“ASSIGNING CAUSE OF STILLBIRTH- COMPARISION OF TWO METHODS: ONE YEAR HOSPITAL BASED OBSERVATIONAL STUDY”

BY

REG NO. BM0117005

Dissertation

Submitted to the
KLE Academy of Higher Education and Research,
Belagavi, Karnataka

In Partial Fulfillment
of the requirements for the degree of

M. D. (Doctor of Medicine)
IN
PAEDIATRICS

DEPARTMENT OF PAEDIATRICS,
JAWAHARLAL NEHRU MEDICAL COLLEGE
BELAGAVI, KARNATAKA

APRIL - 2020

KLE Academy of Higher Education and Research, Belagavi, Karnataka

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Guide.

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ACKNOWLEDGEMENT

It is an immense pleasure for me on this occasion, to convey my gratitude and regards to all the personalities to whom I owe a lot for the successful completion of my dissertation.

It is with a deep sense of gratitude that I humbly acknowledge my indebtedness to my guide **Dr.S.M DHADED** MD,DM (Neonatology) Professor, Department of Pediatrics, Jawaharlal Nehru Medical College, Belagavi, for his able guidance and support, valuable suggestions, fatherly advice and constant encouragement throughout the study which actuated me to furnish the study.

I express my deepest sense of gratitude to my eminent and esteemed teachers **Dr. V. D. PATIL** MD, DCH, Professor, Department of Pediatrics, J. N. Medical College, Registrar, KAHER and **Dr.(Mrs)N. S. MAHANTSHETTI** MD, DCH, Professor, Department of Pediatrics, Principal, J. N. Medical College for permitting me to carry out this study, their unabated inspiration, constant support and encouragement.

I express my sincere and humble gratitude to **Dr.Mahantesh. V. Patil** MD, Professor and Head, Department of Pediatrics, J. N. Medical College for his encouragement and support during my dissertation.

I am extremely grateful to Professors, **Dr.Sujata Jali** MD,DCH, **Dr.(Mrs.)Roopa.Bellad** MD,DCH, **Dr.(Mrs.) Manisha Bhandankar** MD,MRCP,(Neonatology), **Dr.Mahesh Kamate** MD, DM (Pediatric Neurology), **Dr. Dnyaneshwar Kamble** MD, **Dr.Tanmaya Metgud** MD , **Dr. Santosh Kurbet** MS, M.ch (Paed Surgery). I am also thankful to Associate professors **Dr. (Mrs) Supriya Patil** MD , **Dr. Veeresh Manvi** MD, DNB (Paediatric Cardiology), **Dr. Abhilasha** MD DCH , **Dr .Bhavana Koppad** MD , assistant professors **Dr.(Mrs) Meenakshi B R** MD , **Dr.(Mrs) Meenakshi R. Sarvi** MD. Senior residents **Dr.Sindhura B.M**M.D **and Dr. Govind Auradkar** MD, for their valuable suggestions and encouragement.

I immensely thank **Mr. Ramesh Dhareshwar** M. Sc. for his valuable help in the statistical analysis of the study.

I remain grateful to my friends and colleagues for their love and support and also extend my sincere thanks to our labor room staff.

I would also like to thank **Mr. Harshad, Mrs Arati Ambewadi** and **Mr. Mahantesh** for their help and co-operation.

I express my indebtedness to all the **Mothers** who have participated in this study.

I want to thank **Mr. Ravi Hullur** Digital library incharge, **Mr. Pandu** and **Mr. Arun** of JNMC main Library Xerox Centre, Belagavi for the extensive help in the formatting, printing and binding of the thesis.

I am highly obliged to my parents **Dr.Veerappa Kothiwale** and **Dr.(Mrs.) Shaila Kothiwale,** my brother **Viraj Kothiwale** for their love and affection. No goal seems impossible to me because of their love and support. They also inspired me to take-up my studies. I am grateful to all my friends for their constant support and help in the dissertation work.

I deeply thank all my family members for their love, affection and their blessings without whom I would not have been here in this place.

Date :

Place : Belagavi **Dr. VISHAKA KOTHIWALE**

LIST OF ABBREVIATIONS

AIDS	-	Acquired Immunodeficiency disorder
APH	-	Antepartum Hemorrhage
BMI	-	Body mass Index
BP	-	Blood pressure
CODAC	-	Cause of Death and Associated Conditions
ENAP	-	Every Newborn Action Plan
FGR	-	Fetal growth restriction
FLR	-	Free labor room
GDM	-	Gestational diabetes mellitus
HIC	-	High income countries
ICD	-	International classification of diseases
INCODE	-	Initial causes of fetal death
IUD	-	Intrauterine death
IUFD	-	Intrauterine fetal death
IUGR	-	Intrauterine growth restriction
LMIC	-	Low-and middle- income countries
LMP	-	Last menstrual period
NICE	-	Neonatal and Intrauterine death Classification according to Etiology
PE	-	Pre-eclampsia
POG	-	Period of gestation
PROM	-	Premature rupture of membranes
PSANZ-PDC	-	Amended Aberdeen, Extended Wigglesworth, Perinatal

		society of Australia and New Zealand – perinatal death classification
RECODE	-	Relevant Condition at Death
SBR	-	Stillbirth rate
WHO	-	World heath organization

ABSTRACT

Background and objectives

Developing countries account for 98% of estimated 3.3 million stillbirth which occur annually. While many developed countries have stillbirth rates as low as 3-5/ 1000 birth. A large number of factors have been associated with the risk of fetal death like genetic, maternal, systemic infections, placental and fetal pathology Assigning the cause of stillbirths, is accepted as crucial step towards the goal of reducing stillbirth. However, the use of suboptimal system may lead to a loss of important information and contributes to high proportion of unexplained deaths which is a major public health problem and also fails to assign long term prevention strategies. The present study was undertaken to compare assigning causes of stillbirth by clinician and investigator and know the stillbirth rate and type of stillbirth.

