



## EVALUATION OF RATE AND ETIOLOGY OF STILLBIRTH IN A TERTIARY CARE CENTER

<b>Madhuri J Patil</b>	Assistant Professor Department of Obstetrics and Gynecology , Indira Gandhi Govt Medical College , Nagpur.
<b>Trupti Wankhede*</b>	Assistant Professor Department of Obstetrics and Gynecology , Indira Gandhi Govt Medical College , Nagpur. *Corresponding Author
<b>Alka Patankar</b>	Associate Professor Department of Obstetrics and Gynecology , Indira Gandhi Govt Medical College , Nagpur.
<b>Prashant Uikey</b>	Professor Department of Obstetrics and Gynecology , Indira Gandhi Govt Medical College , Nagpur.

**ABSTRACT** **Aim** -was to find out the rate of stillbirth at our institute over last 2 years and evaluate causes for the stillbirth. **Materials And Methods**-A retrospective study was carried out at a tertiary health care centre over a period of 2 years. All the patients with stillbirth were included in the study and their detailed history, clinical examination findings investigations were noted and analysed from medical records. **Results**-The stillbirth rate in the present study was 17.78 per 1000 live births. Most stillbirth were seen in the age group 21-25 (51.40%) and in primigravida (51.40%). Most cases were unbooked (54.2%). 59.34% were preterm and weighed < 1.5 kg (61.67%). Majority of SB occurred in antepartum period 91.12% and only 8.87 % were in intrapartum period. The cause of still birth was classified according to ReCoDe classification. Hypertensive disorder of pregnancy (19.62%), accidental hemorrhage (20.09%) and IUGR (16.35%) was the most common cause of stillbirth. **Conclusion** - by providing adequate antenatal care, early identification of high risk pregnancy, timely referral to tertiary health centre, prompt care by well-equipped tertiary centres will help achieve the goal of reducing stillbirths.

**KEYWORDS** : SB- still birth, ReCoDe-relevant condition at death classification, IUGR, accidental haemorrhage , hypertensive disorder of pregnancy ,stillbirth rate

### INTRODUCTION

Every pregnancy should end with the birth of healthy baby. Stillbirth has very devastating effect on family, couple and health care provider. Stillbirth is defined as baby born with no signs of life after 28 weeks of gestation (WHO) [1]. The definition varies in different countries like in India a fetus of more than 500 gm weight or > 20 weeks of gestation with no signs of life is considered stillborn [2,3].

2.6 million Stillbirth occur globally each year. The highest burden of stillbirth continues to be in the sub-Sahara Africa and south Asian region [4]. India tops the list of stillborn all over the world (2015). Stillbirth rate in India is 22 per 1000 pregnancies [5]. Improvement in maternal care has resulted into a dramatic reduction in stillbirths in high income countries but woman in developing countries experience high stillbirth rate due to difference in the physical and social environment, education and access to quality healthcare. To plan preventive strategies it is crucial to understand the etiology, risk factors and associated factors leading to stillbirth. The stillbirth rate has declined worldwide but the annual rate of reduction is 2% which is much slower than reduction of maternal mortality and with this rate it is impossible to achieve the national stillbirth rate 12/1000 by 2030 [6].

Bernis et al proposed various strategies for stillbirth prevention which include acknowledging the actual burden, providing high quality antenatal and intrapartum care and using stillbirth rate as the indicator of quality of health care [7]. The country had made substantial progress in reducing the stillbirth rate over the past two decades. The rate had declined to 13.9 stillbirths per 1,000 births in 2019, from 29.6 in 2000 with 53% reduction. Globally 35% reduction in stillbirth rate was seen during this period however the progress rate has been slow. India's progress in reducing the stillbirth rate improved marginally by 2.7% in the 2010s compared to the 2000 [8].

### AIMS AND OBJECTIVES

1. The aim of the present study was to find out the rate of stillbirth at a tertiary care teaching hospital over period of 2 years.
2. To evaluate causes of stillbirth and correlate it with the various factors like socioeconomic status, demographic factors, and booked status so that preventable measure can be taken to reduce the stillbirth rate.

### METHODOLOGY-

A retrospective study carried out at a tertiary health care center IGGMC Nagpur. Study period was of 2 years from Jan 2018 to Dec 2019.

Study setting-Labour room and emergency ward under the department of Obstetrics and Gynaecology, IGGMC, Nagpur.

