.2)	18 (13.2)
	N=	74	1	61	136
31.	Type of labour				
	Induced	20 (27.03)		10 (16.39)	30 (22.06)
	Spontaneous	54 (72.97)	1 (100.00)	51 (83.61)	106 (77.94)
	N=	74	1	61	136
32.	Place of Delivery				
	Home	42 (56.76)	1 (100.00)	41 (67.21)	84 (61.76)
	Sub Centre			1 (1.64)	1 (0.74)
	Hospital	30 (40.54)		17 (27.87)	47 (34.56)
	Private Nursing Home	2 (2.70)		1 (1.64)	3 (2.21)
	Enroute to hospital			1 (1.64)	1 (0.74)
	N=	74	1	61	136
33.	Place of Delivery				
	Day	37 (50.00)	1 (100.00)	40 (65.57)	78 (57.35)
	Night	37 (50.00)		21 (34.43)	58 (42.65)
	N=	74	1	61	136
34.	Sex of the new born				
	Male	40 (54.1)		27 (44.3)	67 (49.3)
	Female	30 (39.2)	1 (100.00)	24 (39.3)	54 (39.3)
	Died before delivery	5 (6.8)			5 (3.7)
	Fotetal Death			10 (16.4)	10 (7.4)
	N=	74	1	61	136

	Variables/ Indicators	Rural	Urban	Tribal	Total
35.	Birth Order				
	1	40 (54.05)		13 (21.31)	53 (38.97)
	2	16 (21.62)		13 (21.31)	29 (21.32)
	3	4 (5.41)		17 (27.87)	21 (15.44)
	4	8 (10.81)		4 (6.56)	12 (8.82)
	5	2 (2.70)		6 (9.84)	8 (5.88)
	6	2 (2.70)		5 (8.20)	7 (5.15)
	7		1 (100.00)		1 (0.74)
	8	1 (1.35)		2 (3.28)	3 (2.21)
	10			1 (1.64)	1 (0.74)
	11	1 (1.35)			1 (0.74)
	N=	74	1	61	136
36.	Birth interval				
	Upto 1 year	10 (29.41)		15 (31.25)	25 (30.12)
	1-2 years	15 (44.12)		25 (52.08)	40 (48.19)
	2-3 years	2 (5.88)	1 (100.00)	5 (10.42)	8 (9.64)
	More than 3 years	7 (20.59)		3 (6.25)	10 (12.05)
	N=	34	1	48	83
37.	Survival status of the Newborn				
	Alive	31 (41.89)	1 (100.00)	36 (59.02)	68 (50.00)
	Dead	30 (40.54)		9 (14.75)	39 (28.68)
	Foetal Death			10 (16.39)	10 (7.35)
	Died during delivery	13 (17.57)		6 (9.84)	19 (13.97)
	N=	74	1	61	136
38.	If Newborn Dead, Age at Death				
	1 day	8 (26.67)		1 (11.11)	9 (23.08)
	2 days	6 (20.00)		2 (22.22)	8 (20.51)
	3 days	5 (16.67)			5 (12.82)
	4 days	2 (6.67)		3 (33.33)	5 (12.82)
	5 days and above	9 (30.00)		3 (33.33)	12 (30.77)
	N=	30		9	39
39.	Any complication during delivery, pregnancy and confinement				
	Prolonged / obstructed Labour	23(23.47)	1(100)	16(21.05)	40(22.86)
	Bleeding before Labour	98(100.00)	0	76(100.00)	174(99.43)
	Excessive bleeding after delivery	41(41.84)	1(100)	28(36.84)	70(40.00)
	Fits / convulsions	15(15.31)	1(100)	09(11.84)	25(14.29)
	Placental abnormality	34(34.69)	1(100)	14(18.42)	49(28.00)
	Abnormal presentation	9(9.18)	1(100)	4(5.26)	14(8.00)
0.00	Multiple pregnancy	98(100.00)		76(100.00)	174(99.43)
	Fever and prolapsed	32(32.65)	1(100)	14(18.42)	47(26.86)
	Cesarean / operation	11(11.22)	1(100)	04(5.26)	16(9.14)
	N=	98(100)	1(100)	76(100)	175(100)

	Variables/ Indicators	Rural	Urban	Tribal	Total
40.	Month of Pregnancy				
	3	1 (33.33)		1 (20.00)	
	5		2 (100.00)	2 (40.00)	
	6	1 (33.33)		1 (20.00)	
	8	1 (33.33)		1 (20.00)	
	N=	3	2	5	
41.	Place of abortion				
	Govt. Hospital	1 (33.33)			1 (20.00)
	Home	2 (66.67)		2 (100.00)	4 (80.00)
	N=	3		2	5
42.	Who performed abortion				
	Doctor	1 (33.33)		1 (20.00)	
	Quack	1 (33.33)	2 (100.00)	3 (60.00)	
	Spontaneous abortion	1 (33.33)		1 (20.00)	
	N=	3	2	5	
43.	How many days after abortion died				
	1	2 (66.67)		2 (40.00)	
	2		2 (100.00)	2 (40.00)	
	3	1 (33.33)		1 (20.00)	
	N=	3	2	5	
44.	Illness experienced after abortion				
	Unconscious	2 (100.00)		(100.00)	2 (100.00)
	N=	3		2	5
45.	Type of house				
	Pucca	9 (9.18)	1 (100.00)		10 (5.71)
	Semi Pucca	11 (11.22)		2 (2.63)	13 (7.43)
	Kutcha	71 (72.45)		73 (96.05)	144 (82.29)
	Hut met	7 (7.14)		1 (1.32)	8 (4.57)
	N=	98	1	76	175
46.	Sources of drinking water				
	Open Well	13 (13.27)		14 (18.42)	27 (15.43)
	Tube well	81 (82.65)	1 (100.00)	61 (80.26)	143 (81.71)
	Chuan	1 (1.02)		1 (1.32)	2 (1.14)
	Pipe water supply	3 (3.06)			3 (1.71)
	N=	98	1	76	175
47.	Is the house electrified				
	Yes	27 (27.55)	1 (100.00)	7 (9.21)	35 (20.00)
	No	71 (72.45)		69 (90.79)	140 (80.00)
	N=	98	1	76	175
48.	Place of defecation				
	Open Field	89 (90.82)		65 (85.53)	154 (88.00)
	Own Toilet	9 (9.18)	1 (100.00)	11 (14.47)	21 (12.00)
	N=	98	1	76	175

