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## International Journal of Biological & Medical Research

Journal homepage: [www.biomedscidirect.com](http://www.biomedscidirect.com)



### Original Article

# Maternal mortality among tribal women as per gravidity at a tertiary level of care in bastar chhattisgarh, india

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#### ARTICLE INFO

##### Keywords:

Maternal Mortality  
Primigravida  
Hypertensive Disorders of Pregnancy  
Rupture Uterus, Severe Anemia  
Tribal women of Bastar  
Chhattisgarh.

#### ABSTRACT

**Objectives:** The primary objective of this study is to study Maternal Mortality as per Gravidity among Tribal women at a tertiary level of care in Bastar, Chhattisgarh, India. **Materials and Methods:** This is a hospital based ,retrospective, reproductive-age mortality study (RAMOS) of tribal women of Bastar region, Chattisgarh, that were admitted and managed in Obstetrics and Gynecology Department Govt. Medical College, Jagdalpur, Bastar, Chattisgarh, between July 2007 and October 2011. There were total 120 cases. **Result:** Results of the present study showed that among 120 deceased tribal women highest maternal mortality 65 cases (54.166%) was noted in Primigravida (Nullipara G1P0), second highest maternal mortality 44 cases (38.333%) was noted in 2nd to 4th Gravida (Multipara), 10 cases (8.333%) were in 6th and 7th Grand Multigravida (Grand Multipara), and 01 case (0.833%) was in 8th Great Grand Multigravida. Direct causes of maternal mortality were highest 46 cases (38.333%) due to hypertensive disorders of pregnancy. Among direct causes second highest 18 cases (14.999%) maternal mortality were due to Rupture Uterus, third highest 12 cases (09.999%) of Septicemia, 06 cases (04.999%) of obstructed labor, 06 (04.999%) of Hemorrhage, 02 cases (01.666%) of unsafe Abortion, 02 cases (01.666%) of Pulmonary Embolism and 01 case (0.833%) due to Aspiration. Indirect causes of maternal mortality maximum 15 cases (12.5%) of Malaria and 10 cases (08.333%) were due to Anemia and 02 cases (01.666%) were of Sickle cell Anemia. The result of the present study showed that in Tertiary level of care of Bastar in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 the total maternal deaths were 35, (n=35), 27 (n=27) and 26 (n=26) respectively. The Maternal Mortality Ratio was 1615.881, 1168.325 and 1000.769 Per 1, 00,000 live births in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 respectively. In the year 2008 - 2009, maternal mortality percentage among tribal women was 85.714% and was 100% in the year 2009 - 2010 and 2010 - 2011.

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### 1.Introduction

**Definition:** Maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. To facilitate the identification of maternal deaths in circumstances in which cause of death attribution is inadequate, a new category has been introduced: Pregnancy-related death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death. [1]

Maternal Mortality Ratio is the ratio of the number of maternal deaths per 100,000 live births. The MMR is used as a measure of the quality of a health care system. Sierra Leone has the highest maternal death rate at 2,000, and Afghanistan has the second highest maternal death rate at 1900 maternal deaths per 100,000 live births, reported by the UN based on 2000 figures. According to the Central Asia Health Review, Afghanistan's maternal mortality rate was 1,600 in 2007. Lowest rates included Ireland at 0 per 100,000 and Austria at 4 per 100,000. In the United States, the maternal death rate was 11 maternal deaths per 100,000 live births in 2005. This rose to 13.3 per 100,000 in 2006. [2]

In 2003, the WHO, UNICEF and UNFPA produced a report with statistics gathered from 2000. The world average per 100,000 was 400, the average for developed regions were 20, and for developing regions 440. Countries with highest maternal mortality were: Sierra Leone (2,000), Afghanistan (1,900), Malawi (1,800), Angola (1,700), Niger (1,600), Tanzania (1,500), Rwanda (1,400), Mali

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(1,200), Somalia, Zimbabwe, Chad, Central African Republic, Guinea Bissau (1,100 each), Mozambique, Burkina Faso, Burundi, and Mauritania (1,000 each). [2]