Materials and methods

One year observational study was conducted from January 2018 to December 2018 in the Department of Pediatrics, KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi. A total of 161 stillbirths with gestation ≥20 weeks were studied. Maternal and stillbirth data was collected in a structured proforma. The clinician assigned the cause of stillbirth based on their routine system for determining the cause of stillbirth and the investigator of the study assigned the cause per Global Network cause of stillbirth algorithm. The clinician's assigned causes of stillbirths were regrouped into broad categories as per the algorithm. Interrater agreement was assessed by Cohen's Kappa.

Results

During the study period there were 4232 deliveries and 161 (3.80%) stillbirths. Stillbirth rate in our study was 38 /1000 births. Unregistered cases were 55.90%. The mean age of women in the study was 24.8 ± 4.12 and 44.10% were in 20-25 years age group. Higher risk of stillbirth was noted among primi (58.39%) and in gestational age group of 29-36 weeks (61.25%) with mean gestation 33.14 ± 4.60 weeks. Nearly threeforth (72%) of stillbirths were delivered through vaginal route and 80.7% occurred in antepartum period. Fresh stillbirths accounted for 62.11%. Out of 161 stillbirths 87.14% were female. More than half i.e 54.66% of stillbirths weighed <1500 gm. Clinicians assigned causes were regrouped as per algorithm for easy comparison. Asphyxia (68.94%) was the major cause followed by congenital anomalies (11.18%). Assignment by investigator using the algorithm showed 68.32% were due to asphyxia. Interrater agreement was assessed by Cohen's Kappa. This showed clinician and investigator agreement in assigning cause of stillbirth is 86%. As per the agreement levels, Complications of prematurity (1), Asphyxia (0.98) and Congenital anomaly (0.93) showed a perfect agreement. Infection (0.65) showed a substantial agreement and Unknown (0.56) moderate agreement

Conclusion

Assigning the cause, is accepted as crucial step towards the goal of reducing stillbirth. The Rate in our study was 38/1000 births. The Global Network Cause of Death algorithm to classify causes of stillbirth provides a reliable data in low resource settings. Interrater agreement assessed by Cohen's Kappa, showed clinician and investigator agreement in assigning the cause of stillbirth is 86%.

This simple classification system, which does not need extensive investigations can be used to inform and provide public health strategies to reduce stillbirth rate and achieve better pregnancy outcome.

Keywords

Stillbirth, Algorithm, Classification system.

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INTRODUCTION

"Stillbirth is defined as death that occurs prior to the complete expulsion or extraction from the mother of a fetus of more than or equal to 20 weeks of gestation or weighing more than or equal to 500 grams" [1]. Stillbirths taking place in the intrapartum period usually have a normal appearance and are called fresh stillbirth. The skin not being intact states that death has occurred more than 24 hours before delivery in the antepartum period and called macerated stillbirth.

All stillbirths are a tragedy in itself and a potential life lost. There are, various psycho-social consequences for parents such as anxiety, long-term depression, post-traumatic stress disorder and stigmatisation[2].Women who have witnessed a stillbirth are more likely to experience this again in following pregnancies than those who have not. An approximate of 2.6 million stillbirths occur worldwide every year[3], making stillbirth the fifth leading global cause of death across all age groups and outranking diseases like Diarrhea, HIV/AIDS, Tuberculosis, Road traffic accidents and Cancer [2].

About 98% of stillbirths take place in low- and middle-income countries (LMIC). Stillbirth rates are maximum in South Asia and sub-Saharan Africa, with rates as high as 40–50/1000 births paralleled to 2–3/1000 births in high income countries [4]. The stillbirth rates are comparable to or more than the neonatal death rates, with approximately 3 million stillbirths occurring in the last trimester yearly. The add on of second trimester stillbirths (20–27 weeks) upsurges the assessed number of stillbirths globally to more than 5 million yearly. The causes of stillbirth and preterm birth in this gestation overlap and also preterm delivery rate would be higher in populations with increased stillbirth rate if stillbirths were counted during calculation of preterm birth rates [5].

Data suggests that most of these deaths could be prevented. A systematic review of perinatal audit in LMIC aimed at gathering the timing and clinical demarcation of causes and associated conditions of death. This took place at health facility level by healthcare workers and it was likely to advance the quality of care[6]. When they analyzed the studies done before and after introduction of perinatal audit, they observed a reduction in perinatal mortality of 30%.

It is vital that we recognize the reasons which have led to a stillbirth and develop interventions with a focus on high risk groups. In developing countries, the causes of stillbirth, generally similar across regions, include maternal infection, fetal asphyxia, trauma, congenital abnormalities, fetal-maternal hemorrhage, and a variety of medical conditions of the mother. Yet, for most of the cases the cause of stillbirth is currently never recognized which accounts for 25-60% of all fetal deaths[7].

Assigning the cause of stillbirths, is accepted as an important step towards the goal of decreasing the stillbirth rate. Use of suboptimal system to identify and record the cause may lead to increased percentages of unexplained stillbirth which is a major public health problem and also fails to assign long term prevention strategies[8]. The WHO mentions the use of International Statistical Classification of Diseases and Related Health Problems (ICD) for classification of perinatal deaths for international reporting. The weak points in ICD for categorizing stillbirths has given rise to many disparate systems currently being in use, limiting worldwide comparisons and even when used leading to a increased number of unknown stillbirths[9].

Hence the knowledge of the cause and uniformity in classification of stillbirth helps in knowing the primary events leading to stillbirth. It is important for setting the priorities for health service to identify the gaps and highlight the need for preventive

strategies. A universally accepted classification system that is simple and can be used by all the heath care workers even in the rural setup will help countries or districts to benchmark and compare their mortality rates and the associated factors or underlying causes[10]. This in turn will help in providing the appropriate resources to fill health gaps and to develop equitable services which can recognize and respond to local challenges.