	Variables/ Indicators	Rural	Urban	Tribal	Total
49.	Fatal illness that led to death				
	Delayed placenta delivery	10 (10.2)	1 (100.0)	10 (13.2)	21 (12.0)
	Heavy bleeding after delivery	29 (29.6)		20 (26.3)	49 (28.0)
	Bleeding after C-Section	2 (2.0)		2 (2.6)	4 (2.3)
	Prolonged labour pain/ obstructed labour	8 (8.2)		1 (1.3)	9 (5.1)
	Weakness during pregnancy aggravated by heavy bleeding	3 (3.1)		1 (1.3)	4 (2.3)
	Heart Attack	9 (9.2)		3 (3.9)	12 (6.9)
	Hyper tension	2 (2.0)		2 (2.6)	4 (2.3)
	Death after still birth	2 (2.0)		2 (2.6)	4 (2.3)
	Fits due to anemic	6 (6.1)		6 (7.9)	12 (6.9)
	Convulsion - became senseless	5 (5.1)		4 (5.3)	9 (5.1)
	Severe abdominal pain	3 (3.1)		1 (1.3)	4 (2.3)
	Sickle Cell Anaemia	15 (15.3)		14 (18.4)	29 (16.6)
	Brain Malaria	1 (1.0)		3 (3.9)	4 (2.3)
	Due to Kidney failure	2 (2.0)			2 (1.1)
	Pneumonia	1 (1.0)			1 (0.6)
	Pre matured delivery	1 (1.0)			1 (0.6)
	Bleeding due to abortion	1 (1.0)		4 (5.3)	5 (2.9)
	Multiple pregnancy	2 (2.0)		2 (2.6)	4 (2.3)
	Bleeding before delivery	1 (1.0)		2 (2.6)	3 (1.7)
	Septicemia			1 (1.3)	1 (0.6)
	Pulmonary infection			2 (2.6)	2 (1.1)
	Excessive vomiting	1 (1.0)			1 (0.6)
	N=	98	1	76	175
50.	What was the 1st step taken to provide care				
	Home care	28 (28.57)		45 (59.21)	73 (41.71)
	Treated by traditional healer	3 (3.06)			3 (1.71)
	Sought formal care	67 (68.37)	1 (100.00)	31 (40.79)	99 (56.57)
	N=	98	1	76	175
51.	How long after the illness, care was sought				
	Immediately	55 (56.12)		22 (28.95)	77 (44.00)
	Within half an hour	10 (10.20)		38 (50.00)	48 (27.43)
	Died on the way			1 (1.32)	1 (0.57)
	Within 1 hour	7 (7.14)	1 (100.00)	3 (3.95)	11 (6.29)
	1-2 hours	9 (9.18)		2 (2.63)	11 (6.29)
	2-5 hours	10 (10.20)		1 (1.32)	11 (6.29)
	More than 5 hours	7 (7.14)		9 (11.84)	16 (9.14)
	N=	98	1	76	175

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	Variables/ Indicators	Rural	Urban	Tribal	Total
52.	What was the reason for delay				
	Could not arrange transport	11 (11.22)		2 (2.63)	13 (7.43)
	Had no money	6 (6.12)		4 (5.26)	10 (5.71)
	Doctor was not present/busy with attending other patient	3 (3.06)		3 (3.95)	6 (3.43)
	Continued home care	3 (3.06)	1 (100.00)	1 (1.32)	5 (2.86)
	Husband was away/sick			1 (1.32)	1 (0.57)
	Long distance for reaching at facility	7 (7.14)		2 (2.63)	9 (5.14)
	Informal service provider was not present			1 (1.32)	1 (0.57)
	Delay in procuring medicine	1 (1.02)			1 (0.57)
	Died on the way	1 (1.02)			1 (0.57)
	Was not aware about serious consequence	1 (1.02)			1 (0.57)
	Though she was not sick enough			1 (1.32)	1 (0.57)
	Not applicable	65 (66.33)		61 (80.26)	126 (72.00)
	N=	98	1	76	175
53.	What are the facilities visited				
	DHH	22 (32.84)		8 (25.81)	30 (30.30)
	SDH	7 (10.45)		10 (32.26)	17 (17.17)
	CHC/PHC	21 (31.34)		11 (35.48)	32 (32.32)
	Private Clinic	5 (7.46)		1 (3.23)	6 (6.06)
	City hospital	2 (2.99)	1 (100.00)		3 (3.03)
	Medical College	2 (2.99)		1 (3.23)	3 (3.03)
	Died on the way	8 (11.94)			8 (8.08)
	N=	67	1	31	99
54.	What transport used to take her				
	Bullock Cart	-		2 (6.45)	2 (2.02)
	Rickshaw	5 (7.46)			5 (5.05)
	Auto rickshaw	33 (49.25)		18 (58.06)	51 (51.52)
	Other vehicles / Private Transport	28 (41.79)	1 (100.00)	10 (32.26)	39 (39.39)
	Own vehicle			1 (3.23)	1 (1.01)
	Was there at facility for delivery	1 (1.49)			1 (1.01)
	N=	67	1	31	99
55.	How long did it take to arrange the transportation				
	Within 15 minutes	16 (23.88)	1 (100.00)	7 (22.58)	24 (24.24)
	15-30 minutes	13 (19.40)		5 (16.13)	18 (18.18)
	31-60 minutes	14 (20.90)		4 (12.90)	18 (18.18)
	1-2 hours	8 (11.94)		13 (41.94)	21 (21.21)
	2-5 hours	11 (16.42)		1 (3.23)	12 (12.12)
	More than 5 hours	4 (5.97)			4 (4.04)
	Was there at facility	1 (1.49)		1 (3.23)	2 (2.02)
	N=	67	1	31	99