Generally there is a distinction between a direct maternal death that is the result of a complication of the pregnancy, delivery, or their management, and an indirect maternal death that is a pregnancy-related death in a patient with a preexisting or newly developed health problem. Other fatalities during but unrelated to a pregnancy are termed accidental, incidental, or non obstetrical maternal deaths. [2]

Maternal mortality is a sentinel event to assess the quality of a health care system. [2]

## 2. Maternal Mortality Ratio

2.1. Maternal Mortality Ratio (MMR); In INDIA TOTAL: Among women aged between 15-49 years dying due to maternal causes per 1, 00,000 live births in 2004-2006 was 254 and in 2007-2009 was 212. In the state of Assam in 2004-2006 and 2007-2009, 480 and 390, in Bihar/Jharkhand 312 and 261, in Madhya Pradesh/Chhattisgarh 335 and 269, in Orissa 303 and 258, in Rajasthan 388 and 318, in Uttar Pradesh/Uttarakhand 440 and 359, in EAG and ASSAM SUBTOTAL: 375 and 308, in Andhra Pradesh 154 and 134, in Karnataka 213 and 178, in Kerala 95 and 81, in Tamil Nadu 111 and 97, in SOUTH SUBTOTAL: 149 and 127, in Gujarat 160 and 148, in Haryana 186 and 153, in Maharashtra 130 and 104, in Punjab 192 and 172, in West Bengal 141 and 145, in Other 206 and 160, in OTHER SUBTOTAL: 174 and 149; in 2004-06 and 2007-09, respectively. [3] [Table 1]

**Table- 1. Maternal Mortality Ratio (MMR); India, EAG & Assam, Southern States and Other States, 2004-06 and 2007-09 MMR measures number of women aged 15-49 years dying due to Maternal causes per 1,00,000 live births.**

India & Major States	MMR 2004-06	MMR 2007-09
INDIA TOTAL	254	212
Assam	480	390
Bihar/Jharkhand	312	261
Madhya Pradesh/Chhattisgarh	335	269
Orissa	303	258
Rajasthan	388	318
Uttar Pradesh/Uttarakhand	440	359
EAG AND ASSAM SUBTOTAL	375	308
Andhra Pradesh	154	134
Karnataka	213	178
Kerala	95	81
Tamil Nadu	111	97
SOUTH SUBTOTAL	149	127
Gujarat	160	148
Haryana	186	153
Maharashtra	130	104
Punjab	192	172
West Bengal	141	145
Other	206	160
OTHER SUBTOTAL	174	149

Maternal & Child Mortality and Total Fertility Rates Sample Registration System (SRS) Office of Registrar General, India; [http://censusindia.gov.in/vital\\_statistics/SRS\\_Bulletins/MMR\\_release\\_070711.pdf](http://censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR_release_070711.pdf) [3]

## 2.2. Demographic, Socio-economic and Health profile of Chhattisgarh State

Total Population (Census 2001) (in million) 20.83, Crude Birth Rate (SRS 2008) 26.1, Crude Death Rate (SRS 2008) 8.1, Total Fertility Rate (SRS 2008) 3.0, Infant Mortality Rate (SRS 2008) 57, Maternal Mortality Ratio (SRS 2004 - 2006) 335, Sex Ratio (Census 2001) 989, Schedule Caste population (in million) 2.42, Schedule Tribe population (in million) 6.62, Female Literacy Rate (Census 2001) (%) 51.9. [4] [Table: 2]

**Table 2. Demographic, Socio-economic and Health profile of Chhattisgarh State as compared to India figures [4]**

Item	Chhattisgarh	India
Total population (Census 2001) (in million)	20.83	1028.61
Decadal Growth (Census 2001) (%)	NA	21.54
Crude Birth Rate (SRS 2008)	26.1	22.8
Crude Death Rate (SRS 2008)	8.1	7.4
Total Fertility Rate (SRS 2008)	3.0	2.6
Infant Mortality Rate (SRS 2008)	57	53
Maternal Mortality Ratio (SRS 2004 - 2006)	335	254
Sex Ratio (Census 2001)	989	933
Population below Poverty line (%)	-	26.10
Schedule Caste population (in million)	2.42	166.64
Schedule Tribe population (in million)	6.62	84.33
Female Literacy Rate (Census 2001) (%)	51.9	53.7