New global health figures show India to have the highest rates of stillbirth in the world. In India, the rate was 22/1000 pregnancies in 2015. It accounted for 592,100 stillbirths out of a total 2.6 million of such births. To reduce stillbirth rates, the prevalence, risk factors and causes must be known [11].

Hence To address the gaps in standardized systems to determine the cause of stillbirth in low-middle income countries, McClure et al, developed The Global Network Cause of Stillbirth algorithm. Assigning the cause using the algorithm for low resource areas to determine the likely cause of stillbirth provides advantages of comparability, consistency and transparency.

We plan to undertake this study to compare the cause of stillbirth obtained with the stillbirth algorithm to the clinicians assigned cause in low resource conditions, and to determine the stillbirth rate and estimate the number of fresh and macerated stillbirths.

OBJECTIVES

PRIMARY

1. Assigning Cause of stillbirth by comparison of two methods- routine versus Global Network cause of stillbirth algorithm to determine the probable cause of stillbirth

SECONDARY

1. To know the rate of stillbirth.
2. To estimate rate of fresh and macerated stillbirths

REVIEW OF LITERATURE

Stillbirth usually are a reason for half of all perinatal mortality, with an estimated 4 million globally each year. More than 97% of these stillbirths take place in developing countries. Stillbirths have been understudied, underreported and rarely have been well thought-out in attempts to improve pregnancy outcome in developing countries. Perinatal mortality reflects one of the important health index of the country and also a sensitive indicator of maternal and child health. Nearly 60 % of perinatal death is due to stillbirths in India which can be prevented [12].

Definition

World Health Organization (WHO) in its International Classification of Diseases Revision (ICD-10) defines fetal death as:"Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles"[13].

The WHO further distinguishes between early fetal deaths/stillbirths (death of a fetus with a birth weight >500 g, if birth weight not available gestational age >22 weeks or crown-heel length >25 cm) and late fetal deaths/stillbirths (death of a fetus with a birth weight >1000 g, if birth weight not available gestational age >28 weeks or crown-heel length >35 cm) [14] (Figure 1).

However, the definition of stillbirth varies from nation to nation and within the same nation. In high income countries, the definition tends to be at lower level of baby's maturity. In the UK, the definition of stillbirth is from 24 weeks of gestation [15]

while in Canada and some states in the USA, it is as low as 20 weeks [16]. In LMIC, definitions of stillbirth are typically at a higher level of maturity, for example it is from 28 weeks in Nigeria, South Africa and Nepal [17]. Definitions also vary within countries. In India Bhattacharya et al [18] used 28 weeks of gestation as a benchmark for stillbirth, where as another study in the country used 24 weeks[19].

Stillbirth categorization is also based on timing of death in relation to labor, the stillbirths that usually in the antepartum period have skin that is macerated (macerated stillbirth)occurs prior to onset of labor. Stillbirths occurring in intrapartum period (during labor) are called fresh stillbirth.

Antepartum stillbirths occur due to combination of severe maternal, placental and fetal conditions. There are various risk factors for antepartum stillbirth like advanced maternal age, high parity, maternal smoking, obesity etc. Intrapartum fetal death usually results from fetal distress and /or obstructed labor and often reflects poor quality of essential obstetric care[20]. Many factors are unidentified in the developing countries, where significant deliveries occur, usually at home although scenarios are changing with promotion of institutional deliveries by virtue of numerous government schemes.

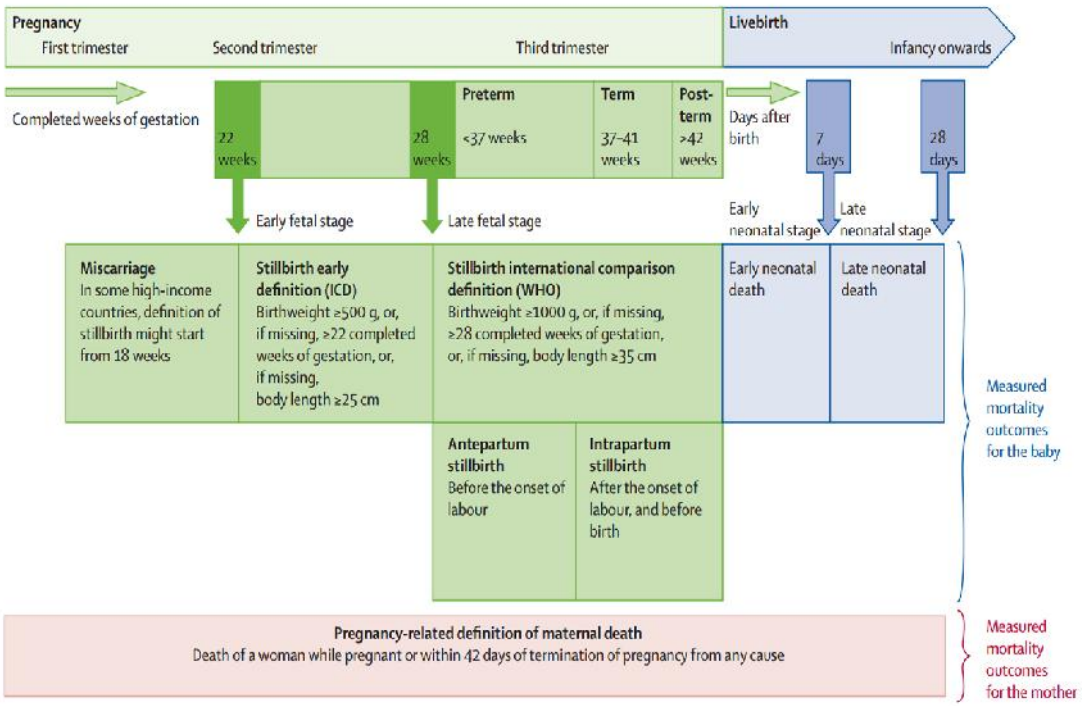


Figure1. Defining stillbirths, neonatal deaths and associated pregnancy outcomes[3]

Overveiw and trends of Global stillbirth rate

The Stillbirth rate is defined as the number of stillbirths per thousand births and stillbirths during the year. Such deaths include antepartum and intrapartum deaths.

