

## **Analysis of Causes and Lags in a Tertiary Care Hospital That Contribute in Causation of Still Birth**

**Dr. Sujata Singh, Dr. Lucy Das, Dr. Barsha Sahu**

- 1. Associate Professor, Department of Obstetrics and Gynaecology, S.C. B Medical College, Cuttack, Odisha, India**
- 2. Professor, Department of Obstetrics and Gynaecology, S.C. B Medical College, Cuttack, Odisha, India**
- 3. Senior Resident, Department of Obstetrics and Gynaecology, S.C. B Medical College, Cuttack, Odisha, India**

**Corresponding author: Dr. Barsha Sahu**

**Email: barshasahu4890@gmail.com**

### **ABSTRACT**

**Background:** still births was not regarded as one of the Millenium Development Goals and is still missing in the sustainable development goals. The World Health Organization(WHO) has reported 2.6 million stillbirths in the year 2015, globally. India continues to be at the top of this list recording a massive 592100 stillbirths in 2015. Strategies require analysis of etiology and risk factors as a first step.

**Aim & Objective:** The aim of the present study was designed to analyse and find out the causes of stillbirth in a tertiary care hospital.

**Methodology:** The present observational study “ANALYSIS OF STILL BIRTH AT SCBMCH CUTTACK” was undertaken O&G DEPARTMENT S.C.B. Medical college Hospital, cuttack in the period January 2019 to December 2019. Total number of deliveries during this period recorded.

**Results:** In the present study, Highest number of still birth (37.5%) occur in the age group of 21-24 years followed by 30% in 25-29 years 16.5% in 30-34 years, 12% were more than 35 years and 4% cases of still birth were in the age group less than 20 years. Majority of cases belonged to rural areas (84.3%) and only 15.7% were from urban areas. Maximum patients were multiparous (44.5%) and 42.5% were nulliparous and grand multipara (13%). Majority of stillborn 69% were delivered spontaneously vaginally, 4.5% cases assisted vaginally and

26.5% had undergone caesarean section. Maximum still births were singleton pregnancy (92.6%) in comparison to 7.4% in multiple pregnancy. 75.7% had cephalic presentation at the time of delivery, followed by breech 22.1% 2.2% had others. The present study found that risk of still births is having DM 2.2%, HTN 13.1% Thyroid 5.4%, cardiac and renal disease 1.9%, 1% respectively. Hemoglobinopathies 0.6%, jaundice 2.1%, SLEB 0.2%, Hepatitis 1.2%, anemia 5.4%, infection 1.8% with no associated disease 64.9%.

**Conclusion:** Finally we concluded that, Major factors associated with stillbirths were hypertension, antepartum hemorrhage, IUGR in our study although these are not preventable but the related complications, that may lead to still births, can be averted by strengthening the antenatal services, identifying the high risk cases, early referral to tertiary center and timely delivery.

**Keywords:** Still birth, Antepartum, hypertension, multiparous, Caesaren, hemorrhage

## INTRODUCTION

Stillbirth has a traumatic effect on the life of a woman and her family. It has been a worry that reduction of stillbirths was not regarded as one of the Millennium Development Goals and is still missing in the sustainable development goals. The World Health Organization (WHO) has reported 2.6 million stillbirths in the year 2015, globally.<sup>1,2</sup> India continues to be at the top of this list recording a massive 592100 stillbirths in 2015.<sup>3</sup> Strategies require analysis of etiology and risk factors as a first step. The major causes are child birth complications, post term pregnancy, maternal infections, maternal medical disorders, fetal growth restrictions, fetal congenital abnormality<sup>1</sup>. In the year 2017, government of India issued a National Health Policy with a goal to reduce stillbirth rate to a 'single digit' number by year 2025.<sup>4</sup> The Stillbirth Collaborative Research Network suggested post mortem examination; placental histology and fetal karyotype as a strong recommendation for evaluation of still births.<sup>5</sup>

## AIMS & OBJECTIVES

To analyse and find out the causes of stillbirth in a tertiary care hospital

To analyse number and causes of stillbirths at O&G DEPARTMENT S.C.B. Medical college Hospital, Cuttack during study period January 2019- December 2019.

To ascertain the role of various contributory factors in still births

To find out avoidable factors and facility based lags in causation of still births

To suggest remedial measures to reduce the still births.

## **MATERIALS AND METHODS**

The present observational study ‘‘ANALYSIS OF STILL BIRTH AT SCBMCH CUTTACK’’ was undertaken O&G DEPARTMENT S.C.B. Medical college Hospital, cuttack in the period January 2019 to December 2019. Total number of deliveries during this period recorded.