Source: Chhattisgarh <http://mohfw.nic.in/NRHM/State%20Files/chhattisgarh.htm> [4]

## 2.3. Demographics of district Bastar

According to the 2011 census Bastar district has a population of 1,411,644, roughly equal to the nation of Swaziland or the US state of Hawaii. This gives it a ranking of 348th in India (out of a total of 640). The district has a population density of 140 inhabitants per square kilometre (360 /sq mi). Its population growth rate over the decade 2001-2011 was 17.83 %. Bastar has a sex ratio of 1024 females for every 1000 males, [ and a literacy rate of 54.94 %. In 1981 Bastar had a population of 1,842,854 with 1,249,197 of the residents being members of scheduled tribes. This also represented about 70% of the population. However these figures are for the pre-1999 Bastar District which had the same boundaries as the modern Bastar Division. [5]

Bastar, the land of tribes and natural resources, is the largest tribal district of the newly formed Indian state of Chhattisgarh. About 70% of the total population of Bastar comprises of tribals, which is 26.76% of the total tribal population of Chhattisgarh. The major tribes of the Bastar region are the Gond, Abhuj Maria, Bhatra, Halbaa, Dhurvaa, Muria and BisonHorn Maria. The Gonds of Bastar are one of the most famous tribes in India, known for their unique Ghotul system of marriages. Gonds are also the largest tribal group of central India in terms of population. [6] [Table:3]

**Table 3. Bastar Tribes of Chhattisgarh**

Bastar Tribes	
Gonds	Abuj Maria
Bison Horn Maria	Muriya
Halba	Bathra
Dhruvaa	

Bastar Tribes of Chhattisgarh: <http://www.tourismofchhattisgarh.com/bastar-tribes-of-chhattisgarh/> [6]

The tribes of Bastar region are known for their unique and distinctive tribal culture and heritage in all over the world. Each tribal group in Bastar has their own distinct culture and enjoy their own unique traditional living styles. Each tribe has developed its own dialects and differ from each other in their costume, eating habits, customs, traditions and even worship different form of god and goddess. A large number of Bastar tribals are still living in deep forests and avoid mixing with outsiders in order to protect their own unique culture. The tribes of Bastar are also known for their colorful festivals and arts and crafts. The Bastar Dussehra is the most famous festival of the region. The tribals of Bastar were also amongst the earliest to work with metal and have expertise in making beautiful figurines of tribal gods, votive animals, oil lamps, carts and animals. Bastar is also blessed with exceptional natural beauty and promises to be a favorite destination for researchers, anthropologists, wildlife enthusiasts and nature lovers.[6]

The predominant tribal population in the 4 tehsils were Murias constituting (42.3% HH) the highest concentration (70.5 %) of which live in Dantewara Tehsil (Now District). This was followed by Gonds (41.4% HH), their highest concentration (73.9 %) found in Narainpur Tehsil (Now District). and other tribal groups like Halbas and Bhatras together constituting 16.3 percent of the households. [7]

Tribals of Bastar, Chhattisgarh, India are known for their unique and distinctive tribal heritage and culture all over the world. Each tribal group of this region has its own distinct culture and enjoys a unique traditional living style. The dialect of each of these tribes differs from the others as do their eating habits, costumes, traditions and customs. Even each of these Bastar Tribes worship different forms of gods and goddesses.[8]

The status of tribal women in patrilineal societies has been observed to be somewhat better that of women in a patrilineal society, e.g. their legal status is much higher than that of their counter parts in patrilineal societies and they have a significant role in the tribal economy. However, after a comparative analysis of the various indicators (political organization, religion, ritual practices etc.) among the different tribes of India, it has been observed that the status of tribal women is comparatively lower than that of tribal men. Moreover, the status of tribal women has gone from bad to worse as a result of the impact of social change which has affected the social structure of tribal society. [9]

