

## Epidemiology of Stillbirth: A study in a tertiary care hospital located at a rural area of Northern Maharashtra, India

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### Abstract

**Background:** Stillbirth rates are unacceptably high in developing countries. India accounts for the highest stillbirth rate in the world. Occurrence of stillbirths poses difficult situation and remains big challenge to health care system. Present study was conducted to understand the incidence, maternal & foetal characteristics and etiological factors for stillbirth.

**Material and Methods:** The present retrospective record based study conducted at a tertiary care hospital of a Government Medical College, Maharashtra, India. The study includes stillbirths during the period of April 2014-March 2016. Variables like age, gravida, parity, etiology, birth weight etc. recorded from the indoor papers of stillbirths. All data entered, cleaned and analyzed using Microsoft Excel.

**Results:** During the study period there were 19085 deliveries out of 978 were still births. The incidence of still births was 51 per thousand births. Maternal characteristics shows 442(45.9%) from the age group of 21-25 yrs, pre term(66.1%), prime gravid 51.39%, while macerated 634(64.8%), & 65.5% low birth weight babies observed. Pregnancy induced hypertension [259(26.48%)], Prematurity [184(18.81%)], Medical disorder including Severe anemia [135(13.8%)] & IUGR [89(9.1%)] were most common etiology found among stillbirth.

**Conclusion:** Progress in reducing Still birth remains at slow rate. Adequate antenatal care including nutrition, identification of risk pregnancies, timely referral of high risk cases will help to reduce the still birth rate. High quality intrapartum care at tertiary care centre located at rural area will certainly reduce the substantive number of still births.

**Keywords:** Epidemiology, Etiology, Hospital, Incidence, Stillbirths

### Introduction

The loss of a baby due to stillbirth remains a bad reality for many families and it has many implications for the couple, family & the health care provider including obstetrician. WHO reported, in 2015 there were 2.6 million stillbirths globally, with more than 7178 deaths a day.<sup>(1)</sup> Majority of these deaths occurs in developing countries while three fourth in South Asia and sub-Saharan Africa. The estimated trend in stillbirth rate reduction is slower than that for maternal mortality and lags behind the increasing progress in reducing deaths in children younger than 5 years.<sup>(2)</sup> Primi parity as a risk factor for maternal and perinatal outcome in comparison with multigravida.<sup>(3)</sup> The prevalence of stillbirth rates vary in different studies based on locations, health care facilities and socio economical settings. In this developing country with reasonable technical resources defined by hospital delivery and a high cesarean delivery rate, stillbirth rates were much higher than rates in the United States.<sup>(4)</sup> Developing countries represent 98% of estimated 3.3 million stillbirths, which occur annually, while many developed countries rates have stillbirth rates as low as 3-5 per thousand births, most developing countries have rates that are ten-fold higher.<sup>(5)</sup> The estimated average global SBR in 2015 was 18.4/1000 births, down from 24.7 in 2000. Both fetal growth restriction and preterm birth are strongly associated with placental dysfunction and subsequent

poor fetal health, which carry increased risk of both antepartum stillbirth, and, for a compromised fetus who handles the labour process poorly, intrapartum stillbirth.<sup>(6)</sup> Stillbirth contributes to majority of perinatal deaths. More than two third of the stillbirths taken place during pregnancy & remaining during course of labor. Prevalence of prenatal deaths in a society is the direct indicator of the quality of antenatal care in the country.<sup>(7)</sup> Present study was conducted to understand the prevalence, socio epidemiological and etiological factors of Stillbirths at tertiary care hospital.

### Material and Methods

The present retrospective record based observational study carried out at an obstetrics and gynecology department of a tertiary hospital of a Government Medical College, located at Northern Maharashtra region which is a tribal area.

The study conducted during the period of two years i.e. from 01/04/2014 to 31/03/2015 & from 01/04/2015 to 31/03/2016. The total number of deliveries during the period recorded.

The study case records include pregnant women who delivered a stillbirth baby after admission during the study period. Stillbirth includes the babies borne after 28 weeks having no signs of life and having weight more than 1000 gms.<sup>(1)</sup> The babies born before 28 weeks and birth weight less than 1000gm and no signs of birth were excluded. The incomplete records

were excluded. Institutional Ethical committee approval was obtained prior to the study.

The data regarding socio-demographic profile, gestational age, parity, maceration status, birth weight at the time of delivery, cause of stillbirth were collected from indoor case sheet. If case records mentioned more than one cause for stillbirth, most appropriate cause considered for study purpose. All the collected data entered, cleaned and analyzed using Microsoft™ Excel 2010. Descriptive analysis which includes frequency distribution showing number and percentages were generated for each identified variables. The stillbirth rate was calculated as the number of stillbirths per 1,000 births, the sum of live births and stillbirths.

