Original Research Article

A STUDY TO EVALUATE CAUSES AND RISK FACTORS OF STILL BIRTHS IN A TERTIARY CARE HOSPITAL

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INTRODUCTION

Due to the high prevalence of morbidity, impairment, and stunted growth at birth, which has far-reaching consequences for individuals and society as a whole, a good start to life is essential. The gift of life is the birth of a healthy baby, whereas the tragedy of death is the birth of a dead infant. The tragic loss of life that accompanies each stillbirth is deep and lasting. One of the most difficult tragedies that an attending obstetrician encounter is the occurrence of foetal death.

Regardless of gestational age, foetal death is defined according to the International Classification of Diseases, 10th Revision, as any death that occurs before the foetus is completely expelled from its mother.[1] The World Health Organisation, however, considers a stillbirth to have occurred if the infant does not show any signs of life beyond 28 weeks of gestation or if the newborn's weight is more than 1000 gm when the gestational age is absent.

A significant factor in perinatal mortality is the number of stillbirths. The aetiology of stillbirths should be better understood in order to decrease perinatal mortality, which in turn necessitates a decrease in stillbirths. Even in nations with ready access to autopsy and placental pathology, approximately half of all stillbirths remain unsolved. This is a testament to how difficult it is to pinpoint the exact reason of a stillbirth[2,3]. The likelihood of a foetus's survival during gestation depends on a number of factors. The uteroplacental unit's proper functioning, the mother's health, the fetus's surroundings, and the lack of harmful foetal elements are the three main categories into which these considerations fall. Any one of these factors, or perhaps more than one, can lead to a stillbirth.

Major causes of still birth include preeclampsia/ eclampsia, preterm rupture of membrane, foetal growth restriction, antepartum haemorrhage, prolonged labour, maternal infection and maternal anaemia[4]. A careful study of these causes reveals that most of these causes can be detected early, and with timely & appropriate treatment, properly in time, the mishaps can be avoided. So, this study was done to evaluate the causes and to identify the risk factors of still birth.

AIMS AND OBJECTIVES

- To evaluate the epidemiological profile of cases of still births.
- To evaluate the associated antenatal high-risk factors, present in these cases.
- To classify the stillbirths according to ReCoDe system.

MATERIAL AND METHODS

Government Medical College and Rajindra Hospital Patiala's Obstetrics & Gynaecology Department and the Pathology Department conducted a prospective study in 2021 and 2022. The formula for determining the sample size, which is N divided by 1 plus N, was used by Solvin. Thus, we found that 200 instances was an adequate sample size for our investigation.

Inclusion Criteria:

- Women who gave birth to a dead baby at or after 24 weeks of gestational age which was calculated on the basis of USG/LMP.
- Foetuses with Apgar 0 out of 10 at 1 or 5 mins.

Exclusion Criteria:

1. Women who gave birth to dead baby before 24 weeks.
2. Foetus with Apgar > 0 at 1 or 5 mins.

- A detailed history was taken followed by examination and identifying risk factors followed by evaluation of the foetus and placenta after delivery.
- Finding out how often stillbirths occur and what factors are associated with them was the main goal.

- The secondary outcome was to classify stillbirths according to the ReCoDe (relevant condition at death) classification.

We used SPSS 25.0 for statistical analysis after entering the data in Microsoft Excel. The frequency and proportional representations were used for the categorical data. Metrics like standard deviation and mean were used to depict normally distributed continuous data. In order to ensure that the continuous data was normal, the Shapiro-Wilk test was used.

RESULT

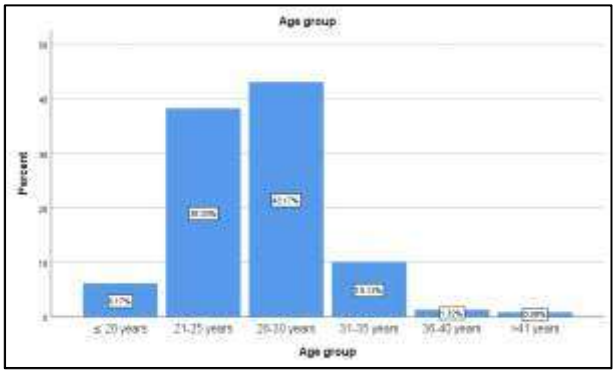

Figure 1: Bar diagram representing the age group of the study population.