Maternal mortality was reported to be high among various tribal groups but no exact data could be collected. The chief causes of maternal mortality were found to be unhygienic and primitive practices for parturition. For example, it was observed that among Kutia Khondhs the delivery was conducted by the mother herself in a half squatting position holding a rope tied down from the roof of

the hut. This helped her in applying pressure to deliver the child. In complicated labour, obviously it might lead to maternal as well as child mortality. Similar crude birth practices were found to exist in other tribal groups like Kharias, Gonds, Santals, Kutia Khondhs of Orissa, Santals, Jaunsaris, Kharias, etc.). Expectant mothers to a large extent are not inoculated against tetanus. From the inception of pregnancy to its termination no specific nutritious diet is consumed by women. On the other hand, some pregnant tribal women, (that is, Dudh Kharias, Santals) reduced their food intake because of simple fear of recurrent vomiting and also to ensure that the baby may remain small and the delivery may be easier. The consumption of iron, calcium and vitamins during pregnancy is poor. The habit of taking alcohol during pregnancy has been found to be usual in tribal women and almost all of them are observed to continue their regular activities including hard labour during advanced pregnancy. More than 90 per cent of deliveries are conducted at home attended by elderly ladies of the household. No specific precautions are observed at the time of conducting deliveries which resulted in an increased susceptibility to various infections. Services of paramedical staff are secured only in difficult labour cases. [10]

### 3. Material Method:

This is a hospital based ,retrospective, reproductive-age mortality study (RAMOS) of tribal women of Bastar region, Chattisgarh, that were admitted and managed in Obstetrics and gynecology Department Govt. Medical College, Jagdalpur, Bastar, Chattisgarh, between July 2007 and October 2011. There were total 120 Tribal patient (n=120) and 12 (n=12). with a non-tribal background, admitted and managed in indoor wards between July 2007 and October 2011, and the relevant data was collected from the records of the Department of Obstetrics & Gynecology and Medical Records Department (MRD), Government Medical Collage and the associated Maharani Hospital, Jagdalpur (Bastar), Chhattisgarh, All 120 Tribal patient (n=120) have been included in this study and 12 (n=12) with non-tribal background have been excluded.

**2.4. Objectives:** The primary objective of this study is to study Maternal Mortality among Tribal women as per Gravidity at tertiary level of care in Bastar, Chhattisgarh. This is a hospital based retrospective, reproductive-age mortality study (RAMOS) of tribal women of Bastar region, Chattisgarh, that were admitted and managed in Obstetrics and Gynecology Department Govt. Medical College, Jagdalpur, Bastar, Chattisgarh, between July 2007 and October 2011. There were total 120 cases. All these 120 cases were unbooked cases."

**2.5. Study Population:** The sample consisted of 120 tribal patients who attended tertiary care hospital for medical care between July 2007 and October 2011. Those with a non-tribal background, (n=12) attended between July 2007 and October 2011, were excluded from the study. Finally 120 (n=120) tribal patients were included in the study.

**2.6. Sampling:** This is a hospital based, retrospective, reproductive-age mortality study (RAMOS) of maternal mortality among tribal women of Bastar region. 120 (n=120) tribal patients admitted in the Department of Obstetrics & Gynecology, Government Medical Collage and the associated Maharani Hospital, Jagdalpur (Bastar), Chhattisgarh for treatment.

**2.7. Data collection:** There were total 120 Tribal patient (n=120) and 12 (n=12). with a non-tribal background, admitted and managed in indoor wards between July 2007 and October 2011, and the relevant data was collected from the records of the Department of Obstetrics & Gynecology and Medical Records Department (MRD), Government Medical Collage and the associated Maharani Hospital, Jagdalpur (Bastar), Chhattisgarh, All 120 Tribal patient (n=120) have been included in this study and 12 (n=12) with a non-tribal background have been excluded.