## **INCLUSION CRITERIA**

All the subjects regardless of their booking status who delivered stillborn in this hospital

Still born at >28 weeks (if gestational age was known) or weight 1000 gm (if gestational age was unknown)

Singleton and multiple pregnancies were included

## **EXCLUSION CRITERIA**

The babies born before 28 weeks and birth weight less than 1000 gms and no signs of life were excluded.

Institutional Ethical Committee approval was obtained prior to the study.

Gestational age was estimated by first day of last menstrual period when reliable and or/early USG imaging before 20 weeks of gestation. Detailed history about various obstetric risks factors in current pregnancy. Apart from routine investigation of pregnancy specific investigations related to HDP, Diabetes, Macrosomia, chorioamnionitis, IUFD with fever septic screen, coagulogram and platelet count to rule out coagulopathy. As no pathological autopsies are being done at our set up, following delivery stillborn placenta were examined thoroughly. Collected data were analysed to find out still birth rates as number of still births per 1000 births per sum of live birth and still births.

## **OBSERVATION**

During the study period there were 15967 births and 1000 still birth giving the hospital based incidence of still birth rate as 62.59 per 1000 live births. Highest number of still birth (37.5%)

occur in the age group of 21-24 years followed by 30% in 25-29 years 16.5% in 30-34 years, 12% were more than 35 years and 4% cases of still birth were in the age group less than 20 years. Maximum patients were preterm (56.5%) of this 27.5% were early preterm i.e 28 weeks to 33.6 weeks and 29% were late preterm i.e 34 weeks-36.6 weeks. 43.5% cases were term i.e more than 37 weeks.

Majority of cases belonged to rural areas (84.3%) and only 15.7% were from urban areas. Maximum patients were multiparous (44.5%) and 42.5% were nulliparous and grand multipara (13%). Women from low socioeconomic background contribute to a major (81.5%) share of still birth, 16.5% belong to middle class and only 2% were from high socioeconomic status. Most of the women were educated upto middle to higher secondary school (41.2%), 39.6% having primary education and graduate and university level 15.1% and only 4.1% cases of women were illiterate.

Majority of women did not have antenatal visit to health care facility or have one ANC. Maximum still births are among those who had undergone 0-1 ANC (60.5%) in comparison to those who had undergone 2-3 ANC (18.5%) and low among women with more than 4 ANC (21%). Risk of recurrence of stillborn is 11.8% in those who had history of previous stillborn. 39.5% cases occurred in those who had history of abortion either spontaneous or induced and in 6.2% had ectopic and maximum in those who had no such history i.e 42.5%.

Majority of stillborn 69% were delivered spontaneously vaginally, 4.5% cases assisted vaginally and 26.5% had undergone caesarean section. Maximum still births were singleton pregnancy (92.6%) in comparison to 7.4% in multiple pregnancy. 75.7% had cephalic presentation at the time of delivery, followed by breech 22.1% 2.2% had others.

61.7% baby had birth weight more than 2.5kg where as 28.7% had weight between 1.5 to 2.499kg and 9.6% cases had weight less than 1.5kg. 62.2% live birth were fresh in comparison to 37.8% were macerated. Congenital anomalies were found in 5.6% stillborn babies. Majority of foetuses 50.1% were male, 49.3% were female, and in 0.6% cases sex could not be determined. Clear liquor was found in 34.4% cases of still born, meconium stained in 31.8% where as blood stained in 33.8% cases. 24.8% cases had live foetuses at the time of admission and 75.2% cases women came with an intrauterine dead fetus. 12.3% had delivered within 1 hour of admission 38.4% took 1-12 hours and 49.3% cases took more than 12 hours for delivery. Self referral is 2.1%, 97.9% cases are referred from near by hospital.

**TABLE -1MATERAL DISEASE ASSOCIATED WITH STILL BIRTH**

DISEASE	NO. OF CASES	PERCENTAGE
DM	22	2.2
HYPERTENSION	131	13.1
THYROID	54	5.4
CARDIAC	19	1.9
RENAL	10	1.0
HEMOGLOBINOPATHIES	6	0.6
JUNDICE	21	2.1
SLE	2	0.2
HIV	2	0.2
HEPATITIS	12	1.2
ANEMIA	54	5.4
INFECTIONS	18	1.8
NOT ASSOCIATED	649	64.9
TOTAL	1000	100

This table shows that in women having various medical disease the risk of still births is having DM 2.2%,HTN 13.1% Thyroid 5.4%,cardiac and renal disease 1.9%,1% respectively.Hemoglobinopathies 0.6%,jaundice 2.1%,SLEB0.2%,Hepatitis 1.2%,anemia 5.4% ,infection 1.8% with no associated disease 64.9%.

