

# Why fetuses die - A retrospective observational study in a tertiary care center

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## ABSTRACT

**Background:** Late intrauterine fetal death (IUFD) and stillbirth are a cause of concern and not widely reported though it contributes a large chunk in perinatal mortality. It is a traumatic experience for the family and obstetrician. If the cause of fetal deaths can be ascertained, preventive strategies can be formulated. **Objectives:** This study was done to estimate the incidence and suspected causes leading to IUFD and stillbirth. **Materials and Methods:** The present study was conducted in the Department of Obstetrics and Gynecology of Veer Chandra Singh Garhwali Government Institute of Medical Science and Research (VCSGGIMS&R) and RI and its attached hospital. Retrospective data of all the cases of IUFD were recorded in a predesigned performa from April 2016–March 2017. Data was compiled and analyzed statistically using simple statistical measures such as percentage and proportions. **Results:** The incidence of stillbirth in our study was 24.8/1000 live birth. Among all factors responsible for IUFD, hypertensive disorder of pregnancy was present in 14 (18.42%) of the patients; placental abruption was present in 10 (13.2%) cases. In 28.95% of cases, no apparent cause of IUFD could be ascertained. **Conclusion:** Poor socioeconomic background, illiteracy, and late seeking of antenatal care are the predisposing factors for IUFD. Many of the causes of intrauterine deaths are preventable such as placental abruption, hypertensive disorders, and diabetes which can be avoided by proper antenatal care. Early detection of high-risk pregnancy and timely referral to equipped center will help in decreasing IUFD.

**KEY WORDS:** Fetal Death; Stillbirth; Intrauterine Fetal Death; Antenatal Care; Preeclampsia; Fetal Loss


## INTRODUCTION

The Perinatal Mortality Surveillance Report (CEMACH) defined stillbirth as “a baby delivered with no signs of life known to have died after 24 completed weeks of pregnancy.”<sup>[1]</sup> The WHO definition of third trimester stillbirth used for

international comparability is a dead fetus of 1000 g or more at birth or after 28 completed weeks of gestation.<sup>[2]</sup>

ACOG refers to intrauterine fetal death (IUFD) as the demise occurring at or later than 20 weeks. In a recent RCPI (Recent clinical practice investigation guideline), stillbirth is taken as a baby delivered without signs of life from 24 weeks gestation, and IUFD is taken to refer to death *in utero* after 24 weeks gestation.<sup>[3]</sup>

Although 3 million stillbirths occur annually worldwide, almost as high as postnatal deaths, they have not been addressed as much. The developing countries in Asia and sub-Saharan Africa together constitute 70% of the world’s stillbirth burden.<sup>[4]</sup>

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The estimate of stillbirth rate for 2016, at the national level, is 4. Stillbirth rate of Uttarakhand is 9 (urban 8, rural 11).<sup>[5]</sup>

Fetal death is traumatic experience for the mother in particular and for the family as a whole and remains a challenge for obstetrician. Advancement of antepartum and intrapartum surveillance of fetal well-being has reduced the incidence of stillbirth, but it remains a significant contributor to perinatal mortality. Stillbirth is a useful marker to measure the value of antenatal and intranatal care. There are many maternal conditions and diseases which may lead to stillbirth. Poor socioeconomic condition and social status of women are important contributory factors responsible for higher fetal mortality rate, as all these prevent women to go to the hospital for health checkup.

### Aims and Objectives

The aim of this study was to find the incidence and characteristics of pregnancies that resulted in IUFD in our institution with objective of:

1. Identifying the risk factors associated with IUFD and
2. Identification of factors to bring down the death rate.

### MATERIALS AND METHODS

This study was conducted in the Department of Obstetrics and Gynecology of Veer Chandra Singh Garhwali Government Institute of Medical Science and Research, Srinagar, Garhwal, Uttarakhand, and its attached hospital. Ethical clearance was taken from the institutional ethical committee. Retrospective data of all the cases of IUFD were recorded for April 2016–March 2017.

Following parameters were recorded in a predesigned per forma. Women's age, parity, booked/referral cases, any complaint during present pregnancy, history of IUFD in past pregnancy, complaint/diagnosis at the time of admission, gestational age, past and present medical disorders, history of pregnancy-related or aggravated conditions, mode of delivery, and any intra or postpartum complications.

### Inclusion Criteria

All those cases who were diagnosed as intrauterine dead fetus at the time of admission or during intranatal period with gestational age more than 24 completed weeks of pregnancy were included in the study.

### Exclusion Criteria

Babies born below completed 24 weeks of gestation were excluded from the study.

Data were compiled and analyzed statistically using simple statistical measures such as percentage and proportions.

### RESULTS

There were a total of 3139 deliveries in the hospital during the study period, out of which 76 (2.42%) were stillbirth. The incidence of stillbirth in our study was 24.8/1000 live birth. Majority of stillbirths (47.37%) occurred in the age group of 21–25 years [Table 1]. 57 cases were unbooked (75%) while 21 (25%) stillbirth occurred in booked cases. Primigravida had the highest number of stillbirth (56.58%) as seen in Table 1. Majority of 53.95% of the cases were in gestational age <37 weeks [Table 2].