**2.8. Data Analysis:** Results were analyzed by using percentage and ratio.

### 3. Results

3.1 Results of the present study showed that among 120 deceased tribal women highest maternal mortality 65 cases (54.166%) was noted in Primigravida (Nullipara), second highest maternal mortality 44 cases (38.333%) was noted in 2nd to 4th Gravida (Multipara), 10 cases (8.333%) were in 6th and 7th Grand Multigravida (Grand Multipara, and 01 case (0.833%) was in 8th Great Grand Multigravida. Total Maternal Mortality among Primigravida (Nullipara) to Greatgrand Multigravida (Great Grand Multipara) were noted between 18 to 42 Age Group. [Table:4]

3.2 In Tertiary level of care of Bastar in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 the total maternal deaths were 35, (n=35), 27 (n=27) and 26 (n=26) respectively. The Maternal Mortality Ratio was 1615.881, 1168.325 and 1000.769 Per 1, 00,000 live births in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 respectively. In the year 2008 - 2009, maternal mortality percentage among tribal women was 85.714% and was 100% in the year 2009 - 2010 and 2010 - 2011. [Table:5]

**Table:4 Maternal Mortality Among Tribal Women As Per Gravidity And Age At Tertiary Level Of Care In Bastar, Chattisgarh**

GRAVIDITY	CASES	TOTAL	%	TOTAL%
Primigravida	65	65	54.166	54.166
2nd Gravida	17		14.166	
3rd Gravida	17	44	14.166	
4th Gravida	10		8.333	36.666
Grand Multigravida	3+7=10	10	8.333	8.333
Great Garand Multigravida	1	1	0.833	0.833
Total	120	120	100	100

**Table: 5 MMR/ Mortality Percentage In Tribal Women At Tertiary Level Of Care In Bastar, Chattisgarh**

Year	2008-2009		2009-2010		2010-2011	
MMR Per 100000 Live Births	1615.881		1168.325		1000.769	
	Among Tribal women	Among Other Cast women	Among Tribal women	Among Other Cast women	Among Tribal women	Among Other Cast women
Maternal Mortality Percentage	85.714%	14.286%	100%	0%	100%	0%

3.3 Direct causes of maternal mortality were highest 46 cases (38.333%) due to hypertensive disorders of pregnancy. Out of these 46 cases maximum 30 cases (25%) were due to Eclampsia, second highest 11 cases (09.166%) were due to Pregnancy Induced Hypertension and 05 cases (04.166%) were due to Preeclampsia. Among direct causes second highest 18 cases (14.999%) maternal mortality were due to Rupture Uterus, among these 18 cases of Rupture Uterus, no case was with history of previous caesarean section, third highest 12 cases (09.999%) of Septicemia, 06 cases (04.999%) of obstructed labor, 06 (04.999%) of Hemorrhage, 02 cases (01.666%) of unsafe Abortion, 02 cases (01.666%) of Pulmonary Embolism and 01 case (0.833%) due to Aspiration. Indirect causes of maternal mortality maximum 15 cases (12.5%) of Malaria and 10 cases (08.333%) were due to Anemia and 02 (01.666%) cases were of Sick Cell Anemia. [Table:6]



**Table : 6. Direct And Indirect Casuses Of Maternal Mortality Among Tribal Women At Tertiary Level Of Care In Bastar, Chattisgarh**

CASUSES	CASES	PERCENTAGE OF MATERNAL DEATHS
Hypertensive Disorders of Pregnancy	46	38.333%
Rupture Uterus	18	14.999%
Septicemia	12	09.999%
Unsafe Abortion	02	01.666%
Obstructed Labour	06	04.999%
Haemorrhage	06	04.999%
<b>Other Direct Casuses</b>		
Pulmonary Embolism	02	01.666%
Aspiration	01	0.833%
<b>In Direct Casuses</b>		
Anemia	10	08.333%
Sickle Cell Anemia	02	01.666%
Malaria	15	12.500%

#### 4. Discussion

4.1. The age at which the girl was given in marriage depended on social values. Among the tribals, virginity was not very much valued. Many of the tribal societies were lax towards pre-marital sex relations which were considered as training in the art of love and sex life and often ended in marriage. Girls in tribal societies were given in marriage generally after puberty. According to 1971 census at the national level, the age at marriage for tribal women was higher (16.39) than that of the rural women in general (15.39). [10]

