Original Research Article

Analytical study on IUFD after 28 weeks of pregnancy in a tertiary care rural hospital of West Bengal India

Dr Arindam Ghosh[1], Dr. Suparna Dhara[2], Dr Kajal Kumar Patra[3*],
Dr Kishore P Madhwani[4]

1. Medical Officer, Dept of Gynae and Obstetrics, Islampur SD Hospital, Uttar Dinajpur, West Bengal, India. arindammghosh@gmail.com
2. Assistant professor, Department of Biochemistry, Jalpaiguri Government Medical college, West Bengal, India. supornadhara@gmail.com
3. Professor and Head, Dept of Gynae and Obstetrics, Gouri Devi Institute of Medical Science, Durgapur, West Bengal, India
4. Senior Medical Consultant, Mumbai, Maharashtra, India

Dr Kajal Kumar Patra
Professor and Head, Dept of Gynae and Obstetrics
Gouri Devi Institute of Medical Science
GT Road, National Highway 2, Rajbandh,
Durgapur, West Bengal 713212, India
Mobile : +91 9830212433
Email: drmch2000@gmail.com
Running Title: Analytical study on IUFD

Abstract

Background : An Intrauterine Fetal Demise (IUFD) at any stage of pregnancy is a tragic event and one of the unhappy events in the field of obstetrics. It is a traumatic experience for the family and obstetrician. If the cause of fetal deaths can be ascertained, preventive strategies can be formulated. **Aims and objectives:** The present study was done to determine the possible causes of stillbirths or intrauterine foetal demise after 28 weeks of gestation and to determine the preventive measures. **Methods :** A retrospective study was done in all pregnant women admitted with IUFD delivered at or above 28 weeks of gestation in the Dept of Gynae and Obstetrics, Islampur SD Hospital, Uttar Dinajpur, West Bengal, India from July 2022 to February 2023. Data analysis were done for maternal age, parity, antenatal visits, gestational age, probable causes of IUFD, pregnancy complications, placental abnormalities. Statistical data were analysed by using Microsoft Excel and SPSS V.20 software. **Results :** Total number of deliveries during the study period was 7220, out of them number of IUFD deliveries recorded was 205. Incidence of IUFD observed was 28.4/1000 total birth. Most common age group of the mother delivered

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IUFD was found to > 30 years 142 (69.3%). Maximum mothers were multi parity 133 (64.9%). Very low birth weight babies (<1.5kg) were 97 (47.3%), low birth weight babies (1.5- 2.5 kg) were 66 (32.2%). Maximum delivery was normal delivery 184 (90%) and LSCS was 21 (10%). Oligohydramnios was found to be the most common cause 38 (18.5%) followed by Unknown cause was 31 (15.1%), fetal distress and pre-eclampsia was 25 (12.2%) each, congenital malformation was 20 (9.8%). **Conclusion :** Causes of IUFD are multifactorial and they can be prevented with proper community education, good quality obstetric care and urgent intervention from the healthcare provider to prevent stillbirth and improve the perinatal mortality of India. **Keywords :** Antenatal care, Intrauterine foetal death, Prevention, Registration, Risk factors

Introduction :

An Intrauterine Fetal Demise (IUFD) is a major obstetrical catastrophe at any gestational age but the emotional pain and distress caused by this event increases in direct relation to the duration of pregnancy. Lot of importance is given for maternal, neonatal and child health all over the world. There is increasing attention and investment in the field of maternal and neonatal health care but still births remain most under studied or documented.[1]

Intra uterine fetal death (IUFD) is defined as fetal death after 20 weeks of gestation.[2] It can be further classified into early or late IUFD. Early IUFD, if fetal death occurs before 4 weeks of pregnancy and late IUFD, if fetal death after 24weeks.[2]

The causes of IUFD, in a large percentage of cases remain unknown, even where extensive testing and autopsy have been performed. A rarely used term to describe this is "sudden antenatal death syndrome" or SADS, a phrase coined by Cacciature and Collis in 2000.[3]

Many still births occur at full term to apparently healthy mother and a post-mortem evaluation reveals a cause of death in only 40% of autopsied cases.[4] It is important to investigate the cause of IUFD. If the cause of an IUFD can be identified, the family will have answers about the possibility of recurrence and can seek appropriate medical treatment to prevent recurrence. Identification of causes of IUFD will be helpful in counselling the parents as well as for formulating preventive measures.[5] Health education to encourage the utilization of the available antenatal care services, family planning and genetic counselling are being advocated strongly as possible preventive measures.[6]

Certain demographic factors for foetal death include race, low socioeconomic status, inadequate prenatal care, less education and advanced maternal age.[7] Illiteracy, poor socioeconomic condition and social status of women and misbelieves are important contributory factors responsible for higher foetal mortality rate, as all these prevent women to go to the hospital for health check-up.

