

# Epidemiology of Intrauterine Fetal Deaths: A Retrospective Observational Study.

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## ABSTRACT

**Background:** Intrauterine fetal death is a very tragic event for the parents and a great challenge to the obstetrician. It contributes to perinatal mortality and detail analysis of it may help to reduce the still birth rate in India. The aims and objectives of the study is to find out the prevalence, socio-demography, maternal risk factor and fetal characteristics of intrauterine fetal demise cases. **Methods:** This is a retrospective observational study carried out in Institute of Medical Science and SUM Hospital Bhubaneswar from October 2014 to April 2015. Ante partum events leading to fetal demise were recorded, socio-demographic and clinical characters were noted and analysed. **Results:** There were 2899 deliveries and 90 fetal deaths in this period. The incidence of IUFD was 31.04/1000 live births in our study. **Conclusion:** Pregnancy induced hypertension, severe anaemia; abruption of placenta, congenital malformation of the fetus is the main cause of fetal demise. All the main causes of fetal death observed here is preventable. Proper preconceptional counselling, antenatal care is mandatory to reduce the still birth rate by 2030.

**Keywords:** Intrauterine fetal death, perinatal mortality.

## INTRODUCTION

Intrauterine fetal demise is very much distressing to a mother and a great challenge to the obstetrician. According to WHO, ICD-9, intrauterine fetal death (IUFD) is defined as, "Death prior to the complete expulsion or extraction of a product of human conception from its mother, irrespective of duration of pregnancy and which is not an induced termination of pregnancy".<sup>[1]</sup> Confidential enquiry into maternal and child health (CEMACH) defined still birth as "a baby delivered with no signs of life, known to have died after 24 completed weeks of pregnancy". IUFD refers to babies with no signs of life in utero.<sup>[2]</sup>

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According to society of obstetricians and gynaecologists Canada(SOGC) clinical practice guideline still birth is defined as a death that occurs prior to complete expulsion or extraction from the mother of a fetus of more than 20 weeks gestation or weighing more than 500 gm.<sup>[3]</sup> Because of the above difficulties regarding the gestational age of the fetus and weight, WHO has recommended a

boundary of 1000gm or more, which is more frequently associated with gestational period of 28 weeks for international comparison.<sup>[1]</sup> Data from the National Vital Statistics report 2006 shows US national average stillbirth rate of 6.05 per 1000 births.<sup>[4]</sup> India had the highest number of stillbirths and neonatal deaths in the world in 2015, says a study in the Lancet.<sup>[5]</sup> The Every Newborn Action Plan, drawn up by partners including the World Health Organization and Unicef, has a target of reducing the global stillbirth rate to 12 per 1000 births or lower by 2030.<sup>[6]</sup>

India is expected to reach a stillbirth rate of 19 per 1000 live births by 2030.<sup>[7]</sup> In India after the launching of National Rural Health Mission (NRHM) and Janani Surakshya Yojana (JSY) the number of institutional deliveries has increased and next step required is the quality of health services which requires critical information regarding maternal and perinatal mortality rate. The prevalence of intrauterine death indirectly gives a picture of the antenatal care given to the pregnant ladies in society. Intrauterine fetal death contributes to a large portion of the perinatal mortality, but this is a mostly overlooked area and is not well addressed. Proper evaluation in these cases may help us to find a solution to reduce this tragic event.

Aims and objectives-

1. To find out the prevalence and socio-demography of intrauterine fetal demise in this part of the country

- To determine the maternal risk factor that leads to fetal demise
- To find out the neonatal characteristic in intrauterine fetal demise cases

## MATERIALS AND METHODS

This is a retrospective observational study carried out in Institute of Medical Science and SUM Hospital Bhubaneswar. The tenure of the study is from October 2014 to April 2016. Total 90 cases of intrauterine fetal demise were studied in this period. Cases of fetal death after 28 weeks of gestation were included. Multiple pregnancies with a dead fetus, still birth following feticide and delivery of the fetus papyraceous were excluded from the study. Death of the fetus during delivery was also excluded from the study. IUFD was diagnosed by absence of fetal movement and fetal heart sound and was confirmed by ultrasonography. All the mothers were investigated as per the hospital protocol. Mothers were screened for diabetes using HbA1c and fasting blood glucose. VDRL, TSH, FT4, CBC with platelet count and tests for anti-phospholipid syndrome, urine toxicology screening, were done for all the mothers with IUFD. All the mothers who were undergoing antenatal check-up in this hospital were considered to be booked cases. Data were retrieved and detail past history regarding abortion, congenital malformation, consanguinity, hereditary conditions etc. were analysed. Fetal autopsy was advised, but all the patients had declined for the same.