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	Variables/ Indicators	Rural	Urban	Tribal	Total
56.	How long it took to travel				
	Within 15 minutes	4 (5.97)		2 (6.45)	6 (6.06)
	15-30 minutes	13 (19.40)		6 (19.35)	19 (19.19)
	31-60 minutes	19 (28.36)		13 (41.94)	32 (32.32)
	1-2 hours	10 (14.93)	1 (100.00)	3 (9.68)	14 (14.14)
	2-5 hours	10 (14.93)		3 (9.68)	13 (13.13)
	> 5 hours	2 (2.99)			2 (2.02)
	Died on the way	8 (11.94)		1 (3.23)	9 (9.09)
	Was there at facility	1 (1.49)		3 (9.68)	4 (4.04)
	N=	67	1	31	99
57.	What care was provided				
	No care was provided	6 (8.96)			6 (6.06)
	Formal care was provided	50 (74.63)	1 (100.00)	25 (80.65)	76 (76.77)
	BP was checked up	2 (2.99)			2 (2.02)
	Given malaria tablet			1 (3.23)	1 (1.01)
	Died on the way			1 (3.23)	1 (1.01)
	Was there at facility for delivery	1 (1.49)			1 (1.01)
	Not applicable	8 (11.94)		4 (12.90)	12 (12.12)
	N=	67	1	31	99
58.	How long was there for treatment				
	Upto 1 hour	14 (20.90)		5 (16.13)	19 (19.19)
	1-2 hours	8 (11.94)		4 (12.90)	12 (12.12)
	2-5 hours	10 (14.93)	1 (100.00)	3 (9.68)	14 (14.14)
	5-10 hours	8 (11.94)		2 (6.45)	10 (10.10)
	>10 hours	17 (25.37)		14 (45.16)	31 (31.31)
	Not applicable	10 (14.93)		3 (9.68)	13 (13.13)
	N=	67	1	31	99
59.	Did the facility refer to another facility				
	Yes	21 (31.34)		7 (22.58)	28 (28.28)
	No	37 (55.22)	1 (100.00)	21 (67.74)	59 (59.60)
	Not applicable	9 (13.43)		3 (9.68)	12 (12.12)
	N=	67	1	31	99
60.	What was the type of facility				
	Tertiary Hospital, Burla Medical College	12 (57.14)		5 (71.43)	17 (60.71)
	DHH	5 (23.81)		2 (28.57)	7 (25.00)
	Private clinic	4 (19.05)			4 (14.29)
	Why referred				
	Referred for better treatment	21 (100.0)		7 (100.0)	28 (100.0)
	N=	21		7	28
61.	Was she taken to the facility referred				
	Yes	15 (71.43)		6 (85.71)	21 (75.00)
	No	6 (28.57)		1 (14.29)	7 (25.00)
	N=	21		7	28

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	Variables/ Indicators	Rural	Urban	Tribal	Total
62.	If not taken reasons				
	Died during arrangement of vehicle	1 (16.67)			1 (14.29)
	Heavy rain	1 (16.67)			1 (14.29)
	Had no money	1 (16.67)		1 (100.00)	2 (28.57)
	Thought she would any way die	3 (50.00)			3 (42.86)
	N=	6	1		7
63.	Height of mother in cm				
	Short	10 (10.20)			10 (5.71)
	Normal	83 (84.69)	1 (100.00)	73 (96.05)	157 (89.71)
	Tall	5 (5.10)		3 (3.95)	8 (4.57)
	N=	98	1	76	175
64.	Weight of the mother in kg				
	Reduced Weight	14 (14.29)		6 (7.89)	20 (11.43)
	Normal Weight	82 (83.67)	1 (100.00)	70 (92.11)	153 (87.43)
	Over Weight	2 (2.04)			2 (1.14)
	N=	98	1	76	175

N..B. Figures in parenthesis are percentage of case totals

ANNEXURE -2.

LIST OF SELECTED SUB-CENTRES COVERED UNDER THE STUDY

A. ABSTRACT OF ALL EXISTING SUB-CENTRES IN ORISSA

Location	Total	Selected under PPS methodology for the study
Rural	3999	73
Urban	94	05
Tribal	2689	152
Total	6782	230

B. SELECTED SUB-CENTRE LIST FOR THE STUDY

Sl.no	District	Blocks	Tribal/Rural/Urban	SC
1	Mayurbhanj	Bahalda	Tribal	Badupatka
2	Mayurbhanj	Bangiriposi	Tribal	Kandalia
3	Mayurbhanj	Bentanati	Tribal	Bachuripada
4	Mayurbhanj	Bentanati	Tribal	Tarakoti
5	Mayurbhanj	Bijatata	Tribal	Chadheipahadi
6	Mayurbhanj	Jamada	Tribal	Kainpur
7	Mayurbhanj	Kaptipada	Tribal	Badasimulia
8	Mayurbhanj	Karanjia	Tribal	Hatibari
9	Mayurbhanj	Khuta(ii)	Tribal	Jaypur
10	Mayurbhanj	Kuliana	Tribal	Purunapania
11	Mayurbhanj	Morada	Tribal	Kandana
12	Mayurbhanj	R.govindpur	Tribal	Kamardiha
13	Mayurbhanj	Samakhunta	Tribal	Balidiha
14	Mayurbhanj	Sarskana	Tribal	Sarasakana
15	Mayurbhanj	Thakurmuda	Tribal	Akhapalana
16	Mayurbhanj	Udala	Tribal	Ambadiha
17	Keonjhar	Champua	Tribal	Badanoi
18	Keonjhar	Champua	Tribal	Nandapur
19	Keonjhar	Ghatagaon	Tribal	Toranipokhari
20	Keonjhar	Hachandanpur	Tribal	Tambhahara
21	Keonjhar	Joda	Tribal	Bhadrasahi
22	Keonjhar	Keonjhar	Tribal	Badaposi
23	Keonjhar	Keonjhar	Tribal	Janardanpur
24	Keonjhar	Keonjhar	Tribal	Saraskala
25	Keonjhar	Patna	Tribal	Khireitangiri
26	Keonjhar	Telkoi	Tribal	Deulidiha
27	Sambalpur	Bamara	Tribal	Balanda
28	Sambalpur	Jamankira	Tribal	Tikilipara
29	Sundargarh	Badgaon	Tribal	Mahapara