Table No. 1 : Demographic profile of study subjects

Maternal age	No. of cases	Percentage
<20	14	6.16
21 – 25	87	38.32
26 – 30	98	43.17
31 – 35	23	10.13
36 – 40	03	1.32
>41	02	0.88
Gravidity		
1	91	40.08
2	71	31.27
3	40	17.62
>4	25	11.01
Abortions		
1	27	11.89
2	4	1.76
3	2	0.88
Previous Stillbirth		
1	3	1.32
Socioeconomic status		
Upper	0	0
Upper middle	7	3.08
Lower middle	115	50.66
Upper Lower	03	1.32
Lower	102	44.93

A total of 227 patients were selected based on the eligibility criteria. The mean age of the patients was 26.33±4.26 years and most of the cases of still births were seen between age group 26 to 30 years of age (43.17%. (Figure 1).

Among the 227 cases studied it was seen that maximum of 98 (43.17%) patients belonged to the age group 26-30 years, with maximum cases seen in primigravida (40.08%). Also, it was observed that 3 (1.32%) patients had a previous history of still births. 27 (11.89%) patients had 1 abortion in the past. Majority of study subjects (50.66%) belonged to lower middle class. (Table 1)

Table No. 2: Gestational age of study subjects at time of delivery

Gestational age at delivery (in weeks)	No. of Cases	Percentage
24 – 28	36	15.85
29 – 32	59	25.99
33 – 36	78	34.36
37 – 40	52	22.91
>41	02	0.88

It was observed that in most cases i.e., in 78 (34.36%) cases the gestational age at the time of delivery was 33-36 weeks followed by 59 (25.99%) cases where it was found to be 29-32 weeks. In 52 (22.91%) cases the gestational age was 37-40 weeks followed by 36 (15.85%) cases where it was between 24-28 weeks. Only 2 (0.88%) cases had gestational age 41 weeks or greater. (Table No. 2)

Table No 3: Birth details of Stillborn Babies

Birth Details	No. of cases	Percentage
Fresh	115	50.66
Macerated	112	49.33
Sex of Baby		
Male	128	56.38
Female	98	43.17
Ambiguous	1	0.44
Weight of Baby (gm)		
500 – 1000	59	25.99
1001 – 2000	86	37.88
2001 – 3000	65	28.63
>3000	17	7.48
Placental Weight (gm)		
<15005	2.20	
151-300	51	22.46
301 – 500	137	60.35
> 501	34	14.97

In this study, 177 (77.97%) subjects delivered vaginally, 46 (20.26%) underwent caesarean section and in four cases (1.76%) laparotomy was undertaken because of rupture uterus. Also, there were 132(58.14%) spontaneous deliveries and in 45 cases (19.82%) induction of labour was done.

It was observed in our study that out of 227 cases, 115 (50.66%) cases were fresh stillbirths (FSB) and the remaining 112 (49.33%) cases were macerated stillbirths (MSB), out of which 128 (56.38%) foetuses were males, 98 (43.17%) were females and 1 (0.44%) was with ambiguous genitalia. It was observed that mean foetal birth weight was 1767.68±854.59 gm. Most of the foetuses had birth weight between 1001-2000gm as seen in 86 (37.88%) with mean placental weight of 399.97±115.37 gm. 137 (60.35%) foetuses had placental weight between 301-500 gm. (Table No. 3)

Table No. 4: Associated antenatal risk factors

Maternal Complications	No. of cases	Percentage
Hypertension	44	19.38
Abruption	34	14.98
Severe Anaemia	30	13.21
Placenta Previa	16	7.04
Oligohydramnios	08	3.52
Cord Prolapse	06	2.64
GDM	04	1.76
Rupture Uterus	04	1.76
PROM/PPROM	03	1.32
Hyperthyroidism	02	0.88
IHCP	02	0.88
Polyhydramnios	02	0.88
Hand Prolapse	01	0.44
Chorioamnionitis	01	0.44

In case of maternal complications, the most common complication observed was hypertension seen in 44 (19.38%) cases followed by 34 (14.98%) cases of abruption, 30 (13.21%) cases of severe anaemia and 16 (7.04%) cases of placenta previa were observed. (Table No. 4)

Table No. 5: Foetal complications

Foetal Complications	No. of cases	Percentage
Intrapartum IUD	98	43.17
Severe FGR	37	16.29
Extreme Prematurity (< 28 weeks)	36	15.85
Cord Prolapse	06	2.64
CMF	01	0.40

Among foetal complications, intrapartum IUD was seen in 98 (43.17%) cases, severe FGR was observed in 37 (16.29%) accounting for the most common cause of foetal complication, followed by 36 (15.9%) cases were of extreme prematurity, 6 (2.64%) were due to cord prolapse, and 1 (0.4%) was cases of CMF (anencephaly). (Table No.5)

There were 55 cases (24.2%) who came in advanced labour and FHS were not localized but couldn't be confirmed by USG. In 31 (13.7%) cases FHS was not localized and confirmed by USG. Also 43 (18.9%) cases came with USG showing intrauterine death.