## RESULTS

There were 2899 deliveries and 90 fetal deaths in this period. The incidence of IUFD was 31.04/1000 live births in our study. There were 49 males (54.4 %) and 41 (45.5 %) female fetuses in our study. 45.5% of cases are primigravida and were within the age group of less than 30 years in our study. Most of the IUFD cases (53, 58.8%) were diagnosed before the term that is 37 completed weeks. In our study majority of cases (84.4%) were referral cases from the periphery where there is a dearth of obstetrician for an adequate antenatal check up. In the past obstetric history, 12.2% cases had a history of previous abortion while 4.4 % cases had history of IUFD. Pregnancy induced hypertension and eclampsia (25.5%) tops the list as a maternal risk factor associated with IUFD. Next most common risk factor is severe anaemia (12.2%). In the fetal causes congenital malformation is the most common cause causing fetal death.

## DISCUSSION

Intrauterine fetal demise is usually an unaddressed area in the society. We are not much focused

towards the IUFD. More than 7.6 million of perinatal deaths per year occur throughout the world out of which 57% are due to the fetal death.<sup>[5]</sup> In the developing countries the system to monitor IUFD is weak to get an exact picture of IUFD.

**Table 1: Demography.**

Variables	Total number of cases	Percentage (%)
<b>Age in years</b>		
<30	58	64.4
30-35	21	23.3
>35	11	12.2
<b>Parity</b>		
Primigravida	41	45.5
Second gravida	29	32.2
Multigravida	20	22.2
<b>Gestational Age</b>		
Preterm	53	58.8
Term	29	32.2
Post term	8	8.8
<b>Past obstetric history</b>		
Abortion	11	12.2
IUFD	4	4.4
<b>Gender of fetus</b>		
Male	49	54.4
Female	41	45.5
<b>Antenatal check up</b>		
Booked	14	15.5
Referral cases	76	84.4

**Table 2: (Fetal Risk factors)\***

Risk factors	Number of cases(n=90)	Percentage (%)
Congenital anomalies	10	11.1
Rh isoimmunisation	3	3.3
Non immune hydrops	1	1.1
Cord problem	3	3.3
PROM	5	5.5

**Table 3: (Maternal risk factors)\***

Risk factor	Number of cases (n=90)	Percentage (%)
Gestational diabetes	5	5.5
Previous uterine scar dehiscence	2	2.2
Jaundice	1	1.1
Infection	6	6.6
Systemic lupus erythematosus	2	2.2
Haemoglobinopathies	3	3.3
Severe Anaemia	11	12.2

**Table 4: (Placental causes)\***

Risk factor	No of cases(n=90)	Percentage (%)
Placenta praevia	3	3.3
Abruption placenta	6	6.6
Severe PIH+eclampsia	23	25.5
IUGR	7	7.7
Antiphospholipid Syndrome	5	5.5
Postdatism	8	8.8

Unexplained-29 cases (32.2%)

\*Many cases had multiple risk factors each risk factor was taken into account.

In the present study there is 31.04 IUFD per 1000 live births. In 2009, the estimated global no of stillbirths was 2.64 million (uncertainty range, 2.14-3.82 million.<sup>[6]</sup> worldwide stillbirth rate has declined by 14.5% from 22.1 stillbirths per 1000 births in 1995 to 18.9 stillbirths per 1000 births in 2009<sup>[8]</sup> Patel S, et al had reported stillbirth rate(GA>28 wk) as 22.2 per 1000 total birth.<sup>[9]</sup> Most of the patients coming to our institution were referred from nearby rural primary health centers where there is a dearth of skilled obstetrician and lack of proper antenatal check-up and treatment. Al kadri et al had reported that women without proper ANC had a 70% risk of IUFD<sup>[10]</sup>. In the our study, 84.4 % cases are unbooked cases. Patel S, et al reported, the incidence of IUFD was higher (70%) in emergency admission cases.<sup>[9]</sup> Korde NV et al<sup>[11]</sup> has also reported a higher stillbirth rate in emergency admission cases.

In this study, 58 patients were below 30 years and 11 cases were above 35 years of age. Out of which 4 patients were above 40 years Frett et al. has concluded that age of 35 and more can increase risk of fetal death at the rate of 1.5 times.<sup>[12]</sup> Advanced maternal age (>35) was also significant in study by Anue D et al.<sup>[13]</sup> Korde-NV et al<sup>[11]</sup> reports 51.6%, and Patel S, et al reports 60 %<sup>[9]</sup> cases to be multigravida in their study. In our study, multigravida consists of 54.4% cases almost similar to the other studies.