Sl.no	District	Blocks	Tribal/Rural/ Urban	SC
30	Sundargarh	Bisra	Tribal	Barsuani
31	Sundargarh	Gurundia	Tribal	Banki
32	Sundargarh	Hemagiri	Tribal	Laikera
33	Sundargarh	Koida	Tribal	Badbalijore
34	Sundargarh	Kutra	Tribal	Amgova
35	Sundargarh	Kutra	Tribal	Sanabarsa
36	Sundargarh	Lathikata	Tribal	Brahmnitarang
37	Sundargarh	Lefripada	Tribal	Kharalchopal
38	Sundargarh	Rajgangpur	Tribal	Alanda
39	Sundargarh	Rajgangpur	Tribal	Raiberna
40	Sundargarh	Tangarpali	Tribal	Maghdega
41	Gajapati	Mohana	Tribal	Buduli
42	Gajapati	Mohana	Tribal	Rajakhama
43	Kandhamal	Baliguda	Tribal	Baliguda
44	Kandhamal	Chakapada	Tribal	Sankarkhole
45	Kandhamal	Daringibadi	Tribal	Badabanga
46	Kandhamal	Khajuripada	Tribal	Arapaju
47	Kandhamal	Phirigian	Tribal	Bandhagada
48	Kandhamal	Raikia	Tribal	Gedingia
49	Koraput	Boiparigoda	Tribal	Baligam
50	Koraput	Boiparigoda	Tribal	Siribeda
51	Koraput	Borigumma	Tribal	Semalaguda
52	Koraput	Jeypore	Tribal	Hadia
53	Koraput	Koraput	Tribal	Suku
54	Koraput	Kotpad	Tribal	Sutipadar
55	Koraput	Laximpur	Tribal	Laxmipur
56	Koraput	Narayanpatn	Tribal	Kumbhari
57	Koraput	Similiguda	Tribal	Patakhamera
58	Malakanagiri	Mathili	Tribal	Kansariput
59	Nawarangpur	Dabugaon	Tribal	Badalama
60	Nawarangpur	Nandahandi	Tribal	B.maliguda
61	Nawarangpur	Nandahandi	Tribal	Podalguda
62	Nawarangpur	Papadahand	Tribal	Jamugudi
63	Nawarangpur	Tentulikhunti	Tribal	Amalabhatta
64	Nawarangpur	Tentulikhunti	Tribal	Khandiaguda
65	Nawarangpur	Umerkote	Tribal	Pujariguda dnk
66	Rayagada	Bissamkatak	Tribal	Sahada
67	Rayagada	K.singhpur	Tribal	Aljanniguda
68	Rayagada	Kashipr	Tribal	Kahnuguda
69	Rayagada	Muniguda	Tribal	Agula
70	Rayagada	Padmapur	Tribal	Gudiabanda
71	Rayagada	Ramnaguda	Tribal	A.gulumunda
72	Rayagada	Rayagada	Tribal	Gajjigam

Sl.no	District	Blocks	Tribal/Rural/ Urban	SC
73	Rayagada	Rayagada	Tribal	Tadama
74	Balasore	Balasore	Rural	Hidigaon
75	Balasore	Balasore	Rural	Srirampur
76	Balasore	Basta	Rural	Kasudiha
77	Balasore	Bhograi	Rural	Jaleswarpur
78	Balasore	Jaleswar	Rural	Gopimohanpur
79	Balasore	Khaira	Rural	Haripur
80	Balasore	Remuna	Rural	Baliapla
81	Balasore	Remuna	Rural	Somanathpur
82	Balasore	Soro	Rural	Manipur
83	Bhadrak	Basudevpur	Rural	Kanti nali
84	Bhadrak	Bhadrak	Rural	Geltua
85	Bhadrak	Bhandaripokh	Rural	Naami
86	Bhadrak	Bonta	Rural	Tilo
87	Bhadrak	Dhamnagar	Rural	Asurali
88	Bhadrak	Dhamnagar	Rural	Kothar
89	Bhadrak	Tihidi	Rural	Shyamsundarpur
90	Cuttack	Athagarh	Rural	Rajnagar
91	Cuttack	Baramba	Rural	Abhimanpur
92	Cuttack	Baranga	Rural	Arilo
93	Cuttack	Dampara	Rural	Kusunda
94	Cuttack	Mahanga	Rural	Basudevpur
95	Cuttack	Mahanga	Rural	Vheda
96	Cuttack	N.singhpur	Rural	Sardapur
97	Cuttack	Niali	Rural	Sithalo
98	Cuttack	Nischinkoili	Rural	Sankilo
99	Cuttack	Sadar	Rural	Paramahansa
100	Cuttack	Salepur	Rural	Patapur
101	Cuttack	Choudwar	Rural	Kothasahi
102	Jagatsinghpur	Balikuda	Rural	Aliakanta
103	Jagatsinghpur	Balikuda	Rural	Tandikul
104	Jagatsinghpur	Erasama	Rural	Dhobei
105	Jagatsinghpur	Sadar	Rural	Mudilo
106	Jagatsinghpur	Kujanga	Rural	Dagarpada
107	Jagatsinghpur	Naugaon	Rural	Alanahat
108	Jagatsinghpur	Raghunathpur	Rural	Redhua
109	Jagatsinghpur	Tirtol	Rural	Sankheswar
110	Jajpur	Barachana	Rural	Kadei
111	Jajpur	Bari	Rural	Dharpur
112	Jajpur	Binjharpur	Rural	Jari
113	Jajpur	Dangadi	Rural	Rampilo
114	Jajpur	Dasarathpur	Rural	Paikasahi
115	Jajpur	Dharmasala	Rural	Kadampal

Sl.no	District	Blocks	Tribal/Rural/ Urban	SC
116	Jajpur	Jajpur	Rural	Kapasi
117	Jajpur	Korei	Rural	Masudpur
118	Jajpur	Rasulpur	Rural	Madhuban
119	Jajpur	Sukinda	Rural	Ransol
120	Kendrapara	Aul	Rural	Rainio
121	Kendrapara	Derabis	Rural	Santhapura
122	Kendrapara	Kendrapara	Rural	Chandanpur mc
123	Kendrapara	Mahakalapada	Rural	Belamuagaon
124	Kendrapara	Marshaghai	Rural	Akhua
125	Kendrapara	Pattamundai	Rural	Badapada
126	Kendrapara	Pattamundai	Rural	Taradipal
127	Kendrapara	Rajnagar	Rural	Balabhadraprasad
128	Khurda	Balianta	Rural	Balianta
129	Khurda	Balipatna	Rural	Basantamala
130	Khurda	Banpur	Rural	Narendrapur
131	Khurda	Begunia	Rural	Tulasipur
132	Khurda	Bolgarh	Rural	Bhimpada
133	Khurda	Chilika	Rural	Chandeswar
134	Khurda	Jatani	Rural	Taraboi
135	Khurda	Tangi	Rural	Chhanagiri
136	Nayagarh	Bhapur	Rural	Darudhip
137	Nayagarh	Dasapalla	Rural	Satpatna
138	Nayagarh	Khandapada	Rural	Kunjabiharipur
139	Nayagarh	Nayagarh	Rural	Notara
140	Nayagarh	Odagaon	Rural	Chadeyapalli
141	Nayagarh	Ranapur	Rural	Brundabanpur
142	Nayagarh	Ranapur	Rural	Sankhajodi
143	Puri	Brahmagiri	Rural	Kapileswar
144	Puri	Delanga	Rural	Nadakanda
145	Puri	Gopa	Rural	Konark
146	Puri	Kakatapur	Rural	Santaras
147	Puri	Krushnaprasad	Rural	Arakhakuda
148	Puri	Nimapara	Rural	Gopinathpu
149	Puri	Pipili	Rural	Gobindapur
150	Puri	Puri sadar	Rural	Charishri
151	Puri	Satyabadi	Rural	Mathasahi
152	Angul	Angul	Rural	Purnagarh(b)
153	Angul	Athamallik	Rural	Tusar
154	Angul	Chendipada	Rural	Balpatta
155	Angul	Kaniha	Rural	Derang
156	Angul	Pallahada	Rural	Kunjam
157	Angul	Talchera	Rural	Balanda
158	Bargarh	Ambobhana	Rural	Kumbho