Stillbirth rates (SBR) vary from one country to another and variation exists within different regions of the same countries. In 2006, Stanton et al estimated the rates and numbers of stillbirths for 190 countries for the year 2000. They reported that the resulting stillbirth rates varied from 5 per 1,000 in HIC to 32 per 1,000 in LMIC. The probable number of worldwide stillbirths was 3.2 million (uncertainty range 2.5-4.1 million). Due to data limitations and the conventional approach taken, the real numbers might be more than reported[15]

A study reported that the top 10 countries with the highest burden of stillbirth were India, Nigeria, Pakistan, China and Bangladesh. The rest were Stillbirth in sub-Saharan Africa, Indonesia, and Afghanistan[4].

Trends

Current trends of global stillbirth rates remain the same, it is projected that the global stillbirth rate in 2020 will be about 16.7 per 1000 births, and it is unlikely that all the countries will reach the Every Newborn Action Plan of stillbirth target of 12 or less per 1000 births by 2030. Without targeted interventions focused on high-burden countries, the total number of lives lost due to stillbirth worldwide will be about 2 million per year by 2020, with 90% in LMIC. High-income countries and upper middle-income countries have already achieved the ENAP target of 12 stillbirths or less per 1000 births. The long-term trend indicates that the most significant reduction in stillbirth occurred between the years 1950 and 1975 when stillbirths were reduced by two-thirds. This is mainly attributed to improvement in health facilities and early identification and appropriate treatment of infection and better-quality of obstetric care, therefore the poor progress in reducing stillbirth and indeed maternal and neonatal deaths in low and middle income countries has been attributed to lack of action rather than knowledge[4].

Stillbirth rate in India

Perinatal deaths are responsible for about 7% of the total global burden of disease. In developing country like India there has been enormous improvement in health care system reflecting in the reduction of maternal and perinatal deaths when compared to the previous 4 decades[21].The perinatal mortality rate is the index of

current obstetrical and neonatal facilities especially with the waning of infant mortality rate to low level. In recent years it has been implicated to have a superior worth as a reliable measure of maternal & child health care.

India has the highest number of stillbirth globally with an estimated 592100 deaths per year and a WHO estimated rate of 22 per 1000 births with a variation of 22 to 66 per 1000 births . The government of India has also developed an Indian newborn action plan which aims to reduce stillbirths to <10 per 1000 births by 2030 [22].

Etiology and risk factors of fetal death [23]

For better understanding and evaluation there is an undeniable need to enumerate the multifactorial risk factors and etiology associated with fetal death. The following factors contribute to fetal death.

Fetal :

• Chromosomal anomalies

• Non-chromosomal birth defects

• Nonimmune hydrops

• Infections-viruses, bacteria, protozoa

Placental :

• Abruptio placenta

• Fetal-maternal hemorrhage

• Cord accident

• Placental insufficiency

• Intrapartum asphyxia

• placenta previa

• Twin to twin transfusion

• Chorioamnionitis

Maternal **:**

• Antiphospholipid antibodies

• Diabetes Mellitus

• Hypertensive disorders

• Trauma

• Abnormal labour

• Sepsis

Anaemia

Risk factors associated with stillbirth

1. Age

The rate of pregnancy loss was higher among the advanced maternal age (beyond 35 years) as demonstrated by Fretts and colleagues. The results have been cross checked with many other studies, and it states that there is association despite correcting for the important confounding factors such as inherited problems, birth defects, health problems and maternal weight[24].

The main cause is the uteorplacental under perfusion. Collagen progressively replaces normal muscle in walls of myometrial arteries in the older age group there by restricting luminal expansion leading to uteroplacental under perfusion which reduces birth weights more than birth lengths or head circumferences.

Study conducted by Lee et al [25] evaluating risk factors for stillbirths during the antepartum period in rural Nepal, reported a proportional risk of stillbirth of 2.0 among mothers aged 35 or older (95% CI: 1.51 – 2.63). Mothers who were 30 years or older were observed to have an increased risk of stillbirth in a study in Zambia (OR: 1.79; 95% CI: 1.46 – 2.20) by Stringer et al[26]. On the other hand, Engmann et al[27], suggests that teenage mothers are at increased risk of stillbirth than older mothers [OR :1.49 (CI: 1.12–1.99)].

2. Demography

Certain demographic factors for fetal death include race, low socioeconomic status, inadequate prenatal care and less education. Taking into consideration the overall incidence in India, 70% of these pregnancy losses are in the low socio-economic group. Mother's socioeconomic background are in turn related to the use of

alcohol, tobacco, and medical care. Alcohol consumption increases the risk of early fetal death, due to direct toxic effect, and also appears to cause anomalies associated with low birth weight[28].

3. Parity

Multiple studies like Engmann et al[27], McClure et al[29], suggests that nulliparity and multi-parity are associated with higher peril of stillbirth. A study in England during 2009-2011 to evaluate the key risk factors related with stillbirth in a multiethnic English maternity population recognized a noteworthy risk of stillbirth for parity (parity 0 and parity≥ 3)[30].

4. Obesity

The occurrence of obesity in mothers is increasing gradually and is linked with an amplified risk of fetal macrosomia and perinatal mortality. The explanations for this association are thought to be due to socio-economical, cultural as well as antenatal factors. These women are more likely to have complications like gestational diabetes and hypertension leading to stillbirth.

Even after controlling these issues, a high BMI remains an important risk factor for stillbirth and its association seems to upsurge as the gestation increases. Obesity also lead to hyperlipidemia, which may play a role in endothelial dysfunction, platelet aggregation, as well as to clinically significant atherosclerosis. Undeniably, in addition to advanced maternal age and low socio-economic status, the most important risk factor for stillbirth is pre-pregnancy obesity.[31] English maternity population identified a significant risk of stillbirth in women with a BMI ≥30, smoking, overt diabetes [32].