In the present study, 11 cases (12.2%) had a previous history of abortion and 4 (4.4%) patients had a previous history of IUFD. Patel S, et al has<sup>[9]</sup> reported 27.5% with a history of reproductive loss in the form of abortion 16.2% and IUFD 11.2%. 58.8% cases are preterm in this study, which is similar to study by Chita K et al.<sup>[14]</sup>

Chromosomal malformation and congenital anomalies are two unavoidable situations causing stillbirth. In our study, 11.1% cases had congenital anomaly mostly anencephaly. Anjali c et al<sup>[15]</sup> and Kumar et al<sup>[16]</sup> had reported IUFD due to congenital malformation in 10.5% and 10% respectively, which is similar to our study. While Patel S et al reports only 2.5% cases causing IUFD.<sup>[9]</sup>

Proper pre-conceptional folic acid and vita-B12 can reduce the incidence of neural tube defect. Routine imaging for fetal anomaly can be done and termination of pregnancy can be done much earlier without allowing a fetal death. In the present day, we can also screen for chromosomal defects as a routine procedure in high-risk cases and medical termination can be done which will reduce the IUFD rate. Other causes like Rh isoimmunisation are easily preventable by administration of Anti-D. In the fetal causes cord accident is very unpredictable, but the nuchal cord can be diagnosed by colour Doppler and obstetrician can remain vigilant about this.

In the maternal causes pregnancy with diabetes, anaemia, pregnancy induced hypertension are easily preventable. Routine screening for GDM should be

mandatory in the antenatal check-up protocol. Many pregnant mothers in rural the belt are not screened for this in this part of the country. Good glycaemic control is mandatory in GDM. In our study diabetes, causing IUFD is 5.5%. Though iron and folic acid tablets are available to the pregnant ladies free of cost by the Government of India, anaemia causing IUFD is 12.2% in our study. Anjali C et al reported IUFD due anaemia to be 16% in a study.<sup>[15]</sup> Deworming of the pregnant mother should be done to prevent the iron deficiency anaemia. Inject able Irons can also be given safely to treat and prevent the same. Pregnancy induced hypertension can be timely intervened and its complications like abruption of placenta, IUGR can also be prevented so also the still births. In the present study, PIH and related complications attribute 25.5% causing IUFD. Patel s et al reports PIH and eclampsia together accounting for IUFD.<sup>[9]</sup> and Anjali C et al<sup>[15]</sup> reported PIH causes IUFD in 30% cases.

8 fetal deaths were due to oligohydramnios due to postdatism where patient had waited for normal labour pain to start without any monitoring. Presently knowledge on antiphospholipid syndrome has helped us to investigate the patients with IUFD in this line. The patients with antiphospholipids antibodies can develop severe pre-eclampsia and severe placental insufficiency causing IUFD.

Injection of low molecular weight Heparin has revolutionized the treatment of IUFD due to lupus Anticoagulants. Presently intra Hepatic cholestasis has become a significant contributor to IUFD. In our study previous uterine scar rupture has caused IUFD in 2 no of cases. Major causes of IUFD in our study are PIH, abruption placenta, severe anaemia and congenital malformation. Unexplained still births accounts of 32.2% in our study. Neetusingh et al reported 33% unexplained fetal death in a study of 296 cases of IUFD.<sup>[17]</sup> In a study by LamiaShaban et al, out of 157 IUFD cases 28% cases were without a definite cause.<sup>[18]</sup> Meta analysis for the cause of IUFD by Ruth fret shows at least fifteen causes for IUFD and says unexplained still birth and severe IUGR are two main contributor to IUFD.<sup>[19]</sup>

Exploration of these unexplained facts may help us to reduce the IUFD and so also the still birth rate.

## CONCLUSION

Pregnancy induced hypertension, severe anaemia, abruption of placenta, congenital malformation of the fetus is the main cause of fetal demise. This study is a tertiary level hospital based study, so the stillbirth rate observed here does not reflect the stillbirth rate of this area as many other hospitals and home deliveries is also there which have not been taken into consideration. Again, because of lack of consent, post-mortem could not be done, so many other unexplained caused could have been explained. But all the main causes of fetal death observed here

are preventable. Proper preconceptional counselling, antenatal care and the proper referral system is mandatory to reduce the still birth rate by 2030.

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