Sl.no	District	Blocks	Tribal/Rural/ Urban	SC
159	Bargarh	Attabira	Rural	Silet
160	Bargarh	Barpali	Rural	Bandhapal
161	Bargarh	Bhatili	Rural	Sirapali
162	Bargarh	Bheden	Rural	Sialhandahata
163	Bargarh	Gaisilat	Rural	Sandhibahal
164	Bargarh	Padampur	Rural	lcchapali
165	Bargarh	Sohela	Rural	Birjam
166	Bolangir	Agalpur	Rural	Rengali
167	Bolangir	Belapara	Rural	Dungripali
168	Bolangir	Bolangir	Rural	Sakama
169	Bolangir	Khaprakhole	Rural	Maharadapadar
170	Bolangir	Muribahal	Rural	Gudighat
171	Bolangir	Patnagarh	Rural	Larambha
172	Bolangir	Saintala	Rural	Belagaon
173	Bolangir	Tentulikhunti	Rural	Tusura
174	Bolangir	Tureikela	Rural	Ghunesh
175	Deogarh	Riamal	Rural	Chhatabar
176	Dhenkanal	Bhuban	Rural	Arakhapal
177	Dhenkanal	Gondia	Rural	Lauli
178	Dhenkanal	Hindol	Rural	Karanda
179	Dhenkanal	Kamakhyangar	Rural	Khatakuhura
180	Dhenkanal	Odapara	Rural	Balarampur
181	Dhenkanal	Parjang	Rural	Kodapada
182	Dhenkanal	Sadar	Rural	Gobidnapur
183	Jharsuguda	Kirmira	Rural	Arda
184	Jharsuguda	Lakanapur	Rural	Bandhabahal
185	Keonjhar	Anandapur	Rural	Bausagarh
186	Keonjhar	Ghasipura	Rural	Daradipal
187	Keonjhar	Hatadihi	Rural	Jambhira
188	Sambalpur	Maneswar	Rural	Bhikampur
189	Sambalpur	Naktideul	Rural	Sarapali
190	Sambalpur	Sambalpur	Rural	A. Katapali
191	Sonepur	Binika	Rural	Mahadevpali
192	Sonepur	Dunguripalli	Rural	Cherupalli
193	Sonepur	Sonepur	Rural	Sargunamunda
194	Sonepur	Ullunda	Rural	Sindhole
195	Boudh	Harbhanga	Rural	Bamanda
196	Boudh	Kantamal	Rural	Kantamal
197	Gajapati	Gosani	Rural	Kantalakoitha
198	Ganjam	Aska	Rural	Benapata
199	Ganjam	Beguniapada	Rural	Digapada
200	Ganjam	Belaguntha	Rural	Inginathi
201	Ganjam	Bhanjanagar	Rural	Mujjagada

Sl.no	District	Blocks	Tribal/Rural/ Urban	SC
202	Ganjam	Chhatrapur	Rural	Chamakhandi
203	Ganjam	Chikiti	Rural	Lalmenta
204	Ganjam	Digapahandi	Rural	Bamkoi
205	Ganjam	Ganjam	Rural	Ganjam
206	Ganjam	Hinjilicut	Rural	Ralaba
207	Ganjam	Jaganarasad	Rural	Samarabandha
208	Ganjam	Khalikote	Rural	Bikrampur
209	Ganjam	Kukdakhandi	Rural	Dengapadar
210	Ganjam	Patrapur	Rural	Kharinipada
211	Ganjam	Polsara	Rural	Podara
212	Ganjam	Pursotampur	Rural	Ranjhalli
213	Ganjam	Sanakhmundi	Rural	Ambagaon
214	Ganjam	Seragada	Rural	Brahmanachhai
215	Ganjam	Sorada	Rural	Genja
216	Kalahandi	Bhawanpatna	Rural	Kutrukhamar
217	Kalahandi	Dharmagada	Rural	Parla
218	Kalahandi	Jaipatan	Rural	Ainlabhata
219	Kalahandi	Junagada	Rural	Charbahal
220	Kalahandi	Kalampur	Rural	Ichhapur
221	Kalahandi	Kesinga	Rural	Paelsinga
222	Kalahandi	M.rampur	Rural	Dammkarlakhunta
223	Kalahandi	Narla	Rural	Sarian
224	Nuapada	Khariar	Rural	Duajhar
225	Nuapada	Komana	Rural	Sialati
226	Khurda	Bhubaneswar	Urban	Unit – 8. Bhubaneswar
227	Cuttack	Cuttack	Urban	Sati chowra, cuttack
228	Cuttack	Cuttack	Urban	Nimasahi, cuttack
229	Sundargarh	Rourkela	Urban	Basanti colony, panposh, Rourkela
230	Sundargarh	Rourkela	Urban	Sector-12, Rourkela

ANNEXURE -3 (A)