## Results

During the study period i.e. from April 2014 to March 2016, total no. of 19085 deliveries conducted in the obstetric and gynecology department of the tertiary care centre, out of these 978 deliveries presented with the stillbirths. The overall stillbirth rate was 51/1000 birth. Year wise distribution shows that during 2014-15; 513 stillbirth out of 9190 deliveries (55.8 per 1000 live birth) and during 2015-16, 465 stillbirth out of 9895 deliveries (46.9 per 1000 live birth). (Table 1)

Table 2 shows that out of 978 stillbirth during the study period, majority i.e. 442(45.9%) from the age group of 21-25 yrs followed by the 273(27.9%) were from 26-30 yrs age group. 140(14.3%) were between the age group of 16-20 yrs. i.e. teenage pregnancies. Almost 66.1% pregnancies were pre term while 342(34.9%) % 306(31.2%) pregnancies of stillbirth were having early preterm and late preterm gestational age respectively. 634(64.8%) were macerated. Majority of women were prime gravid 54.3%. 33.7% baby were between 1 to 1.5kg and 31.8% baby were born between 1.5 to 2.5 kg weight.

Pregnancy induced hypertension was found to complicating 259(26.48%) pregnancies, Prematurity [184(18.81%)], Medical disorder including Severe anemia [135(13.8%)], IUGR [89(9.1%)] were etiology found in stillbirth. Congenital anomalies were complicating 7.56% of pregnancies. Ante partum hemorrhage was found to 5.82%. Almost 8.79% of pregnancies stillbirth cause was unknown. (Table 3)

**Table 1: Year wise still birth rate distribution during the study period from April 2014- March 2016**

Sr. No.	Year	Total Number of Deliveries	Total Number of stillbirth	Rate per 1000 live births
1	April 2014- March 15	9190	513	55.8
2	April 2015- March 16	9895	465	46.9
	Total	19085	978	51.2

**Table 2: Maternal & Fetal characteristics associated with stillbirth during the study period from April 2014- March 2016 (n=978)**

Sr No	Variables	Numbers	Percentage
1	Age group(Yrs)		
	16-20	140	14.3
	21-25	442	45.9
	26-30	273	27.9
	31-35	110	11.2
	>35	13	01.3
2	Parity		
	G1	532	54.3
	G2	205	21.0
	G3	147	15.3
	G4	62	06.3
	G5	32	03.1
3	Gestational age		
	Early preterm (28-32 weeks)	342	34.9
	Late preterm (>32-37)	306	31.2
	Term (>37-41 wks)	231	23.6
	Past term (>41 wks)	99	09.3
4	Macerated Status		
	Present	634	64.8
	Not Present	344	35.2
5	Birth weight (Kg)		
	>2.5	337	34.5
	<2.5-1.5	311	31.8
	<1.5->1.0	330	33.7

**Table 3: Etiology wise distribution of the Stillbirth during the study period from April 2014- March 2016: (n=978)**

Sr. No.	Etiology of stillbirth	No. of Cases	Percentage
1	Pregnancy induced Hypertension	259	26.48%
2	Prematurity	184	18.81%
3	Medical disorders (S. Anemia)	135	13.80%
4	IUGR	89	9.10%
5	Idiopathic	86	8.79%
6	Congenital Anomalies	74	7.56%
7	APH	57	5.82%
8	Placenta previa	25	2.55%
9	Postdatism	25	2.55%
10	Infections	24	2.45%
11	Malpresentations	16	1.63%
12	Cord Accidents	04	0.40%
	Total	978	100.0

## Discussion

Despite the significant advances, stillbirth continues to be high in the developing countries, contributing to 97% of stillbirths reported worldwide annually. India shares the highest burden of stillbirths (75%) as compared to other South-East Asian countries.<sup>(8)</sup> At the national level in India, the estimate of stillbirth rate for the year 2010 is 7. Fetal deaths remains high though perinatal mortality has reduced over few decades. Hence the present study carried out to study stillbirth epidemiology and etiology at obstetrics and gynecology department of a tertiary care hospital of a Government medical college located at a tribal area of a Maharashtra.

In the present study, we observed 978 stillbirth during April 2014 to March 2016 with average Stillbirth rate is 51/1000 birth. The difference is more because the study conducted at a tertiary care centre. The rate is higher (55.9 per 100 live births) in 2014-15 as compared to 2015-16 in which it was 46.8 per 1000 live births. This could be because of improving transport mechanism or utilization of ANC services.