4.2. Child bearing imposes additional health needs and problems on women - physically, psychologically and socially. Maternal mortality was reported to be high among various tribal groups but no exact data could be collected. The chief causes of maternal mortality were found to be unhygienic and primitive practices for parturition. For example, it was observed that among Kutia Khondhs the delivery was conducted by the mother herself in a half squatting position holding a rope tied down from the roof of the hut. This helped her in applying pressure to deliver the child. In complicated labour, obviously it might lead to maternal as well as child mortality. Similar crude birth practices were found to exist in other tribal groups like Kharias, Gonds, Santals, Kutia Khondhs of Orissa, Santals, Jaunsaris, Kharias, etc.). Expectant mothers to a large extent are not inoculated against tetanus. From the inception of pregnancy to its termination, no specific nutritious diet is consumed by women. On the other hand, some pregnant tribal women, (that is, Dudh Kharias, Santals) reduced their food intake because of simple fear of recurrent vomiting and also to ensure that the baby may remain small and the delivery may be easier. The consumption of iron, calcium and vitamins during pregnancy is

poor. The habit of taking alcohol during pregnancy has been found to be usual in tribal women and almost all of them are observed to continue their regular activities including hard labour during advanced pregnancy. More than 90 per cent of deliveries are conducted at home attended by elderly ladies of the household. No specific precautions are observed at the time of conducting deliveries which resulted in an increased susceptibility to various infections. Services of paramedical staff are secured only in difficult labour cases. [10]

4.3. Maternal death from bacterial infection, hemorrhage, and obstructed labor has been nearly eradicated in the industrialized countries; preeclampsia, a syndrome of hypertension and proteinuria, and eclampsia (preeclampsia with grand mal convulsions) are now the most common causes of maternal mortality. Still, maternal death associated with hypertensive disorders of pregnancy remains far more common in the developing world than in the developed world. The physiology of toxemia syndromes is complex. Although the causes of preeclampsia and eclampsia have remained elusive, several factors potentially amenable to intervention, including nutrition, have been proposed. [11]

4.4. Pregnancy-induced hypertension and eclampsia are far more common in first pregnancies than in subsequent ones. The relation to age is complex. Most cases of hypertension and eclampsia appear in young women because most primiparae are young. Among primiparae, there is a U-shaped relation between incidence and age, with far higher rates in older women than in women between the ages of 20 and 30 years. Teenagers appear to have a minimally higher risk of hypertension and eclampsia than do women in their 20s. There is also an increase in risk with increasing age among multiparae. [11]

4.5. Although rates of eclampsia and preeclampsia are higher in blacks than in whites living in industrialized countries, the incidence of these conditions appears to vary little by social class within ethnic groups. In contrast, social class is clearly related to perinatal outcomes of preeclamptic pregnancies. The absence of a relation between incidence and social class is inconsistent with a nutritional or dietary cause of preeclampsia and eclampsia. [11]

4.6. The search for nutritional factors associated with preeclampsia is hindered by the lack of data. The review by Green covers this material through the 1980s. Many nutritional factors have been suggested as possible causes of preeclampsia and eclampsia, and there have been many attempts at prevention using dietary or nutritional interventions. No dietary interventions have had much, if any, effect. Many nutrients, including thiamine and sodium chloride, were either not proven to be consistently related or were not studied thoroughly enough to be nominated for programmatic testing and application. Calcium, zinc, and magnesium are 3 micronutrients that seemed very promising, although their roles in preventing preeclampsia and eclampsia are now uncertain. [11]