5. Smoking

Smoking is associated with fetal growth restriction and probably also with placental abruption,which are two main causes of stillbirth. [33].Gardosi J et al[20] showed an average risk of 1.36 in mothers found smoking in early pregnancy. The risk was increased (RR 1.8, 95%CI:1.4-1.9), probably as a result of social deprivation, which is strongly related to smoking. Passive or environmental smoking was linked with increased risk of stillbirth by 30%.

6. Access to care

Many studies reported an association between poor antenatal attendance and stillbirth. In a multi-national study, McClure et al [34]. reported that mothers who did not attend antenatal care were almost twice the risk of experiencing a stillbirth than mothers who attended (RR:1.6; 95% CI:1.4 –1.9). Bhattacharyya et al [18] reported mothers who live in rural areas not attending obstetric care had an augmented risk of stillbirth.

7. Socioeconomic factors and education

Low socioeconomic status has been reported to increase the risk of stillbirth in multiple studies. In a study assessing risk factors for stillbirth in rural Nepal, higher socioeconomic status, measured by proxies such as land ownership, lowered the risk of stillbirth (RR: 0.85; 95% CI: 0.74–0.98) [35]. Di Mario et al [36] in a systematic review, showed low socioeconomic status has been reported to have an attributable factor of more than 50%.

Poor maternal education is another demographic factor frequently reported to increase the risk of stillbirth. In a multi-country study of 4,301 births in multiple LMIC, McClure et al. reported that women with no education were at higher risk of stillbirth (RR: 1.4, CI: 1.2, 1.5)[34].

8. Emerging factor

Some factors that were rarely reported before are beginning to emerge from various studies. A secondary analysis of data from India by Sehgal et al [37] has shown a gradual rise of stillbirth among women when used biomass for cooking (OR: 1.26; 95% CI: 1.12, 1.43). This strengthens the earlier report by Pope et al [38] that indoor air pollution increases the risk of stillbirth (OR: 1.51; 95% CI: 1.23 - 1.85)

Cause of stillbirth

In order to understand and evaluate stillbirth analysis and enumeration of its causes is necessary. The causes can be effectively understood when its classified on the basis of maternal and fetal factors

a. Hypertensive disorders complicating pregnancy

Hypertensive disorders complicating pregnancy are common and form one of the deadly triad, along with hemorrhage and infection, resulting in a large number of maternal and fetal deaths. The major cause of fetal compromise occurs as a consequence of reduced utero placental perfusion.

Decreased uteroplacental perfusion from constriction of the artery is definitely the main culprit contributing to perinatal morbidity and mortality. The average width of the myometrial spiral arterioles of normal prenatal women is 500 µm. The same

measurement in women with preeclampsia is 200µm. Due to chronic placental insufficiency, the fetuses are likely to be growth retarded. In the milder form when the Blood Pressure (BP) is <160/100 mmHg, perinatal loss is about 10%. When BP exceeds 160/110 mmHg, perinatal loss doubles and when complicated by preeclampsia it is 3 times more[39].

For maternal conditions causing stillbirth, hypertensive disorders were frequently reported by researchers like McClure et al[4], Awoleke & Adanikin et al [41]. In a clinical trial involving 6,285 mothers in Bangladesh which reported patterns of antepartum complications and, pregnancy-induced hypertension to be a significant cause of death.

b. Maternal infection

McClure et al [7] have reported infections to be the maternal cause of stillbirth and it is a major contributer in developing countries.

The mechanism of stillbirth due to infection are firstly due to mothers infection leading to severe systemic disease, in which the fetus may die, though the pathogens are not spread to the placenta or fetus. Next, the placenta may be infected without transmission of the pathogens to the fetus but the placenta has a compromised blood flow leading to a stillbirth. Finally, contamination of the fetus due to organisms itself may injure vital organs resulting in stillbirth or an anomaly may occur that subsequently kills the fetus. A considerable amount of the infection related stillbirths in developing countries are due to fetal infection with microorganisms that also cause chorioamnionitis. In developing countries, infections with Gram negative organisms s as Klebsiella Pneumoniae and E Coli may be common [40].

c. Diabetes mellitus

To elucidate the magnitude of fetal death, an understanding of the relationship of maternal glycemic levels and its contribution as a factor in causing fetal death is essential. Listed below are the mechanisms by which Diabetes mellitus contributes to fetal death.

1. Placental insufficiency

2. Association with preeclampsia

3. Associated fetal anomalies

4. Unexplained

Unexplained fetal death

Stillbirths without a recognizable reason are exclusive to pregnancies intricated by overt diabetes. They are acknowledged as unknown as no clear reasons such as placental insufficiency, abruption, fetal growth restriction or oligohydramnios are present. Hyperglycemia mediate chronic aberrations in transport of oxygen and the fetal metabolites may account for the unexplained fetal death. Other factors such as ketoacidosis, PE and compromised placental flow can reduce uteroplacental blood flow and affect the fetal oxygenation and lead to stillbirth [42].

The American Diabetes Association (1999) has stated that fasting hyperglycemia defined as >105 mg/dL may be related with higher risk of fetal death during the last 4 to 8 weeks of pregnancy [43].

Malformation

The occurrence of major malformations in mothers with diabetes type 1 is approximately 5 percent[44]. Congenital Anomalies contribute to half of the perinatal deaths in diabetic pregnancies. Specific types of anomalies linked to maternal diabetes are summarized in table 1.