On gross examination of placenta, 152 (66.96%) were normal, 40 (17.62%) showed calcification, retroplacental clot were seen in 34 (14.97%) and true knot was seen in 1 case (0.44%).

Table No. 6 – ReCoDe classification system of still birth

ReCoDe classification		No. of cases	Percentage
Group A: Fetus	A1 (CMF)-1 A7 (FGR)-37	38	16.74
Group B: Umbilical cord	B1 (Prolapse)-6	6	2.64
Group C: Placenta	C1 (Abruption)-34 C2 (Previa)-16	50	22.02
Group D: Amniotic fluid	D1 (Chorioamnionitis)-1 D2 (Oligohydramnios)-8 D3 (Polyhydramnios)-2	11	4.84
Group E: Uterus	E1 (Rupture)-4	4	1.76
Group F: Mother	F1 (Diabetes)-4 F2 (Thyroid disease)-2 F4 (Hypertensive disease)-44 F6 (Cholestasis)-2 F8 (other-severe anemia)-1	53	23.34
Group G: Intrapartum	G1(Asphyxia)-44	44	19.38
Group I: Unclassified	I1 (No relevant condition identified)-21	21	9.25

It was observed that the most common cause of stillbirth was related to the mother which was seen in 53 (23.34%) patients followed by placental reasons for stillbirth, observed in 50 (22.02%) cases. 44 (19.38%) cases were due to intrapartum reasons and 38 (16.74%) cases of stillbirths were due to foetal related reasons. 11(4.84%) cases of stillbirths were related to the amniotic fluid and 4 (1.76%) cases were related to uterus discretely. However, 21 (9.25%) cases of stillbirth could not be classified.

DISCUSSION

The aim of this study was to study the demographic profile of women having stillbirth, to evaluate the risk factors for stillbirth in low resource settings, and to find the aetiology of stillbirth so as to facilitate designing of a stillbirth prevention strategy.

In our sample, 68.7% of the cases were unbooked and 31.3% were booked. Stillbirths are avoidable if high-risk factors are identified and treated during prenatal care. A study by Aggarwal et al (5) indicated that 29% of patients had not had any prenatal care, while 48% were already getting ANC at another healthcare institution such as a primary care clinic or a private practise before being referred to them for treatment of a missing foetal heartbeat. A sizable percentage (23%) of patients enrolled at the facility had just one or two prenatal visits.

Stillbirths occurred most often between weeks 33 and 36 weeks of pregnancy (34.4%), followed by 29 to 32 (26.0%). Similar results were found in research by Singh and Kumar (4), which found that stillbirths were more common after 32 weeks of pregnancy (54.7%).

Hypertension is a major cause of placental insufficiency leading to foetal hypoxia and foetal growth restriction. In our study hypertension was observed in 19.38% women who gave birth to stillborn babies and Abruptio placenta and placental insufficiency were responsible for 22% of stillbirths. In their research, Kulkarni et al.(6) discovered that 26% of stillbirths were caused by placental insufficiency.

Among foetal causes of still birth, Intrauterine growth restriction (15.90%) and hypoxia (11.50%) were the most common causes of stillbirth. Kothiyal et al. discovered that 15.27% of pregnancies ended in IUGR. (7)

Hence there is a pressing need for intensive prenatal monitoring in the last trimester, since this is when FGR is most likely to cause stillbirths.

CONCLUSION

Stillbirth remains a neglected issue and has received negligible policies and programs attention is underfinanced, and in an urgent need of some action.

In a developing country like India, it remains a largely underestimated problem.

A significant proportion of stillbirths is preventable by adequate and quality antenatal care.

LIST OF ABBREVIATION

ICD	International Classification of Disease
WHO	World Health Organisation
FGR	Fetal Growth Restriction
CMF	Congenital Malformation
ANC	Antenatal care
IUGR	Intra Uterine Growth Restriction

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