Ultrasonography to diagnose cord abnormalities, use of intrapartum electronic foetal monitoring, partograph and prevention of prolongation of second stage of labour will help in reduction of stillbirths.[8] The importance of determining the cause of foetal death is that only when the cause is known, the patient can be counselled about the chance of recurrence and attempts at prevention or treatment can be initiated.

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Causes of foetal death like cord accidents have remained unchanged over the decades; causes like

antiphospholipid antibodies have been recognized only recently; causes like chromosomal abnormalities are not totally unpreventable; whereas causes like post maturity, pregnancy induced hypertension, eclampsia, diabetes are preventable or controllable.[9-14]

Objectives of this study were to determine the characteristics of IUFD and a critical analysis of the risk factors associated with it for implementation of preventive measures.

Materials and Methods

This hospital based retrospective study was conducted in the Dept of Gynae and Obstetrics, Islampur SD Hospital, Uttar Dinajpur, West Bengal, India. All pregnant women admitted with IUFD delivered at or above 28 weeks of gestation were included in the study after fulfilling the requisite criteria. The duration of the study was seven months (July 2022 – February 2023).

Inclusion criteria : Pregnant women of any parity or gravida with gestational period of ($\geq$28 to < 42) weeks, birth weight of foetus ($\geq$1000 gm) with singleton pregnancies attending the outdoor clinic or labour room associated with or without labour pain ultimately went into labour and having a perception of less or absent foetal movement diagnosed clinically or by ultrasonography as intrauterine foetal death were included during the study period.

 Exclusion criteria : IUFDs with molar pregnancies, multiple pregnancies and where gestational age was not known were excluded from the study..

Parameters Studied : The data collection form contained details regarding patient particulars including age, parity, gestational age, birth weight of baby, sex of baby, admission delivery interval, fresh /macerated, mode of delivery, cause of foetal death were recorded. Ultrasonography was done to confirm foetal death and all previous blood investigation reports were examined thoroughly. Detailed examination of still birth baby for any congenital anomalies weight was done and the placenta was examined for weight, retro-placental clots, ulceration, calcifications and other gross abnormalities (if any).

Sample size: 205 cases were included after applying inclusion and exclusion criteria from department of obstetrics and gynaecology.

Data Analysis plan- The data was tabulated in Microsoft Excel software and analysed with SPSS V.20 software. The values of the collected data were described as mean and proportion. Descriptive statistics was done using standard statistical software. Subgroup analysis will be carried out chi square test, student t test. P value <0.05 will be considered as significant.

Ethical considerations- Study was initiated after obtaining the informed consents from the participants and ethical clearance from the institutional ethical committee.

Results

The present study was hospital based retrospective study were carried out from July 2022 to February 2023 at the department of Obstetrics and Gynaecology in Islampur Super Speciality Hospital, Uttar Dinajpur, West Bengal, India. During the study period live births was 7220 and still births was 205. The study was conducted after ethical clearance. Among 205 pregnant

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women 17-44 years of age with IUFD delivered at or above 28 weeks of gestation were included in this study. In all the cases, thorough history taking and clinical examination was done after taking proper consent. Data thus obtained was noted in the proforma. Results thus obtained were analysed and expressed in tables.

Table 1 : :Demographic profile of study participants (n=205)

Parameters	Frequency (n)	Percentage (%)	P value
Age of Mother			
< 20	23	11.2	
20-30	40	19.5	0.707
> 30	142	69.3	
Parity			
Primi	72	35.1	0.726
Multi	133	64.9	
Gestational age			
Preterm (< 37 weeks)	115	56.1	
Term (≥37 weeks)	90	43.9	p<0.001
Birth weight of baby			
Very low (<1.5kg)	97	47.3	p<0.001
Low (1.5- 2.5 kg)	66	32.2	
Normal (> 2.5 kg)	42	20.5	
Sex of baby			
Male	91	44.4	
Female	114	55.6	0.876
Admission delivery interval			
> 20 days	8	3.9	
1-5 days	133	64.9	
11-20 days	28	13.7	0.794
6-10 days	36	17.6	
Fresh /macerated			
Fresh	63	30.7	p<0.001
Macerated	142	69.3	

Total number of deliveries encountered during the study period of seven months (July 2022 – February 2023) was 7220. Out of them number of IUFD deliveries recorded was 205. Therefore, the calculated incidence of IUFD observed was 28.4/1000 total birth. In Table 1 demographic profile of the study participants were depicted. Most common age group of the mother delivered IUFD was found to > 30 years 142 (69.3%) followed by 20-30 years 40 (19.5%) and < 20 years