Table 1- Congenital malformations in infants of women with overt diabetes

Anomaly	Ratios of incidence
Caudal regression	252
Situs inversus	84
Spina bifida, hydrocephaly, or other central nervous system defect	2
Anencephaly	3
Heart anomalies	4
Anal/rectal atresia	3
Renal anomalies	5
Agenesis	4
Cystic kidney	4
Duplex ureter	23

A study done suggested that women with lesser glycosylated hemoglobin values at conception had fewer fetuses with anomalies in relation with women with abnormally high values[45].

d. Anemia

Iron deficiency anemia affects the fetoplacental unit which is clearly shown by the fact that in anemic women there is an increase in placental weight, an increase not related to fetal size which suggests inadequate oxygenation of the unit with a hypertrophic trophoblastic tissues. The importance of folate deficiency causes much

argument about its effect on fetal wellbeing. At first considered to be a cause of abruptio placenta and fetal loss, now there is a swing of opinion towards the view that it is important in the invasive stage of trophoblastic activity. The effect on fetus may be abortion, I.U.D. or congenital anomaly.

There is evidence indicating that pre-eclampsia and eclampsia occur more frequently in patient with iron deficiency or megaloblastic anemias than in non anemic gravidas.

e. Genetic conditions

Chromosomal abnormalities is the best known genetic cause of fetal demise seen in 6-12 % of stillbirths. Monosomy X (23%), trisomy 18 (21%), trisomy 21 (23%), and trisomy 13 (8%) are the common abnormalities noted. Autosomal recessive conditions as a result of single gene defect include conditions like glycogen storage diseases, metabolic disorders, and hemoglobinopathies, may lead to intrauterine fetal demise. X-linked conditions may cause death in male fetuses.

Few other causes of genetic abnormalities are also linked to stillbirth such as confined placental mosaicism tells us the presence of atypical chromosomes in some placental tissue with a normal fetal karyotype[46].

f. Post-term pregnancy

Perinatal mortality: Two large Swedish studies [47] analyzed that perinatal mortality amplified when pregnancy surpassed 41 weeks of gestation. A another study studied about the perinatal outcome in 6624 postterm pregnancies and analyzed that the complications associated with antepartum, intrapartum and neonatal death were higher at 42 weeks of gestation and beyond. The most noteworthy rise occurred

during the intrapartum period. The main root cause of death were due to prolonged labor with cephalopelvic disproportion, "unexplained anoxia," and malformations[48].

g. Antepartum hemorrhage

Placental causes of stillbirth, mainly abruptio placenta and placenta previa, continue to be some of the most frequently investigated causes of stillbirth. In the clinical trial by Khanam et al [49], antepartum haemorrhage was found to increase the risk of stillbirth almost four-fold (IRR:3.7; 95% CI: 2.3–5). The percentage of stillbirths attributable to placental causes ranges between 8.0% and 17.7% shown by Lori et al[50].

h.Malpresentation

Breech presentation is the commonest malpresentation. The fetal risk in terms of perinatal mortality is considerable in vaginal breech delivery. It is difficult to assess the magnitude of risk, because the complicating factors such as prematurity, twins, placenta previa, congenital malformations of the fetus etc., which are responsible or associated with breech, might contribute significantly to the fetal hazards. The overall perinatal mortality, ranges from 5-30% in hospital statistics of the developing countries.

The fetal damages in vaginal breech delivery are:

1. Intracranial hemorrhage, compression followed by decompression during delivery of the unmolded after coming head results in tear of the tentorium cerebelli and hemorrhage into the subarachnoid space. The risk is more in premature when the head is small and fragile. Baby can withstand anoxia following cord compression with the

delivery of the trunk for about 5 -7mins. A period of more than l0mins will produce asphyxia of varying degrees.

2. Asphyxia, the prominent cause of fresh stillbirth because the head is delivered too slowly and other causes are [51].

a. Cord compression soon after the buttocks are delivered and most after the head enters into the pelvis,

b. Retraction of the placental site

c. Premature attempt at respiration while the head is still inside,

d. Cord prolapse.

i. Cord accidents

Cord accidents include occult prolapse, cord presentation and cord prolapse. It is common in malpresentations, polyhydramnios, twins and prematurity. Prolapse of the cord is also favoured by an unduly long cord (normal length 45-55cms). It is suggested that spasm of the cord vessels may be as important a cause of fetal death as actual mechanical blockage, as in cases when cord is actually allowed to prolapse outside the vagina and suffer a loss of temperature. Further more handling of the cord may also cause spasm in which efforts to replace it can do little good. Prolapse of the cord at full dilatation followed by immediate delivery with forceps may save the baby from an asphyxial death. The longer the interval between the prolapse of the cord and the delivery of the baby, greater is the fetal mortality. If delivery can be completed within half an hour, fetal mortality can be reduced to 10% or less. If it is more than half an hour it rises to nearly 40%[52].

Classification of Stillbirth

Classifying the cause of fetal death has been onerous since ages, as the pathway to demise is frequently indistinct and therefore the decrease in the global burden of stillbirths is relied upon the planned actions that needs to be clear and necessitate in clear knowledge of the stillbirth[8].

To methodically and systematically cite applicable data from medical records and/or verbal autopsy data and allot the basis of death and its causative reasons for all the cases of stillbirth studied, the practice of uniform system to assign the cause is very useful and can be practiced across numerous settings to permit for comparison of findings[53].

Currently, there are many classification systems that are used to assign cause of perinatal death. But majority of these systems illustrate poor comparison and consistently report about two-thirds of stillbirths the cause is written as "unknown". Most systems were developed based on data from high-income countries. Thus, information required to use them successfully may not be available in low resource settings[40].

Few classification system are created for Low-Middle Income Countries where investigative tools such as autopsy or placental histology are generally inaccessible. Examples of systems include Frøen et al.'s Cause Of Death and Associated Conditions (CODAC) system which emphasizes on perinatal death and includes 10 categories. Neonatal and Intrauterine death Classification according to Etiology (NICE), includes 13 causes for perinatal death. These systems have only been used in small studies and usually do not differentiate among stillbirth and neonatal deaths to describe the aetiology[53].

The comprised classification systems were published between 1954 and 2016 and only six were considered precisely for stillbirth. Fourteen of the classification systems were designed to encompass perinatal mortality, three included neonatal death, two infant mortality and one included "late abortions"[8].