During the study period total deliveries were 11,890 and stillbirths were 214. All women who were admitted with intrauterine death or had intrapartum death were included in the study. The study included both booked, un-booked cases. Booked case was define as women who attended 3 or more antenatal visit and received two doses of tetanus toxoid. In the current study stillbirth was defined as a foetus more than 500 gm weight after 20 weeks of gestation with no signs of life.

Institutional Ethics committee approval was obtained.

As per institutional protocol all pregnancies were evaluated with detailed history, examination and investigation including ultrasonography. The most probable cause of stillborn was assigned based on available history, clinical findings and investigations. The data regarding the socio-demographic profile, antenatal investigation including USG to find out cause of stillborn was collected from indoor case sheet. The data related to total deliveries and stillbirth was collected from medical records. The relevant data entered on structural proforma and then transferred to master sheet.

### RESULTS

During this period out of 11,890 total birth there were 214 stillbirths hence prevalence of stillbirth rate in present study 17.78 per 1000 live birth.

As shown in table 1 most of the patient having stillbirth were in the age group of 21-25 years (51.40%). Stillbirth rate was more in primigravida (51.40%) than in multigravida. As this is a referral center majority of patient enrolled in the study were from rural area (64.01%). 54.2% stillbirth occurred in un-booked cases and 45.7% in booked case. Maximum stillbirths occurred in the women belonging to upper lower class 47.66%.

Majority of SB occurred between 28 to 36 weeks of gestation indicating that 59.34% were preterm.

Most of cases in the study 77.57% delivered vaginally where as 22.43 % delivered by caesarean section.

Based on the appearance of the baby at the time of birth were classified as macerated or fresh stillbirth. In this study 34.42% were macerated and 65.42% were fresh stillborn. More than 50% of stillbirth were weighed < 1.5 kg (61.67%) low birth weight.

Gender was female in 53.75% and 45.32 % were male fetus and in 0.9% of the fetus had ambiguous genitalia.

Most of patient admitted had absent fetal heart rate on ultrasound examination. Hence majority of SB occurred in antepartum period 91.12% and only 8.87% SB were in intrapartum period.

Table 3 shows distribution of stillbirth according to the relevant condition at death (ReCoDe) classification. In the present study common cause of stillbirth were hypertensive disorder of pregnancy (19.62%), accidental hemorrhage (20.09%) and IUGR (16.35%). Placenta previa was seen 8 (3.73%). Hypertensive disorder of pregnancy and its complication was the most common cause of stillbirth. Oligohydramnios and congenital anomalies as a fetal cause for stillbirth was present in 12(5.60%) and 21 (9.82%) respectively. 18 (8.41%) of patient had no obvious cause for still birth. Medical disorder of pregnancy like Anemia 7 (3.27%), fever 0.46%, hypothyroidism 1(0.46%) and GDM 2 (0.93%) were also among the known causes for stillbirth. Uterine rupture was seen in only 1 patient as a cause of stillbirth favouring improvement in intrapartum care.

## DISCUSSION

The stillbirth rate in sub-Saharan Africa is approximately 10 times that of developed countries. Worldwide the number of stillbirths has declined by 19.4% between 2000 and 2015, representing an annual rate of reduction of 2% but this reduction noted for stillbirth is lower than that noted for maternal mortality rate (ARR 3.0%) and under five mortality rate is ARR 3.9% for the same period [9].

During the study period out of 11,890 total birth there were 214 stillbirths hence the proportion of stillbirth in our study was 17.78% per 1000 live birth it is similar to 20 per 1000 live birth multicentric trial conducted by Kochar PS, et al Bihar [10].

Stillbirth rate of present study was lower than stillbirth rate reported by Abha Singh et al (29 per 1000 live birth) but it was still higher than developed countries [11]. The world health assembly endorsed target of 12 or fewer in all countries by 2030. Global ARR (Annual Reduction Rate) need to be more than double the present ARR of 2% to accomplish the target for reduction of stillbirth. Government of INDIA has developed an Indian Newborn Action plan that includes efforts to reduce stillbirth < 10 per 1000 live birth by 2030 [12].