4.7 From NHFS II data it is known that: In some tribal areas, 60% of girls marrying below 18 years.  
 43 % of pregnant tribal women did not receive any ANC.  
 39% did not receive any tetanus toxoid.  
 Only 49% were given iron and folic acid tablets.  
 81% of pregnant tribal women delivered at home.  
 RCH II Document 2, The Principles and Evidence Base for State RCH II Programme Implementation Plans (PIPs)  
 44% of all deliveries were attended by TBAs and 32% by other untrained persons.  
 Only 14% of tribal women had any postnatal care.  
 The unmet need for family planning is 15%.  
 42% of currently married women had any reproductive health problem.  
 Clearly, tribal people especially women and children require special attention if their health status is to be improved.  
 There is low utilisation of health services in tribal areas because:  
 Sparsely distributed tribal population in difficult forest and hilly regions.  
 Poorly located sub-centres, PHCs and CHCs.  
 Service providers not in post.  
 Lack of suitable transport facilities for quick referral of emergency cases.  
 Lack of appropriate HRD policies to encourage/motivate the service

providers to work in tribal areas  
 Inadequate mobilization of NGOs.  
 Lack of integration with other health and sector programmes.  
 BCC activities may be inappropriate.  
 Services are not client friendly.  
 There are cultural barriers to access.  
 Non involvement of local traditional faith healers.  
 Weak monitoring and supervision system. [12]

4.8 A majority were cases of unscarred uterus presenting with rupture; the most common cause of rupture in all cases was inappropriate injections of Oxytocin, followed by obstructed labour. All were anaemic and most of them were in shock. Conclusion: The leading cause of ruptured uterus was found to be mismanagement by traditional birth attendants. We can reduce maternal mortality due to rupture uterus by giving proper training to traditional birth attendants and by mass education through electronic media.[13]

4.9 Anaemia in pregnancy is present in very high percentage of pregnant women in India. Exact data is not available about the prevalence of nutritional anaemia. However according to WHO, the prevalence of Anaemia in pregnancy in south East Asia is around 56%. In India incidence of anaemia pregnancy has been noted as high as 40-80%. Risk factors: Sociodemographic factors (age, level of formal education, marital status, areas and cities of residence) Obstetrical factors (gravidity, parity, history of previous preterm or Small-for gestational-age deliveries, plurality of pregnancy multiple Or singleton) Behavioral factors (smoking or tobacco usage, alcohol usage, utilization of prenatal care services) Medical conditions (diabetes, renal or cardio-respiratory diseases, chronic hypertension AIP anemia in pregnancy. [14]

4.10 Evidence indicates that increasing hookworm infection intensity is associated with lower haemoglobin levels in pregnant women in poor countries. [15]

### 5. Conclusion

A majority of maternal mortality 65 cases (54.166%) was noted in Primigravida (Nullipara, second highest maternal mortality 44 cases (38.333%) was noted in 2nd to 4th Gravida (Multipara), 10 cases (8.333%) were in 6th and 7th Grand Multigravida (Grand Multipara), and 1 case (0.833%) was in 8th Great Grand Multigravida.

Among direct causes of maternal mortality were highest 46 cases (38.333%) due to hypertensive disorders of pregnancy. Out of these 46 cases maximum 30 cases (25%) were due to Eclampsia, second highest 11 cases (09.166%) were due to Pregnancy Induced Hypertension and 05 cases (04.166%) were due to Preeclampsia. Among direct causes second highest 18 cases (14.999%) maternal mortality were due to Rupture Uterus, among these 18 cases of Rupture Uterus no case was with history of previous caesarean section, third highest 12 cases (09.999%) of Septicemia, 06 cases (04.999%) of obstructed labor, 06 (04.999%) of Hemorrhage, 02 cases (01.666%) of unsafe

Abortion, 02 cases (01.666%) of Pulmonary Embolism and 01 case (0.833%) due to Aspiration. Indirect causes of maternal mortality maximum 15 cases (12.5%) of Malaria and 12 cases (09.999%) were due to Anemia.

In Tertiary level of care of Bastar in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 the total maternal deaths were 35, (n=35), 27 (n=27) and 26 (n=26) respectively. The Maternal Mortality Ratio was 1615.881, 1168.325 and 1000.769 Per 1, 00,000 live births in the year 2008 - 2009, 2009 - 2010 and 2010 - 2011 respectively. In the year 2008 - 2009, maternal mortality percentage among tribal women was 85.714% and was 100% in the year 2009 - 2010 and 2010 - 2011.