CHECKLIST FOR FOCUS GROUP DISCUSSION

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

Conducted By: MY-HEART, Bhubaneswar

1. Name of the village :
2. Name of the Sub-center :
3. No. of key informants :
4. Category of Informants :
5. Date :
6. Venue :
7. Name of the facilitators :
8. Community perception/behavior and practices maternal health:
 - 8.1. Community perception/ Behaviour with respect to Marriage, Miscarriage, Abortion, Family Planning, maternal Death etc:
 - 8.2. Rites & Rituals observed during conception, delivery and after delivery:
 - 8.3. Work and diet prescriptions and taboos during pregnancy:
 - 8.4. Eating habits, smoking, drinking among women:
 - 8.5. Personal hygiene/cleanliness observed before/after birth:
 - 8.6. Use of indigenous system of medicines herbal/psychotherapy/ folk medicine:
 - 8.7. Knowledge and attitude to practices of modern health care services:
9. Causes of maternal morbidity and deaths:
10. Suggestions for reduction of maternal morbidity and deaths:

Signature of facilitator

INTERVIEW SCHEDULE FOR SERVICE PROVIDERS

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

Conducted By: MY-HEART, Bhubaneswar

1. Personal Profile:

Name :
Designation :
Institutions :

2. Knowledge /Attitude and views on maternal morbidity and mortality:

What are services are being provided to women during pregnancies, delivery and after delivery by you?

What are the problems faced by you to provide appropriate and quality services to women during pregnancies, delivery and after delivery.

Types of morbidity/complications faced by women during pregnancies, delivery and after delivery in your area.

Are there any deaths of women under reproductive age group in your area?

If yes, no and causes of such deaths.

Do you think women have adequate knowledge and awareness on care and complications during pregnancies, delivery and after delivery?

Are women availing services of govt. health care institutions during pregnancies, delivery and after delivery?

Are the existing govt. health care institutions are fully equipped to provide all types maternal health services?

If, not, what are the gaps?

Suggestions for reduction of maternal morbidity and mortality:

Signature of interviewer

CHECKLIST FOR CASE STUDY

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

Conducted By: MY-HEART, Bhubaneswar

1. Personal Profiles:

- i. Name :
- ii. Village :
- iii. GP :
- iv. Parent's Name :
- v. Sex :
- vi. Age :
- vii. Marital Status :
- viii. Education :
- ix. Occupation :
- x. Caste :
- xi. Religion :

2. Reproductive health history:

3. Knowledge on care/complications during pregnancy, delivery and after delivery and safe abortions:

4. Types of complication faced during pregnancy, delivery and after delivery:

5. Care taken during pregnancy, delivery and after delivery:

6. Knowledge, attitude, and practices on unwanted pregnancies and abortions:

7. Views on health care service providers:

Views on care and support received from family members during pregnancy, delivery and after delivery:

ANNEXURE-3 (C)

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

SCHEDULE FOR INDEX WOMAN (LIVE BIRTH)

Section – I: Identification Particulars

1.1	State	:	
1.2	District	:	
1.3	Block / City	:	
1.4	GP/Sub Centre	:	
1.5	Village / Ward	:	
1.6	Name of Head of Household	:	
1.7	Type of Index Women	:	Experienced Live Birth during last one year-1/ Experienced Maternal Death during last four years-2
1.8	Full Name of Index woman who experienced live birth during last one year	:	
1.9	Date of Birth	:	
1.10	Sex of the Newborn	:	Male-1 / Female-2
1.11	Birth Order	:	
1.12	Birth Interval	:	
1.13	Survival status of the Newborn	:	Alive-1 / Dead-2
1.14	If Newborn Dead, Age at Death	:	

Section –II: Family Background

2.1	Religion	:	Hindu-1/ Muslim-2/ Christian-3 / Others-4
2.2	Caste	:	SC-1/ ST-2/ OBC-3/ OC-4
2.3	Type of family	:	Nuclear-1/ Joint 3-2/ Extended-3
2.4	Size of family	:	
2.5	Land Holding Size	:	
2.6	BPL Status	:	BPL-1/ APL-2
2.7	Major Source of Income	:	Farm-1 / Non-Farm-2 / Wage-Labour-3 / Others-4

2.8	Particulars of the couple				
2.9		Age	Education	Occupation	Age of marriage
i)	Self				
ii)	Husband				
1.10	Number of children born alive				
	Sex	Born	Alive	Dead	
i)	Male				
ii)	Female				

Section –III: Factors Related To Earlier Pregnancies:

How often did you experience the following?

Sl. No	Outcome	:	No. of Times
3.1	Premature birth(s)	:	
3.2	Miscarriage(s) / Abortion(s)	:	
3.3	Still births	:	
3.4	Neonatal deaths within 1 month	:	
3.5	Post-neo-natal deaths during 1-12 months	:	
3.6	Twin/Multiple births (grand multi-parity)	:	
3.7	Child Birth before the age of 18 years	:	
3.8	Child Birth after the age of 35 years	:	
3.9	Complications during Pregnancy	:	
3.10	Complications during delivery	:	
3.11	Complications during Puerperium / Confinement	:	
3.12	Births within 1 year from previous ones	:	

Section –IV: Prenatal Risk Factors Operations during Last Pregnancy

<i>During your last / current pregnancy did she experience the following problems?</i>		:	Yes-1/ No-2/DK-3
4.1	Excessive vomiting	:	
4.2	Vaginal bleeding	:	
4.3	Severe abdominal pain	:	
4.4	Swelling on ankles and fingers	:	
4.5	Convulsions / fits	:	
4.6	Paleness / exhaustion	:	
4.7	Blurred Vision	:	
4.8	Sudden weight loss	:	
4.9	Sudden weight gain	:	
4.10	Semi consciousness /Un consciousness	:	
4.11	Prolonged cough with chest pain and fever	:	
4.12	Loss of appetite	:	
4.13	Hypertension	:	
4.14	Arduous heavy work	:	
4.15	Inadequate rest	:	
4.16	Accident /injury	:	
4.17	Anxiety / tension	:	
4.18	Heart (palpitation / breathlessness)	:	

4.19: *Besides these, did you suffer from any other illness / disease as follows?*

	Illness	:	Yes-1/ No-2/DK-3
i)	Heart Diseases	:	
ii)	Diabetes	:	
iii)	Cancer	:	
iv)	TB	:	
v)	Malaria	:	
vi)	Other	:	

Section –V: Antenatal Risk Factors Operations during Last Pregnancy

<i>Did you receive the following during pregnancy?</i>		:	<i>Yes-1/ No-2</i>	<i>If Yes, No.</i>
5.1	Ante Natal Care (ANC)	:		
5.2	No of ANC	:		
5.3	Place of ANC	:		
5.4	Tetanus Toxoid	:		
5.5	Iron Folic tablets	:		
5.6	Malaria Prophylaxis	:		