In the present study 110 cases (51.40%) were between 20 – 25 years of age and 45 (21.02%) were below the age of 20 years, 51 (23.83%) were between 26-30 years and only 1 patient (0.46%) was > 35 years of age. Bharti et al has reported 50% (33) stillbirth were common in age group, 25 years and only 7 (10%) patient was elderly patient. N Joku C.O. et al stated that stillbirth is common (33.3%) in age group of 30-34 years. [13]

In the present study stillbirth was higher in un booked cases (54.2%) compared to booked case (45.5%). Lack of adequate antenatal care is the most important problem that need urgent attention to reduce stillbirth. If patient gets adequate antenatal care then anemia, hypertension can be diagnosed earlier and managed effectively thereby reducing the stillbirth due to these causes. Nilesh M Makawana et al also reported stillbirth 66% in emergency admission than registered cases [14]. Korde Nagar Vaishali et al also reported stillbirth 79 (84.9%) in unregistered case. [15] AI Kadri et al found that women who did not receive ANC care were at 70% risk of stillbirth. [16]

Most of the stillbirth occurred between the gestation age of 32-35 weeks indicating prematurity is one of the risk factors. Mustafa MA et al concluded that stillbirth was higher 55.4% between 32-35 weeks [17] and Nilesh M Makawana et al also stated that majority of stillbirth 56 (51.4%) occurred between 32-37 weeks which is similar to our study [14]. Shivani Kothiyal et al also reported preterm deliveries in 51.3% cases. [18]

In the present study majority of stillbirth fetus weighed less than 1 kg of birth weight is one of the significant factor for an adverse fetal outcome. Prematurity and low birth weight were the important factors for increase stillbirths.

Reduction in stillbirth rates in developed countries are primarily due to reduction in intrapartum stillbirth rates, Fauvean v et al [19]. In the present study only 8.87% death occurred in intrapartum period. This

indicate increased access to obstetric care including fetal monitoring and to cesarean section appear to associate with decrease stillbirth. Similar finding 12.3% intrapartum stillbirth was observed by Abha Singh in WHO SEARO project [11].

In the present study, normal vaginal delivery occurred in 77.5% while operative delivery required in 22.5% while Njoku c.o. et al reported normal delivery in 74.3% and Nilesh M Makwana et al reported normal vaginal delivery in 85.3% these were comparable to our study [14].

The ReCoDe system of classification was used to identify the cause of death, in our center most of patient were referred from rural area and received poor quality of antenatal checkup. Complete post-mortem report was not available in all cases and cause of stillbirth was assigned on the available clinical findings and investigation. When no obvious cause was available then they were assigned as unexplained. [20]

In the present study common cause of stillbirth was antepartum hemorrhage 23.81% out of which 20.03 % is due to abruption and only 3.73% was due to placenta previa. Data from similar studies from high and middle income countries also stated that 25% of stillbirth was due to abnormalities of placental and cord but none mention fetal demise due to placenta previa. This indicates quality of health care services received by antenatal women. Shivani Kothiyal et al reported that abruption and placenta previa (22.36%) was the most common cause of stillbirth [18] Sharma et al reported antepartum hemorrhage was 19% as a cause of stillbirth. [21]

The second most common cause of stillbirth was hypertensive disorder of pregnancy. In the present study 19.3% stillbirth was due to hypertensive disorder of pregnancy. Nyoku et al reported 18.9 % of stillbirth due to hypertensive disorder of pregnancy [13]. Sharma et al concluded that PIH accounted for 19.6% of stillbirth. B. Sharma et al reported 27.6% stillbirth was due to PIH, [21] Abha Singh et al reported 14.8% stillbirth due to PIH [11]. Prasanna et al reported 34.6% stillbirth was due to PIH [22]. There is no change in trends of hypertensive disorder of pregnancy related stillbirth over the last decade.

The third most common cause of death was IUGR 16.35%. In the present study congenital anomaly was seen in 21 (9.8%) patients while Shivani Kothiyal et al reported 5.4% case of congenital anomalies as a cause of stillbirth [18]. Njoku C.O. et al reported 1% stillbirth due to congenital malformation [13] whereas Sharma et al reported 15.8% stillbirth due to congenital malformation [21]. High prevalence of congenital anomalies is due to late diagnosis of malformation which restrain the option of legal termination.

Cause of death was unexplained in 8.54% cases while Nilesh M Makwana et al reported unexplained cause of death in 19.2%. [14]. Stillbirth due to uterine rupture was markedly reduced and was seen only in one case who had history of previous caesarian with a short inter conceptional period. Nilesh M Makawana et al reported similar finding [14]. B Sharma et al also reported uterine rupture in 2.1%.