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23 (11.2%). Maximum mothers were multi parity 133 (64.9%) and primi parity was 72 (35.1%). In gestation age preterm (< 37 weeks) were 115 (56.1%) and term (≥37 weeks) were 90 (43.9%). This finding was statistically very significant ($p < 0.05$). Very low birth weight babies (<1.5kg) were 97 (47.3%), low birth weight babies (1.5- 2.5 kg) were 66 (32.2%) and normal birth weight babies (> 2.5 kg) were 42 (20.5%). This finding was statistically very significant ($p < 0.05$). Maximum 114 (55.6%) babies were female and 91 (44.4%) babies were male. Admission delivery interval of 1-5 days was 133 (64.9%), 6-10 days was 36 (17.6%), 11-20 days was 28 (13.7%) and > 20 days was 8 (3.9%). Fresh were 63 (30.7%) and macerated were 142 (69.3%). This finding was statistically very significant ($p < 0.05$). (Table 1)
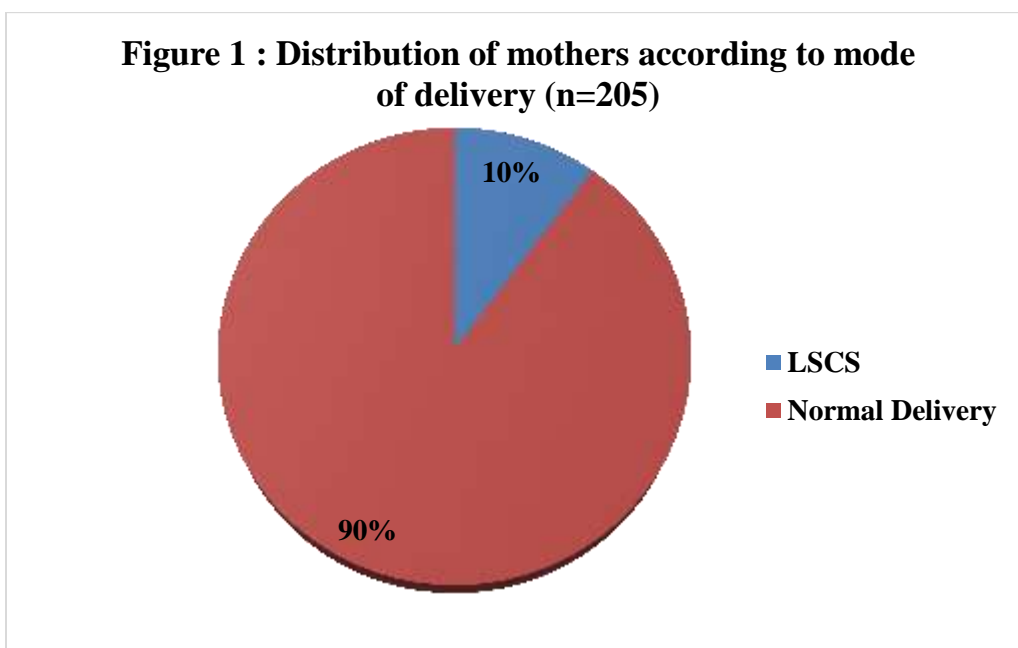
Figure 1 : Distribution of mothers according to mode of delivery (n=205)

Maximum delivery was normal delivery 184 (90%) and LSCS was 21 (10%). The findings were statistically signification $p<0.001$. (Figure 1)

Table 2 : Aetiology of foetal deaths observed in the study (N=205)

Cause of death	Frequency (n)	Percentage (%)
Oligohydramnios	38	18.5
Unknown	31	15.1
Fetal Distress	25	12.2
Pre-eclampsia	25	12.2
Congenital Malformation	20	9.8
Abruption	8	3.9
Prolonged Labour	8	3.9
GDM	7	3.4

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IUGR	7	3.4
Thyroid Disorder	6	2.9
Liver Disease	6	2.9
Cord prolapse	4	2.0
Eclampsia	4	2.0
Post-maturity	4	2.0
Chorioamnitis	3	1.5
Prematurity	3	1.5
Torch+	3	1.5
Apla+	2	1.0
Preterm	1	0.5
Total	**205**	**100.0**

In Table 2 the various causes of foetal death are shown which were observed and extracted from retrospective evaluation of case histories and clinical examination and laboratory reports. Oligohydramnios was found to be the most common cause 38 (18.5%) followed by Unknown cause was 31 (15.1%), fetal distress and pre-eclampsia was 25 (12.2%) each, congenital malformation was 20 (9.8%)