From a Maternal Mortality Rate (MMR) of 437 per 100,000 live births in 1990-91, India is required to reduce MMR to 109 per 100,000 live births by 2015. Between 1990 and 2006, there has been some improvement in the Maternal Mortality Rate (MMR) which has declined to 254 per 100,000 live births as compared to 327 in 1990. However despite this progress, India is expected to fall short of the 2015 target by 26 points. Safe motherhood depends on the delivery by trained personnel, particularly through institutional facilities. However delivery in institutional facilities has risen slowly from 26% in 1992-93 to 47% in 2007-08. Consequently, deliveries by skilled personnel have increased at the same pace, from 33% to 52% in the same period. By 2015 India is expected to be able to ensure only 62% of births occur in institutional facilities with trained personnel. Thus universal coverage remains to be achieved. [16]

The problems of Tribal women in India are due to deep rooted community traditions, custom, culture, beliefs and taboos. They are imposed on them by the family, society and community at different levels. It can be said that the socio-economic status of the

tribal in Bastar is far below the national standard. The low socio-economic condition is associated with poverty, lack of awareness about personal hygiene, health care & nutrition and livelihood skills to increase productivity using local resources.[17] All these put their development and multidimensional progress and above all, health at risk.

It has been argued by the authors that the improving the "Standard of living" will bring improvement in the health status of Tribal women and Tribal population as a whole.

The interaction between social factors and health issues is complex and sometimes unpredictable. For example, in Western Europe during the nineteenth century, increase in income and wealth, resulting from the Industrial Revolution, was accompanied by decrease in both birth and death rates. Many authors have in fact argued that increased income was the main cause of these changes. The situation in the developing world has varied and differs from the so-called "demographic transition" in Europe. In many parts of Asia, and to a certain extent in Latin America, death rates, particularly among infants, have declined steadily in the past decade and birth rates have declined rather dramatically. Yet the increase in income has been very modest. In Africa, on the whole, death rates, particularly of infants, remain high, birth rates are not declining, the benefits of increased income are not yet apparent, and concern over population growth is just emerging. The relationship between wealth, birth, and death rates observed in the development of West European Countries is thus obviously not universal. [18]

The involvement of tribal community in health care delivery system is essential to improve the health status of tribal women of Bastar. A "holistic" approach is needed to organize the health care delivery system in the way it caters the essentials for women of all tribal groups, with emphasis on improvement of the health of tribal women. For example: Planning of health programme according to felt needs of the tribal women groups; IEC programme in their local dialect by the tribal women in connection with nutrition for all category of tribal women with emphasis on pregnant women; Awareness generation for conduction of deliveries by trained staff; discard the old primitive method of parturition by untrained traditional birth attendants, avoid consumption of alcohol, Abstain from use of smokeless tobacco and smoking tobacco, strenuous physical exertion and taking proper rest during pregnancy. Training of health care staff of peripheral health facilities regarding 100% registration of pregnant tribal women and regular Anti Natal Check up, giving Prophylactic/Therapeutic treatment of Anemia during pregnancy; immunization against tetanus, detection of dangerous signs and timely referral to First Referral Units or Tertiary care health facilities; detection of STD's and identification of Genetic disorders i.e. sickle cell and Glucose-6-Phosphate Dehydrogenase Enzyme Deficiency (G-6-PD) and to provide postnatal health services to all tribal mothers. The above has been shared. [9]

One of 20 case studies in Millions Saved: Proven Successes in Public Health is devoted to the reduction of maternal mortality in Sri Lanka. Since 1950, Sri Lanka has reduced maternal deaths "from between 500 and 600 maternal deaths per 100,000 live births in 1950 to 60 per 100,000." Levine (2007) attributes this decline to four major factors:

1. Broad, free access to a strong health system.
  2. The professionalization and broad use of midwives.
  3. Gathering of health information and use of this information for policy making.
  4. Targeted quality improvements to vulnerable groups.
- Sri Lanka accomplished its large reduction in maternal mortality while spending a smaller percentage of GDP on health than most countries at its income level. Maternal mortality decreased more rapidly than female death rates in general. Also, death rates from specific causes of maternal mortality, such as hypertensive disease and sepsis, fell. This suggests that maternal mortality fell due to factors other than general improvements in health.[19]

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