**TABLE -2 PROBABLE CAUSES OF STILL BIRTH**

CAUSE	NO OF CASES	PERCENTAGE
PROM	34	3.4
APH	235	23.5
OBSTRUCTED LABOUR	65	6.5
HDP	253	25.3
CORD PROLAPSE	45	4.5
CORD AROUND NECK	47	4.7
IUGR	57	5.7
CHORIOAMNIONITIS	7	0.7

JUNDICE	21	2.1
RUPTURED UTERUS	28	2.8
ANOMALIES	56	5.6
UNEXPLAINED	152	15.2%
TOTAL	1000	100

Various causes of still birth includes HDP25.3%,APH 23.5%,unexplained 15.2%,obstructed labour6.5%,IUGR 5.7%,congenital anomalies 5.6%.

**TABLE-3 PROBABLE CAUSES OF INTRAMURAL STILL BIRTH**

CAUSE	28-33WK6DAYS	34WK- 36WK6DAYS	>/37WEEK
ANOMALIES	17	11	5
APH	12	3	8
HDP	24	12	20
OLIGOHYDRAMNIOUS	16	26	14
BREECH	8	2	
OBSTRUCTED LABOUR			24
FETAL DISTRESS			7
CORD AROUND NECK			5
MATERNAL JUNDICE	4		2
SEVERE ANEMIA		2	
UNEXPLAINED			26

This table illustrates causes of the intramural still birth i.e248.Out of which maximum are due to HDP and Oligohydramnious 22.58% congrnital anomalies 13.3%,APH 9.27%,Obstructed labour 9.67%,jaundice 2.41%,breech 4.03%.

## DISCUSSION

This still birth rate found in our study is 62.59 per 100 birth.Studies from India reveal no particular pattern with significant variations depending on geographic regions and socioeconomic conditions.This is due to marked regional variations in health care indices between regions.

The average still birth rate in India as a whole is 39/1000 births<sup>6</sup> with the reported still birth rate varying from 23 to 140.69/1000 birth.<sup>7</sup> Underreporting of still birth is common in our country<sup>8</sup>. as lower limit of gestational age adopted in developed countries is 20 wks but in India it is 28 wks. The still birth rate is quite high in our institution which is well above the national and state figures as cases are referred only when they develop the complications which are too late. The study by Bharati S, et al<sup>9</sup> and Sailaja D K et al shows similar results.

In the present study minimum maternal age and maximum maternal ages reported was 18, 40 years respectively as maximum number of patients do deliver in this age group. 67.5% of still birth occurred in age group of 21-30 years corroborating to results of Sailaja D K et al<sup>10</sup> 69.9%, 82.4% in Jenita Baruah et al<sup>11</sup>.

Contrary to more number of preterm stillbirths observed in rural hospitals of Maharashtra (78%)<sup>12</sup>, Uttarakhand 60.95%<sup>13</sup>, Karnataka 56.30%<sup>14</sup>, West Bengal 47.26%<sup>9</sup>, in present study 56.5% were preterm and 43.5% were term corroborating to results of Jenita Baruah et al<sup>11</sup>. Severe preeclampsia, Placental abruption, Uterine rupture, Cholestasis, fetal distress, fetal growth restriction are common causes of preterm birth. In present study 42.5% of stillborn are primigravida corresponding to results of Jenita Baruah et al<sup>11</sup>.

81.5% women having still births belong to low socioeconomic class 16.5% from middle class and 2% from higher socioeconomic status corresponding to study by Chitra Kumara et al (84.2%)<sup>15</sup>, Bhattacharya et al (13.93%)<sup>9</sup> belongs to low socioeconomic class. This highlights the inverse relationship of still births to socioeconomic status.

Majority of subjects enrolled in the study were from rural areas (84.3%), similar to study by Shivani Kothiya et al (56.7%)<sup>16</sup>, Moushmi B Parpilleswar (67.9%)<sup>17</sup> and Aditi Jindal et al<sup>18</sup> belongs to rural services. This may be due to poor access to quality health services.