Discussion :
Antepartum foetal death occurring during pregnancy and labour is a tragic and traumatic outcome of any pregnancy. It is really disheartening when it occurs without warning in a pregnancy that was previously normal.[15] It is an event that challenges both the medical and personal skill of the doctor. It is thus essential to identify causes of foetal death to determine the risk of recurrence, prevention or corrective action. In our study still birth rate was 28.4 per 1000 total birth. In India still birth rate is from 20-66 per 1000- total birth in different states.[16]The still birth rate in our study is close to the lower limit the national average. In 2016 a study by Bhatia T et al[17] still birth rate was 27.76/1000 birth and a study conducted by Vidyadhar B et al[18] in 2010 showing stillbirth rate of 33/1000 births which were higher than our stillbirth rate but Korde-Nayak et al[19] showed stillbirth rate of 23.4/1000 birth which was close to our present study.
In this study, the highest percentage of stillbirths was in the age group was > 30 years (67.1%). A study by Anupamarani V et al[20] showed maximum rate of stillbirth in 21-30 years age group (69.09%).
In the present study most common age group of the mother delivered IUFD was found to > 30 years 142 (69.3%) followed by 20-30 years 40 (19.5%) and < 20   years 23 (11.2%). Maximum mothers were multi parity 133 (64.9%) and primi parity was 72 (35.1%). In gestation age preterm (< 37 weeks) were 115 (56.1%) and term (≥37 weeks) were 90 (43.9%). This finding was statistically very significant ($p < 0.05$). Unlike in two separate studies by Mostafa et al[21]of

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Bangladesh in 1991 and Golding et al[22]of Jamaica in 1994 observed that women with no previous children were found to have the highest incidence of stillbirth.

In our study Very low birth weight babies (<1.5kg) were 97 (47.3%), low birth weight babies (1.5- 2.5 kg) were 66 (32.2%) and normal birth weight babies (> 2.5 kg) were 42 (20.5%). This finding was statistically very significant (p < 0.05). Maximum 114 (55.6%) babies were female and 91 (44.4%) babies were male. Admission delivery interval of 1-5 days was 133 (64.9%), 6-10 days was 36 (17.6%), 11-20 days was 28 (13.7%) and > 20 days was 8 (3.9%). Fresh were 63 (30.7%) and macerated were 142 (69.3%). This finding was statistically very significant (p < 0.05). In a case – control study conducted to assess the risk factors of stillbirth among pregnant women in Jamaica in 2004,[23] low birth weight was found to be associated with stillbirth. In that study, 54% stillborn babies had low birth weight (<2500g), and 19% had very low birth weight (<1500g). In a study conducted in K.G.M.U., Lucknow, Uttar Pradesh by Sujata et al[24] in 2004-2005, it was found that occurrence of stillbirth was associated with low-birth-weight babies. Chitrakumari et al[25] in 2001 found that preterm labour and low birth weight were associated with more stillbirths and Vidyadhar et al.[18]

In present study Maximum delivery was normal delivery 184 (90%) and LSCS was 21 (10%). The findings were statistically signification p<0.001. Oligohydramnios was found to be the most common cause 38 (18.5%) followed by Unknown cause was 31 (15.1%), fetal distress and pre-eclampsia was 25 (12.2%) each, congenital malformation was 20 (9.8%).

Studies by RaziaKorejo et al[26](2007), Korde -Nayak et al[19] (2008) and Anupama Rani V et al[20] (2011) showed hypertensive disorders in pregnancies as a leading cause of IUFD antenatally which also corroborate with our study. Maternal anaemia in pregnancy present in significant percentage (11.4%) in our study. Abdullah et al[27] conducted study on stillbirths and observed that 5th most common cause of antenatal stillbirths was severe maternal anaemia constituting 2% of all stillbirth. Nayak et al[19] in their study also observed of all mothers delivered stillbirths were anaemic. In a retrospective cohort by Manisha Nair et al[28] in 2015 showed that among 1007 pregnant women who delivered in 5 medical colleges of Assam from January to June 2015, 35% pregnant women had moderate to severe anaemia had significant perinatal death (OR=16.42, 95% CI 4.38 to 65.55).

Conclusions

Reasons behind still birth and IUFD are multifactorial as observed in this study and most of them are preventable. The authors feel that preconception counselling and care, early detection of maternal and foetal complications, confirmation of foetal growth retardation and hypoxia and foetal distress, organised referral system for problematic delivery and prompt detection and intervention of intrapartum complications can address the problem to a great extent. There may be a multidisciplinary approach for prevention of still birth including obstetrician, specialist in foetal medicine, radiologist and anaesthetist. Education of the patient to avail obstetric care, proper planning of midwives visits to pregnant women, more frequent visits for high-risk pregnancies, timely referral to specialist will minimize fatal wastage. Hence improving the

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general condition of the people including their education, availability of emergency transportation facilities available at peripheral centres can go a long way in reducing still births.

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