The systems like Relevant Condition of Death (ReCoDe), Initial Causes Of fetal Death (INCODE) and TULIP have groups that may require histological proof to support certain diagnoses. INCODE has sub-categories for congenital anomalies for various body systems, diagnosis may need a post-mortem. Few systems may need chromosomal assays for the final diagnosis. The new International Classification of Disease- Perinatal Mortality was developed for negligible data prerequisite and fewer clinical information when compared to other newly developed systems[54].

McClure et al developed a hierarchical classification system, the Global Network Classification System, which depends solely on readily accessible clinical data. The strong point of the system is consistency, transparency, and comparability across time and regions. It utilizes minimum and basic data from the mother, family or health providers and does not rely on investigations, placental inspection or autopsies to assign the cause of stillbirth using well established categories. Stillbirth is assigned by an algorithm hence probable sources of discrepancy and bias from clinician or lay coders are decreased[55].

Of the 70 studies that could have used a classification system to assign cause of death, only 14 (20%) used a classification system; 35 (50%) categorised cause of death using physical appearance (Fresh/Macerated) or time of death (Antepartum/Intrapartum) and 21 (30%) did not report using any classification system.

Of the 35 studies that categorized cause by physical appearance or time of death, the reported proportion of fresh/intrapartum stillbirths ranged from 4.3% in a hospital-based case-control study of 25 stillbirths in Brazil to 88.2% in another hospital-based study of 116 stillbirths in Gambia, with a median of 53% (IQR: 26.6). In addition, Wilkins et al reported one-third (31.4%) of stillbirths as having unknown time of death [8].

A study conducted by Jason et al. found that newer systems reduced the number of stillbirths previously categorized as "unexplained". Previous methods of classifications (e.g. Wigglesworth classification) resulted in up to 66% of stillbirths categorized as unknown and a new system called "Relevant Condition at Death (ReCoDe)" reduced this number to 15%. This study also found out that FGR was the major category of causes related to stillbirth and it was found in majority of the cases previously classified as unknown [54].

Another study by Vicki et al. with the title "An evaluation of classification systems for stillbirth" compared six different classification systems for stillbirths. These were Amended Aberdeen, Extended Wigglesworth, Perinatal society of Australia and New Zealand – perinatal death classification (PSANZ-PDC), ReCoDe, TULIP and CODAC stillbirth classifications. Three of the four outcome measures were the ability to retain the important information about the death by the classification system ("Infokeep"), the ease of use of the system ("Ease") and the proportion of unexplained stillbirths. They concluded that CODAC performed best (highest score) followed by PSANZ-PDC and ReCoDe, whereas Aberdeen and Wigglesworth did not perform so good and even reported highest proportion of unexplained stillbirths, hence both of these systems were not recommended for future use[8].

A study done in India used CODAC system to classify 87 stillbirths and they found that prolonged labor, hypertension in pregnancy and congenital anomalies were the main causes of stillbirth and nearly half of all stillbirths were intrapartum[71]. In Tanzania, a 10 year study of nearly 2000 perinatal deaths (including 1219 stillbirths) used the NICE system and found that obstructed/prolonged labor and hypertension were the main maternal conditions related with perinatal death[53].

Hence Stillbirth is one of the most common adverse result of pregnancy, yet is least studied, remain undocumented and historically has not been involved among the international health indicators. Registration of all births and stillbirths, together with estimation of cause of stillbirths is vital for developing countries. In order to recognize stillbirth rates, a standard classification system would be necessary for detailing the cause of stillbirth in developing countries.

MATERIAL AND METHODS

The study was conducted in the department of pediatrics, KLES Dr. Prabhakar Kore Charitable Hospital and Medical Research Centre, Belagavi from January 2018 to December 2018.

Study design

Observational study.

Study duration and period

One year, January 2018 to December 2018.

Place

KLE'S Dr. Prabhakar Kore Charitable Hospital and Medical Research Centre, Belagavi, a teaching hospital affiliated to Jawaharlal Nehru Medical College, Belagavi.

Source of data

All stillbirths who were diagnosed at admission or later in mother's admitted in free labor room of KLE'S Dr. Prabhakar Kore charitable Hospital, Belagavi.

Sample size

$n= 4pq/d^2$

The prevalence of stillbirth p= 2.2% (prevalence of stillbirth in KLES Charitable Hospital, Belagavi.)

q= 100-p

Relative error- d=3%, and confidence level of 99%, the sample size would be

n=161

Ethical clearance

Prior to the commencement, study was approved by the Ethical and Research Committee, Jawaharlal Nehru Medical College, Belagavi.

Selection Criteria

Inclusion Criteria

1. All stillbirths ≥ 20 weeks, period of gestation.

Informed Consent

All the pregnant women admitted in free labor room (FLR) fulfilling the inclusion criteria were briefed about the nature of the study and a written informed consent was obtained for participation in the study before enrollment.

Methodology

In mothers admitted with complaints of absent fetal movements or came with an ultrasound report showing intrauterine fetal death or death that occurred during the process of labor, information about the following were collected, demographic details, details about present complaints and duration, present pregnancy and any associated complication like pregnancy induced hypertension, eclampsia, severe anemia, gestational diabetes. TORCH infection and other significant illness were noted. Past obstetric performances and outcomes (including previous abortions, previous IUFD, associated toxemias etc) were listed.

Details of the labor like mode of delivery, type, indication for induction, duration of labor and pregnancy outcome i.e stillbirth were recorded in the structured proforma (ANNEXURE -3)

Stillbirth characteristics

Stillborn baby was examined for the following:

Sex, birth weight, type (fresh/macerated) and clinical examination for congenital / chromosomal anomalies and any other feature.

Assigning cause of death

Clinician assigned the cause of death based on their routine system for determining the Cause of death (COD). Investigator of the study assigned the cause by using Global Network Cause of Stillbirth Algorithm. It is a hierarchical method of determining the cause of stillbirth which includes the following characteristics – Trauma, congenital anomaly, fetal or maternal infection, asphyxia, complications of prematurity and unknown.