Of all stillbirths, 19 were fresh and 57 (75%) were macerated stillbirths. 14 cases were referred from periphery with no detectable fetal heart rate. Rest of the cases presented directly to our center. Stillbirth was seen more in male babies 44 (57.89%) compared to female babies 32 (42.11%).

31 of 76 cases (40.79%) had to be induced for labor. Of the 31 patients in whom labor were induced, 24 patients were induced with prostaglandin and 7 patients were induced with oxytocin. 29 cases went into spontaneous labor. 60 patients (78.94%) delivered vaginally and 16 patients (21.05%) underwent emergency cesarean section [Table 3].

Among all factors responsible for IUFD, hypertensive disorder of pregnancy was present in 17 (22.37%) of the patients. This was found to be the most common cause responsible for IUFD; placental abruption was present in 10 (13.2%) cases while placenta previa was present in 4 (5.26%) cases. Abnormal presentation and obstructed labor were present in 5.26% of cases each. In 28.95% of cases, no apparent cause of IUFD could be ascertained [Table 4].

Incidence of anemia was high in IUFD cases. Five cases were severely anemic ( $\leq 7$  g/dL) and required blood transfusion. 20 cases had moderate anemia (7–10 g/dL). Prolonged leaking per vaginam ( $\geq 18$  h) was seen in 15 cases. 20 cases had stopped perceiving fetal movements for past 2–4 days but presented late to hospital owing to problem of transport facilities or immediate relatives not available to accompany. 6 cases had thick meconium-stained liquor and 10 had cord around neck. 2 cases were congenitally deformed babies

**Table 1:** Distribution of IUFD cases according to maternal age, gravida status ( $n=76$ )

Age	n (%)	Gravida	n (%)
18–20	4 (5.26)	Primi	43 (56.58)
21–25	36 (47.37)	2	14 (18.42)
26–30	28 (36.84)	3	13 (17.10)
31–35	7 (9.21)	4	5 (6.58)
36–40	1 (1.32)	5	1 (1.32)
Total	76 (100.00)	Total	76 (100.00)

IUFD: Intrauterine fetal death

**Table 2:** Distribution of IUF D cases according to the period of gestation ( $n=76$ )

Gestational age	<i>n</i> (%)
24–28	8 (10.53)
29–33	15 (19.74)
34–36	18 (23.68)
37–40	32 (42.10)
>40	3 (3.95)
Total	76 (100.00)

IUF D: Intrauterine fetal death

**Table 3:** Labor and delivery data

Parameters	<i>n</i>
Induction of labor	31
Spontaneous labor	29
Vaginal delivery	60
Cesarean section	16

**Table 4:** Causes of IUF D

Cause of IUF D	Number of cases (%)
Placental abruption	10 (13.12)
PIH	14 (18.42)
Eclampsia	3 (3.95)
Placenta previa	4 (5.26)
Transverse lie	2 (2.63)
Obstructed labor	4 (5.26)
Rupture uterus	2 (2.63)
Hand prolapse	2 (2.63)
GDM PIH	1 (1.32)
Congenital malformations	2 (2.63)
Manipulations by DAI	3 (3.95)
Severe anemia	5 (6.58)
Trauma	2 (2.63)
Undefined/unknown cause	22 (28.95)
Total	76 (100.00)

IUF D: Intrauterine fetal death

(anencephaly) and 3 cases were referred to us with history of DAI handling.

## DISCUSSION

The prevalence of intrauterine fetal demise varies from 5 to 32/1000 live births between nations; stillbirth rates in developing countries are higher than in developed countries.<sup>[6]</sup> While national and international attention, statistics and interventions focus on live-born infants, stillborn infants have largely been overlooked. However, these deaths matter too - they matter to the mother and the family, to the society and to the health-care system. The incidence of fetal demise in our study was 24.8/1000 live births way above the national and state average which may

be because our institute is the largest referral center among hilly districts of Uttarakhand, where complicated and high-risk cases are referred. Many of the cases are referred after detection of IUF D.