Out of 1000 women having still birth 60.5% did not attend single ANC corresponding to results of Shivani Kothiya et al (81.6%)<sup>16</sup>. High percentage of low ANC could be due to poverty, ignorance, illiteracy poor support from family. In our study 42.5% cases have no prior history of any form of pregnancy loss, 11.8% had history of still birth, 39.5% had history of abortion which is similar to study conducted by Aditi Jindal et al (8.5%)<sup>18</sup>, Moushmi B Parpilleswar (11.2%)<sup>17</sup>, Bharati Sharma et al<sup>19</sup>

In the present study 69% still born were delivered vaginally, 4.5% instrumental vaginal, 26.5% were by caesarean section corroborating to study by Jenita Baruah et al<sup>11</sup> (83.3%

vaginal),Bhattacharya et al (83.8% vaginal)<sup>9</sup>Majority of still born 92.6% occur in singleton pregnancy,corresponding to similar results by ,Moushmi B Parpilleswar(95.2%.2%)<sup>17</sup>.Bharati sharma et al <sup>19</sup>(86.3%)

75.7% had cephalic presentation ,22.1% had breech.Transverse presentation were more common in term deliveries compared to preterm and post term corroborating to Shivani Kothiyal et al <sup>16</sup>,Subhada Sunil Avachat et al<sup>20</sup>.43.6% cases had birth weight between 1.5-2.499kg corresponding to Shivani Kothiyal et al <sup>16</sup>,Subhada Sunil Avachat et al<sup>20</sup>. ,Bhattachaya S et al<sup>9</sup>.Most stillborn were fresh(62.2%) indicating most fetal death was peripartum.This is similar to study by ,Bhattachaya S et al<sup>9</sup>(59.72%),not corresponding to study done by Jitendra P Ghumare et al <sup>21</sup>(35.2%)

In our study 4.8%cases were due to congenital anomalies.corroborating to study by Shivani Kothiyal et al <sup>16</sup>, Moushmi B Parpilleswar<sup>17</sup>, Jenita Baruah et al <sup>11</sup>.In the present study still born male were 50.1%.This is due to higher expression of genes involved in placental development ,maintainance of pregnancy,maternal immune tolerance with female foetuses.Similar results were found in Aditi Jindal et al(63.8%)<sup>18</sup>, Shivani Kothiyal et al <sup>16</sup>(60.2%), Moushmi B Parpilleswar<sup>17</sup>(56.9%)

**TABLE 4-**

**COMPARISION OF PROBABLE CAUSES (PERCENTAGES)OF STILL BIRTH IN DIFFERENT STUDIES**

STUDIES	A P H	H D P	O L	ANO MALI ES	COR D PRO LAP SE	CO RD AR OU ND NE CK	IU G R	JUN DIC E	INFE CTIO N	RUP TUR ED UTE RUS	PR O M	UNEXP LAINE D
Jitendra p et al	8.37	26.4		7.56	0.4		9.10		2.45			8.79



<b>Shiva ni kothiy al et al</b>	<b>22 .3 6</b>	<b>19 .4 5</b>		<b>9.4</b>	<b>5.2</b>		<b>8. 4</b>			<b>1.1</b>	<b>2.7 3</b>	<b>18.8</b>
<b>Bhatt achar ya et al</b>	<b>2. 68</b>	<b>10 .6 6</b>	<b>6. 3 6</b>	<b>1.27</b>			<b>4. 02</b>		<b>1.09</b>	<b>2.31</b>		<b>23.14</b>
<b>Mous hmi et al</b>	<b>24 .8 6</b>	<b>25 .9 3</b>	<b>9. 0 7</b>	<b>5.88</b>	<b>1.87</b>	<b>1.33</b>	<b>9. 09</b>	<b>1.33</b>	<b>6.1</b>	<b>1.6</b>		<b>5.6</b>
<b>Jenita et al</b>	<b>13 .1</b>	<b>26 .2</b>	<b>1. 0 6</b>	<b>3.5</b>	<b>1.8</b>			<b>0.87</b>		<b>1.8</b>	<b>2.6</b>	<b>25.4</b>
<b>Aditi et al</b>	<b>6. 3</b>	<b>26 .6</b>	<b>4. 3 4</b>	<b>12.7</b>	<b>3.1</b>		<b>8. 5</b>	<b>7.4</b>	<b>3.1</b>	<b>3.1</b>		<b>11.7</b>
<b>Prese nt study</b>	<b>23 .5</b>	<b>25 .5</b>	<b>6. 5</b>	<b>5.6</b>	<b>4.5</b>	<b>4.7</b>	<b>5. 7</b>	<b>2.1</b>	<b>0.7</b>	<b>2.8</b>	<b>3.4</b>	<b>15.2B</b>

Behind the preventable medical causes the main cause of still birth is sub optimal antenatal and intrapartum care. Causes of this suboptimal care is divided at primary health care center and tertiary health care level. Primary health care providers contributed to suboptimal care by failure to recognise high risk cases, leading to late referral. Areas of suboptimal care by obstetricians included failure to manage high risk cases, delay in labour management, poor counselling, unavailability of equipment.