5.8: *Did you do the following during pregnancy? Yes-1/No-2*

i)	Eat extra food	:	
ii)	Avoid some food	:	
iii)	Chew tobacco	:	
iv)	Drink alcohol	:	
v)	Use addicted drugs	:	
vi)	Try folk medicines	:	
vii)	Attempt abortion	:	

Section – VI: Intra / Post Natal Risk Factors Operating During Delivery and Confinement

6.1	Terms Of Pregnancy	:	Pre Term-1 / Right Term-2 / Post Term-3
6.2	Duration of labour in Hours	:	
6.3	Type of labour	:	Induced-1 / Spontaneous-2
6.4	Personnel attending delivery	:	Relation-1/Dai-2/ANM-3/Doctor-4/ Other-5
6.5	Place of Delivery	:	Home-1/ Sub Centre-2/Hospital-3/ Private Nursing Home-4/Other-5
6.6	Time of Delivery	:	Day-1 / Night-2
6.7	<i>Any complications during delivery, pregnancy and confinement</i>	:	<i>Yes-1 / No-2 / DK-3</i>
	i) Prolonged / obstructed Labour	:	
	ii) Bleeding before Labour	:	
	iii) Excessive bleeding after delivery	:	
	iv) Fits / convulsions	:	
	v) Placental abnormality	:	
	vi) Abnormal presentation	:	
	vii) Multiple pregnancy	:	
	viii) Fever and prolapse	:	
	ix)) Cesarean / operation	:	

Section –VII: Households and Environmental Risk Factors

7.1	Type of house:	:	Pucca-1 / Semi Pucca-2 / Kutcha-3 /Hut met -4
7.2	Is the house electrified?	:	Yes-1/No-2
7.3	Place of defecation:	:	Open Field-1/own Toilet-2 /community latrine-3/ Other-4
7.4	Sources of drinking water:	:	Open Well-1/Tube well-2/ Chuan-3 / Other-4
7.5	Assets / Durables	:	None-1,Some-2, Enough -3
	Winter clothes	:	
	Quilt / Mattresses	:	
	Cots / Beds	:	
	Mosquito net	:	
	Watch / clock	:	
	Radio/ transistor	:	
	Bicycle	:	
	Motor cycle / scooter	:	

Section- VIII: To be recorded by the investigator from the Card

Height of mother in cm	:	
Weight of the mother in kg	:	

Date of interview

Name of the investigator

ANNEXURE-3 (D)

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

SCHEDULE FOR INDEX WOMAN (MATERNAL DEATH)

Section – I: Identification Particulars

1.1	State	:	
1.2	District	:	
1.3	Block / City	:	
1.4	GP/Sub Centre	:	
1.5	Village / Ward	:	
1.6	Name of Head of Household	:	
1.7	Type of Index Women	:	Experienced Live Birth during last one year-1/ Experienced Maternal Death during last four years-2
1.8	Full Name of Index woman who died during last four years	:	
1.9	Date of Death	:	
1.10	Place of Death	:	Home-1/ Sub Centre-2/Hospital-3/Pvt. Nursing Home-4/Other-5
1.11	When Died	:	When pregnant-1/ During Delivery-2 / After Delivery-3 / During/After Abortion-4
1.12	Age at Death	:	
1.13	Marital status at death	:	Married -1/ Divorced-2 / Separated-3 / Widowed-4 / Other-4

Section –II: Family Background

2.1	Religion	:	Hindu-1/ Muslim-2/ Christian-3 / Others-4		
2.2	Caste	:	SC-1/ ST-2/ OBC-3/ OC-4		
2.3	Type of family	:	Nuclear-1/ Joint 3-2/ Extended-3		
2.4	Size of family	:			
2.5	Land Holding Size	:			
2.6	BPL Status	:	BPL-1/ APL-2		
2.7	Major Source of Income	:	Farm-1 / Non-Farm-2 / Wage-Labour-3 / Others-4		
2.8	Particulars of the couple				
2.9		Age	Education	Occupation	Age of marriage
i)	Self				
ii)	Husband				
1.10	Number of children born alive				
	Sex	Born	Alive	Dead	
i)	Male				
ii)	Female				

Section –III: Factors Related To Earlier Pregnancies:

How often did she experience the following?

Sl. No	Outcome	:	No. of Times
3.1	Premature birth(s)	:	
3.2	Miscarriage(s) / Abortion(s)	:	
3.3	Still births	:	
3.4	Neonatal deaths within 1 month	:	
3.5	Post-neo-natal deaths during 1-12 months	:	
3.6	Twin/Multiple births (grand multi-parity)	:	
3.7	Child Birth before the age of 18 years	:	
3.8	Child Birth after the age of 35 years	:	
3.9	Complications during Pregnancy	:	
3.10	Complications during delivery	:	
3.11	Complications during Puerperium / Confinement	:	
3.12	Births within 1 year from previous ones	:	

Section –IV: Prenatal Risk Factors Operations during Last Pregnancy

During your last pregnancy did she experience the following problems?		:	Yes-1/ No-2/DK-3
4.1	Excessive vomiting	:	
4.2	Vaginal bleeding	:	
4.3	Severe abdominal pain	:	
4.4	Swelling on ankles and fingers	:	
4.5	Convulsions / fits	:	
4.6	Paleness / exhaustion	:	
4.7	Blurred Vision	:	
4.8	Sudden weight loss	:	
4.9	Sudden weight gain	:	
4.10	Semi consciousness /Un consciousness	:	
4.11	Prolonged cough with chest pain and fever	:	
4.12	Loss of appetite	:	
4.13	Hypertension	:	
4.14	Arduous heavy work	:	
4.15	Inadequate rest	:	
4.16	Accident /injury	:	
4.17	Anxiety / tension	:	
4.18	Heart (palpitation / breathlessness)	:	

4.19: *Besides these, did she suffer from any other illness / disease?*

	Illness	:	Yes-1/ No-2/DK-3
i)	Heart Diseases	:	
ii)	Diabetes	:	
iii)	Cancer	:	
iv)	TB	:	
v)	Malaria	:	
vi)	Other	:	