The incidence of IUF D differs between various studies. Similar study by Choudhary and Gupta<sup>[7]</sup> reported incidence as 49/1000 live births. In the study conducted by Singh *et al.*,<sup>[8]</sup> incidence was 40/1000, while in the study conducted by Patel *et al.*,<sup>[9]</sup> incidence was 36.17/1000 live birth. In our study, maximum cases of IUF D occurred in primigravida, i.e., in 56.58% similar to the study by Dave *et al.*<sup>[11]</sup> (44.5%) and by Patel *et al.* (47.05%). While in the study by Patel *et al.*,<sup>[10]</sup> proportion of IUF D was higher, i.e., 60% in multigravida cases. The study by Khashoggi<sup>[12]</sup> had not found any association between parity and gestational age. Maximum IUF D cases belonged to 21–25 years (47.37%), same as a study by Patel *et al.* (35.2%)<sup>[9]</sup> and Choudhary (45.71%) while Tamrakar and Chawla<sup>[13]</sup> had reported higher stillbirth associated with increasing maternal age. Maximum number of fetal deaths 41 (53.9%) occurred in <37 weeks of gestation. In the study by Patel *et al.*, 62.5% of fetal deaths were between 25 and 32 weeks of gestational age. Similarly, in the study by Gehlot *et al.*,<sup>[14]</sup> 55.87% of fetal deaths were in preterm. While Patel *et al.* and Singh *et al.* noted maximum stillbirths in 37–40 weeks of gestation, 35.29% and 64.18%, respectively. Unbooked cases were 75% (57 out of 76) in our study, whereas the incidence was 70%, 84.9%, and 89.5% in studies conducted by Patel *et al.*, Korde and Gaikwad,<sup>[15]</sup> and Anjali *et al.*, respectively. This clearly stresses the importance of antenatal supervision. Illiteracy, low socioeconomic status may be contributory factor for higher number of unbooked cases leading to high number of IUF D rate. In our study, 60 patients delivered vaginally while cesarean section was done in 16 patients. Among the 16 patients who were delivered by LSCS, placenta previa, transverse lie, and obstructed labor constitute 4 patients each (25%), followed by failed induction which constitutes 2 patients (12.5%), 2 patients (12.5%) presented with rupture uterus which can be attributed to obstructed labor. The most common maternal risk factor for IUF D in our study was hypertensive disorders in pregnancy, i.e., eclampsia (3.94%) and severe preeclampsia (18.42%). Singh *et al.* had observed the incidence in 10.81% while Patel *et al.* observed it in 33.7% of cases. The second cause of IUF D in our study was placental factors, abruption in 13.2% of cases and placenta previa in 3.94% of cases. Bhatia *et al.*<sup>[16]</sup> in their study found abruption placenta to be the cause of IUF D in 7.25%, while Patel *et al.* found placenta previa in 1.96% and placental abruption in 3.92% of cases. Uttarakhand is a hilly region with frequent occurrence of natural calamities leading to slow infrastructure growth. There is a lack of connectivity in peripheries and transportation is difficult, as a result people do not come to health-care centers. In spite of many government initiatives, awareness in seeking antenatal care by women is low. Many cases in our study were unbooked with not a

single blood pressure measurement in the antenatal period. Simple measures such as blood pressure measurement, serial weight measurements, and urine albumin can help in knowing preeclampsia. Prevention of the progression of preeclampsia and consequent complications such as placental abruption which is also a major cause of IUFD still remains a major goal of high-risk pregnancies. Severe anemia was attributed as causal factor in 5 (6.58%) cases. IUFD occurred due to anemia in 9 (11.2%) in the study by Patel *et al.* and in 16% of cases in the study by Anjali *et al.* Proper antenatal care with iron and folic acid supplementation can prevent IUFD due to anemia. Many cases are still handled at home by untrained DAIs. Referral to the nearest health center is sought only if difficulty in delivery arises. Many of the health centers have no specialist doctors and no ultrasound facilities and are further referred to our institute. By the time, they reach our center complications progress and salvaging the fetus becomes difficult. Our study found 2.63% IUFD occurred owing to severe congenital malformation. The study by Anjali *et al.* found 11.5% and Singh *et al.* observed 9.45% cases of IUFD due to congenital malformation. Although chromosomal abnormalities and congenital malformations are unavoidable, routine screening and selective termination of pregnancies in such cases would reduce these deaths. In our study, obstructed labor was present in 5.26% of cases with two patients presenting with ruptured uterus which may be attributed to obstructed labor. This incidence compares to the study by Singh *et al.* reporting the incidence to be 6.08%. In our study, unexplained causes of fetal demise amounted to 28.95%. Singh *et al.* found 33% unexplained fetal deaths in their study of 296 cases of IUFD Anjali *et al.* found same in 19.5% while Singh *et al.* and Lamia Shaban *et al.*<sup>[17]</sup> had observed 33% and 28% unexplained fetal deaths in their studies, respectively. Death of a well-grown viable fetus is tragic enough but not knowing the cause of it can be more distressing. In many cases, necropsy can help in knowing the cause of fetal demise which should be sought for wherever feasible.

Limitations of this study are its small sample size. Multicenter study will give better idea about the causes of stillbirths prevalent in this area. This study is one of the few studies reported from this state on this important aspect. The knowledge about reason for the fetal loss can help in taking measures to prevent recurrence in subsequent pregnancies.

## CONCLUSION

IUFD rate still remains high. As seen in this study, many of the cases have been referred and most of the women have not had antenatal care regularly. Better antenatal care and evaluation of the cases can help in reducing this tragic event.

Genetic causes congenital malformations though unavoidable, but IUFD due to these causes may be prevented by proper

antenatal screening and genetic counseling. Hypertensive disorders, antepartum hemorrhage, obstructed labor, and abnormal presentations are common factors causing fetal demise which are preventable. There have been significant advances in diagnostic and therapeutic modalities still the cause of IUFD remains elusive in many cases.

Poverty, illiteracy, social culture belief, and unawareness of health-care facilities also predispose to IUFD. Many of the fetal deaths can be prevented by universal and improved antenatal care and educating the patients to avail obstetric care. Identification of high-risk cases and timely referral to well-equipped center may go a long way in saving the babies.

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