## CONCLUSION

Major factors associated with stillbirths were hypertension, antepartum hemorrhage, IUGR in our study although these are not preventable but the related complications, that may lead to still births, can be averted by strengthening the antenatal services, identifying the high risk

cases ,early referral to tertiary center and timely delivery.Sensitisation and training is essential for managing hypertension along with skill like proteinurea measurement and monitoring at grass root level,as maximum are referrals from periphery.Screening methods and predictors of preeclampsia, studies for detailed placental pathological etiology are the areas for research.Early detection of fetal hypoxia and timely caesarean delivery in cases where fetal survival exutero is possible are important steps of management.

Indian Newborn Action Plan 2014 aims at reducing the stillbirth rate of india to less than 10 from present 22/1000live birth by 2030 and has launched various programmes to address maternal and child health issues.<sup>22</sup>At the health care facility all the still birth must be scrutinised by institutional audit committee of still born to find out the cause and delays based on guidelines given by WHO so that the delays should be traced at each level and rectification measures could be taken accordingly.<sup>23</sup>

#### **Acknowledgment**

The author is thankful to Department of OBG for providing all the facilities to carry out this work

#### **Conflict of Interest: None**

#### **Financial Support: Nil**

#### **BIBLIOGRAPHY-**

1. World Health Organisation Maternal newborn,child and adolescent health2016
2. Blencowe H ,Cousens S,Jassir FB,et al.National ,regional and world wide estimate of stillbirth rates in 2015, with trends from 2000 a systemic analysis.The Lancet Global Health 2016;4(2);e98-e108.
3. Lawn JE,Blencowe H ,Waiswa P ,et al Stillbirth;rates,risk factors and acceleration towards 2030.The Lancet.2016;387(10018);587-603.
4. World Health Organisation WHO Health topics Risk factor 2014
5. Aminu M,Unkels R,Mdegela M ,et al.causes of and factors associated with stillbirth in low and middle income countries a systemic literature review.BJOG; An international journal of obstetrics & Gynecology 2014;121(suppl4);141-153
6. Neonatal and perinatal mortality ;country,regional and global estimates .WHO 2006.pp31.

7. Korde –Nayak VN, Gaikward PR causes of stillborn j.obstetGynecolindia.july/august2008;58(4);314-318
8. Lawn JE, Shibuya K, Stein C. No cry at birth: global estimates of intrapartum stillbirth and intrapartum related neonatal deaths 2005;83;409-417
9. Bhattacharya S, Mukhopadhyay G, Mistry PK et al. Stillbirth in a tertiary care referral hospital north Bengal 2010;9(4);4
10. Devi KS, Aziz N, Gala A et al. Incidence of still birth and risk factors at a tertiary perinatal center in southern India 2018;1(1);14-22
11. Baruah J, Kusre G, Hazarika S. Profile of stillbirths in a referral hospital from northeast India: a record based study 2017; 6(21);1683-1686, DOI:10.14260/jemds/2017/370
12. Vidyadhar BB, Rajiv CM, Hrishikesh PA. Review of sociodemographic factors and obstetrics cause of still birth in a tertiary care center 2012;2(3);475-8
13. Choudhury A, Gupta V. Epidemiology of intrauterine fetal death 2014;13(3);3-6
14. Prasanna N, Mahadevappa K, Antaratani RC et al. Causes of death and associated conditions of stillborn 2015;4(6)
15. Chitra Kumari, Kadam NN, Kshirsagar A et al. Intrauterine fetal death: a prospective study 2001;51;94-97
16. Kothiyal S et al. Int J Reprod Contracept Obstet Gynecol 2018 March 7(3);911-916
17. Moushmi et al. Epidemiology of stillbirth: cross sectional study located in central India (IJOG) vol 4(2017) No 1 pp.518-533
18. Jindal A et al. Int J Reprod Contracept Obstet Gynecol 2018 March 7(3) 1029-1034
19. Sharma B. Evaluating intramural stillbirth. Indian Journal of Community and Family Medicine vol 3 issue 2 July-December 2017
20. Avachat SS, Phalke DB, Phalke V. Risk factors associated with still born in rural areas 2015;3(1);56-9
21. Jitendra P. Epidemiology of still birth. Ghumare et al. A study in a tertiary care center. Indian Journal of Obstetrics and Gynecology Research. 2016-3(4);326-329
22. Indian newborn action plan. Ministry of Health and Family Welfare. September 2014
23. Making every body count: audit and review of stillbirth, and neonatal death. WHO 2016 audit guide.