## CONCLUSIONS:

Most of the stillbirth was seen in unbooked cases, so by providing and expanding adequate antenatal care and cover at health care facilities a significant number of stillbirth can be prevented. Adequate antenatal and intra natal care can help in early identification of the modifiable risk factors such as pre-eclampsia, eclampsia, anemia, diabetes and help reducing the number of stillbirths.

Despite improvement in health care facilities still hypertensive disorder of pregnancy and its complication remain the important cause of stillbirth.

Emphasizing among medical and paramedical worker the importance of antenatal care, early identification of high risk cases and timely referral to well-equipped tertiary care center at the very first contact with pregnant women can help reduce antepartum stillbirth rate subsequently. Increased access to obstetrics care facilities including better intrapartum foetal monitoring with cardiotocography (NST) and to caesarean section has been associated with decrease intrapartum stillbirth.

In case of unexplained stillbirth, foetal autopsy, placental and membrane examination can be helpful in finding out causes and in planning future pregnancy accordingly.

Adequate antenatal care, identification of high risk pregnancy, timely referral to tertiary health center from PHCs, prompt care by well-equipped tertiary centres and periodic departmental perinatal mortality audits will help achieve the goal of reducing stillbirths.

**Limitation Of The Study:**

The study results are limited by its retrospective design. The cause of death was assigned on the basis of clinical history with limited investigation. Associated and modifiable factors, which have significant contribution in an LMIC such as India, need further evaluation to make recommendations for corrective measures to reduce the number of stillbirths, both at the facility and the national level.

**Conflict of Interest :-** None

**TABLE 1- Socio- demographic factors of the study group.**

1. Age of mother		Number of cases	Percentage
	<20years	45	21.02%
	21-25years	110	51.40%
	26-30years	51	23.83%
	31-35 years	7	3.27%
	>35 years.	1	0.46%
	Total	214	17.78%
2. Area of residence	Urban.	77	35.98%
	Rural.	137	64.01%
	Total	214	
3. Socio economic strata. (modified kuppusswamy scale)	Upper class	0	0%
	Upper middle class	0	0%
	Lower middle class	28	13.08%
	Upper lower class	102	47.66%
	Lower class	84	39.25%
	Total	214	
4. ANC visits	Booked.	98	45.79%
	Un booked.	116	54.20%
	Total	214	
5. Parity status	G1	110	51.40%
	G2	55	25.70%
	G3	31	14.48%
	G4	10	4.67%
	G5	7	3.27%
	G6	1	0.46%
	Total	214	

**Table 2- Foetal Characteristics Of The Still Births.**

		Number of patients	Percentage
1. Gestational age.	24-27 weeks	30	14.01%
	28-31 weeks	58	27.10%
	32-35 weeks	69	32.24%
	>36 weeks	57	26.63%
	Total	214	
2. Type of still birth	Fresh	140	65.42%
	Macerated	74	34.57%
	Total	214	
3. Sex of still birth	Male	97	45.32%
	Female	115	53.73%
	Sex not confirmed	2	0.93%
	Total	214	
4. Weight of still birth.	>2.5kg	12	5.60%
	2.5-1.5kg	70	32.71%
	1.4-1kg	60	28.03%
	<1kg	72	33.64%
	Total	214	
5. Mode of delivery.			

	Vaginal	166	77.57%
	LSCS	48	22.42%
	Total	214	
6. Time of still birth			
	Antepartum	195	91.12%
	Intrapartum	19	8.87%
	Total	214	

**Table 3- Distribution of still birth according to relevant condition at death. (ReCoDe classification)**

Group	Details	Number of still births	Percentage.
Group A			
Fetus	• IUGR	35	16.35%
	• Congenital anomaly.	21	9.8%
Group B			
Umbilical cord		4	1.86%
Group C			
Placental	• Abruption.	43	20.09%
	• Previa	8	3.73%
Group D			
Amniotic fluid	• Oligohydrannios	12	5.60%
Group E			
Uterus	• Rupture	1	0.46%
Group F			
Mother	• hypertensive disorder of pregnancy (PIH)	42	19.62%
	• anemia.	7	3.27%
	• fever.	1	0.46%
	• GDM.	2	0.93%
	• Hypothyroidism	1	0.46%
Group G			
Intrapartum		19	8.87%
Group H			
Trauma		0	0%
Group I			
Unclassified	• Unexplained	18	8.41%

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