This stillbirth rate in our study compared with other studies shows that it is lower with studies C Okeudo et al<sup>(9)</sup> in south east Nigeria (180/1000 deliveries), Sujata et al<sup>(10)</sup> (110.69), Chitrakumari et al<sup>(11)</sup> (64.1) & Bhattacharya S et al<sup>(12)</sup> (59.76/100 deliveries) in north Bengal while higher with Shaaban LA et al<sup>(13)</sup> (10.1per 1000 deliveries), Korde-Nayak VN & Gaikward PR<sup>(14)</sup> (35.2), & the national average 39/1000 live birth.<sup>(15)</sup> Stillbirth rates vary widely depending on geographic region, socioeconomic condition and also in different regions in the same country. It also varies from the hospital settings as well as time duration of the studies. Many time stillbirths are anticipated by the obstetrician, till some stillbirth occurs suddenly and unexpectedly. There is need of introspection and retrospection to figure out probable causes of fetal deaths and device strategies to reduce the burden.

In our study, highest prevalence in the age group of 21-25 age group and 14.3 percent of stillbirth were contributed by the age group of 16-20 yr of age. This shows early marriages and teenage pregnancy contributes to the stillbirths. 54.3 percent having primigravidae which correlates with the findings of the Hashim N et al<sup>(3)</sup> that primiparity as a risk factor for maternal and perinatal outcome in comparison with multigravida.

66.1 percent stillbirth occurred in preterm pregnancies out of which 34.9% were early preterm. These findings similar to other studies<sup>(12,14)</sup> which found preterm births associated with stillbirths. Though more than 60 percent contributed by the preterm birth, still 40 percent term deliveries cause still birth suggest these stillbirths can be prevented by the intrapartum care during labour or timely transportation. Suboptimal intrapartum care in health facilities including tertiary

centre were mainly responsible for majority of still births which could have been prevented. 64.8 percent stillbirths were macerated. This finding contradicts with the study by Bhattacharya S et al<sup>(12)</sup> who found 40 percent were macerated. The reason could be as our facility is tertiary referral centre and many women were referred for further management after IUFD has been diagnosed outside prior to admission hence macerated. 65.5 percent of stillbirth having birth weight less than 2.5kg.

All though congenital malformation and chromosomal abnormalities are unavoidable, routine screening, and selective termination of pregnancy would reduce these deaths. In ours study 7.56% cases were due to congenital malformations. Korde-Nayak & Gaikwad Pradeep<sup>(14)</sup> and Ravi Kumar et al<sup>(16)</sup> reported congenital malformation in 9.3% & 10.3% cases of stillbirths respectively which slightly higher rates as compared to our study.

Common causes of ante partum still births were placental insufficiency secondary to hypertension (26.4%), prematurity (18.8%), Medical disorder (13.8%), IUGR (9.1%) ante partum hemorrhage(5.8%). Similar observations were reported by other studies.<sup>(14,16,17)</sup> Among all the socio demographic factors studied lack of antenatal care, low socio economic class, lack of health education, illiteracy, unregulated reproduction, early marriages, teenage pregnancies, poor nutrition, poverty, social taboo were formed to be significantly, associated with higher stillbirth rates. Mc Clure et al, Ravi kumar et al and Chitrakumari et al have reported similar observations in their studies.<sup>(17,16,11)</sup>

The Every Newborn Action Plan has the target of 12 or fewer stillbirths per 1000 births in every country by 2030.<sup>(18)</sup> Prematurity and low birth weight due to various medical and obstetrics cause were associated with higher percentage of stillbirth. Maternal under nutrition, anemia, cervico vaginal infection, heavy and strenuous work during pregnancy contributes to the onset of preterm labour and stillbirth of premature and low birth babies.<sup>(13)</sup> The study area is being remote area having lack of infrastructure, delay in transportation due to lack of facilities at periphery leads to many women still attempt to deliver at home by untrained dais or trained person with inadequate facility. In case of difficult in labor, the transport to the nearest hospital is fraught with logistic problems and by the time they reach to tertiary care centre suffers from complications like Eclampsia, Obstructed labour, Cord accident, APH, Rupture Uterus etc. when saving Fetus is difficult.

## Conclusion

Though the stillbirth rate is declining over the period but still the reduction rate is very slow specially in developing countries like India. Congenital fetal malformations are unavoidable but Hypertension, Ante partum hemorrhage, maternal malnutrition, IUGR, are

the common factors causing fetal demises which can be preventable by if good quality obstetric care i.e. routine antenatal checkups, prenatal screenings, early recognition of danger signs made available at the right time. Timely referral of high risk cases to the tertiary care centre is need of hour for reducing still birth rate. High quality Intra partum monitoring care at a tertiary care centre located at rural area by providing adequate infrastructure with trained manpower will certainly reduce the substantive number of still births.

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