Section –V: Antenatal Risk Factors Operating during Last Pregnancy

<i>Did she receive the following during last pregnancy?</i>		:	Yes-1/ No-2	If Yes, No.
5.1	Ante Natal Care (ANC)	:		
5.2	No of ANC	:		
5.3	Place of ANC	:		
5.4	Tetanus Toxoid	:		
5.5	Iron Folic tablets	:		
5.6	Malaria Prophylaxis	:		

5.8: *Did she do the following during last pregnancy? Yes-1/No-2*

i)	Eat extra food	:	
ii)	Avoid some food	:	
iii)	Chew tobacco	:	
iv)	Drink alcohol	:	
v)	Use addicted drugs	:	
vi)	Try folk medicines	:	
vii)	Attempt abortion	:	

Section – VI: Intra / Post Natal Risk Factors Operating During Delivery and Confinement

6.1	Terms Of Pregnancy	:	Pre Term-1 / Right Term-2 / Post Term-3
6.2	Duration of labour in Hours	:	
6.3	Type of labour	:	Induced-1 / Spontaneous-2
6.4	Personnel attending delivery	:	Relation-1/Dai-2/ANM-3/Doctor-4/ Other-5
6.5	Place of Delivery	:	Home-1/ Sub Centre-2/Hospital-3/ Private Nursing Home-4/Other-5
6.6	Time of Delivery	:	Day-1 / Night-2
6.7	Sex of the Newborn	:	Male-1 / Female-2
6.8	Birth Order		
6.9	Birth Interval		
6.10	Survival status of the Newborn		
6.11	If Newborn Dead, Age at Death		
6.12	Any complications during delivery, pregnancy and confinement	:	Yes-1 / No-2 / DK-3
	i) Prolonged / obstructed Labour	:	
	ii) Bleeding before Labour	:	
	iii) Excessive bleeding after delivery	:	
	iv) Fits / convulsions	:	
	v) Placental abnormality	:	
	vi) Abnormal presentation	:	
	vii) Multiple pregnancy	:	
	viii) Fever and prolapse	:	
	ix)) Cesarean / operation	:	

Section-VII: Risk Factors related to Abortion complications

7.1	Months of pregnancy during abortion		
7.2	Place of abortion		Sub Centre-1/Govt. Hospital-2 / Pvt. Hospita-3, Home-4, Other -5
7.3	Who performed abortion		Dai-1/ANM-2/Doctor-3/Quack-4/ Other-5
7.4	How many days after abortion died		
7.5	Illness experienced after abortion		

Section –VIII: Households and Environmental Risk Factors

8.1	Type of house:	:	Pucca-1 / Semi Pucca-2 / Kutcha-3 /Hut met -4
8.2	Is the house electrified?	:	Yes-1/No-2
8.3	Place of defecation:	:	Open Field-1/own Toilet-2 /community latrine-3/ Other-4
8.4	Sources of drinking water:	:	Open Well-1/Tube well-2/ Chuan-3 / Other-4
8.5	Assets / Durables	:	None-1,Some-2, Enough -3
	Winter clothes	:	
	Quilt / Mattresses	:	
	Cots / Beds	:	
	Mosquito net	:	
	Watch / clock	:	
	Radio/ transistor	:	
	Bicycle	:	
	Motor cycle / scooter	:	

Section –IX: Fatal Illness leading to Death

9.1	What was the Fatal illness that led to death	
9.2	What was the 1 st step taken to provide care	
9.3	How long after the illness, care was sought	
9.4	What was the reason for delay	
9.5	What are the facilities visited before she died(2 Facilities in order of visit)	
9.6	What transport used to take her	
9.7	How long it took to arrange the transport	
9.8	How long it took to travel	
9.9	What care was provided	
9.10	How long she was there	
9.11	Did the facility refer to another facility	
9.12	If yes, where and why	
9.13	Was she taken to the facility referred	
9.14	If not taken, reason	

Section- X: To be recorded by the investigator from the Card

10.1	Height of mother	:	Short-1 / Normal-2 / Tall-3
10.2	Weight of the mother at the Time of Death	:	Reduced Weight -1/ Normal Weight-2 / Over Weight-3

Date of interview

Name of the investigator

ANNEXURE – 3(E)

MATERNAL MORTALITY IN ORISSA: AN EPIDEMIOLOGICAL STUDY

VILLAGE SCHEDULE

1. Village Identification Particulars:

1.1	State	Orissa
1.2	District	
1.3	Block / ULB	
1.4	G.P/Sub Centre	
1.5	Village / Ward	

2. Physiographic and Ecological Conditions:

2.1	Physiography	1) Hilly , 2) Forest , 3) Riverside, 4) Others
2.2	Drainage	1) Natural efficient, 2) Marshy 3) Others
2.3	Rain Fall	1) Heavy , 2) Moderate , 3) Scanty 4) Erratic
2.4	Settlement Pattern	1) Linear/ 2) circular/ 3) Cluster

3. Amenities / Facilities:

Facility	Distance (K.M.)	Extend of use (1) Commonly / 2) Occasionally / 3) Rarely
3.1	Primary School	
3.2	M.E. School	
3.3	High School	
3.4	Health Sub-centre	
3.5	PHC (New)	
3.6	PHC	
3.7	CHC	
3.8	Ayurvedic / Homeopathic Clinic	
3.9	Private Clinic/Hospital	
3.10	TBA	
3.11	ASHA	
3.12	Angan wadi	
3.13	PCO	
3.14	Post Office	
3.15	PDS	
3.16	Block Office	
3.17	Bank	
3.18	Private Transport	
3.19	Public Transport	

4. Electrification:

4.1	Is the Village Electrified	1) Yes / 2) No
4.2	Mode of use	1) Domestic/ 2) Commercial/ 3) Both, 4) None

5. Drinking Water and Sanitation:

5.1	Source of Water	1. Tube-well 2. Open-well 3. Taps 4. Others
5.2	Availability of Water	1. Round the year 2. Seasonally 3. Others
5.3	Quality of Water	1. Bad 2. Fair 3. Good
5.4	Place of Defecation	1. Open Space 2. I.H.L. 3. Community Latrine 4. Others

6. Existence of CBOs:

	Type of CBO	
6.1	VDC	
6.2	SHG	
6.3	Farmers groups	
6.4	Mahila Mandals	
6.5	Youth Group	
6.6	Other (Specify)	

Date: _____

Name of the Investigator



MY-HEART

March of Youth for Health, Education and Action for Rural Trust

(A Mother NGO of RCH Program & State Secretariat of White Ribbon Alliance Orissa Chapter)

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