Recommendation for assigning Cause of stillbirth –

1. If trauma was present, regardless of any other potential cause of death such as infection, congenital anomaly, asphyxia, complication of prematurity; trauma was designated as the primary COD
2. If major visible congenital anomaly was present without trauma, regardless of any other potential COD present such as infection, asphyxia, complication of prematurity; congenital anomaly was considered as the primary COD
3. In the absence of trauma or congenital anomaly, if signs of maternal and fetal infection such as vaginal odor, malaria or syphilis was diagnosed, even if asphyxia was present, Infection was the primary COD
4. In the absence of trauma, anomaly and infection, if any maternal-fetal condition is associated with intrauterine asphyxia, it was the primary COD

5. In the absence of the above conditions if stillbirth occurred in less than 32weeks and non macerated during labor, complication of prematurity was assigned as the cause of death
6. If none of the above systems were used to classify then it was termed Unknown

Using these categories, the cause of stillbirth was assigned, the clinicians assigned cause of deaths were regrouped into broad categories as per the algorithm. Interrater agreement was assessed by Cohen's Kappa.

Statistical analysis

The data was coded and tabulated on excel spreadsheet and master chart was prepared. The data was analyzed using SPSS version 20.0 statistical software. The categorical data was expressed in terms of rates and percentages and the continuous data was expressed as mean ± standard deviation. Cohen's Kappa was used to assess the agreement level between the clinician and investigator assigned cause of stillbirth.

RESULTS

Table 2: Number of deliveries and stillbirths

No. of deliveries	4232
No. of live births	4071(96.20%)
No. of the stillbirth	161(3.80%)

During the study period there were 4232 deliveries and 161 (3.80%) stillbirths.

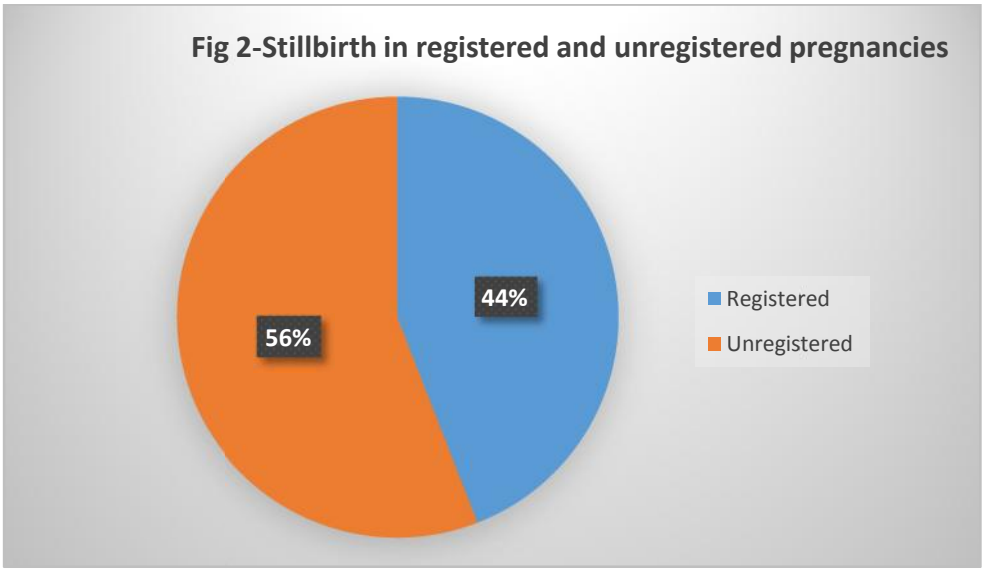
Table 3: StillbirthRate

Total No. of Deliveries	4232
Number of Stillbirth	161
Stillbirth rate	38/1000 births

Stillbirth ratein our study is 38 /1000 births.

Table 4: Stillbirth in registered and unregistered pregnancies

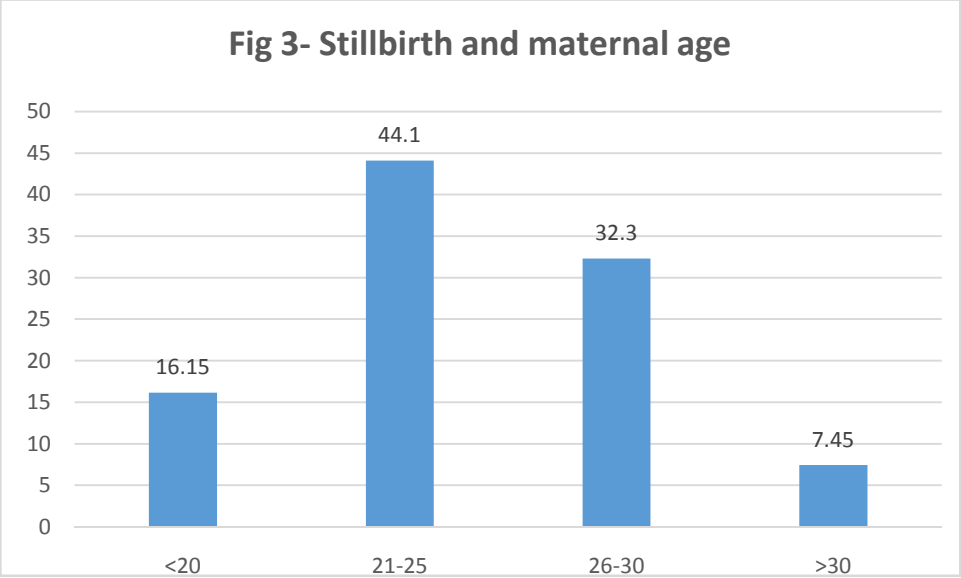
Status	Number	Percentage
Unregistered	90	55.9%
Registered	71	44.09%
Total	161	100%



Stillbirths inunregistered and registered pregnancies were 55.90%and 44.09%respectively.

Table 5:Stillbirth and maternal age

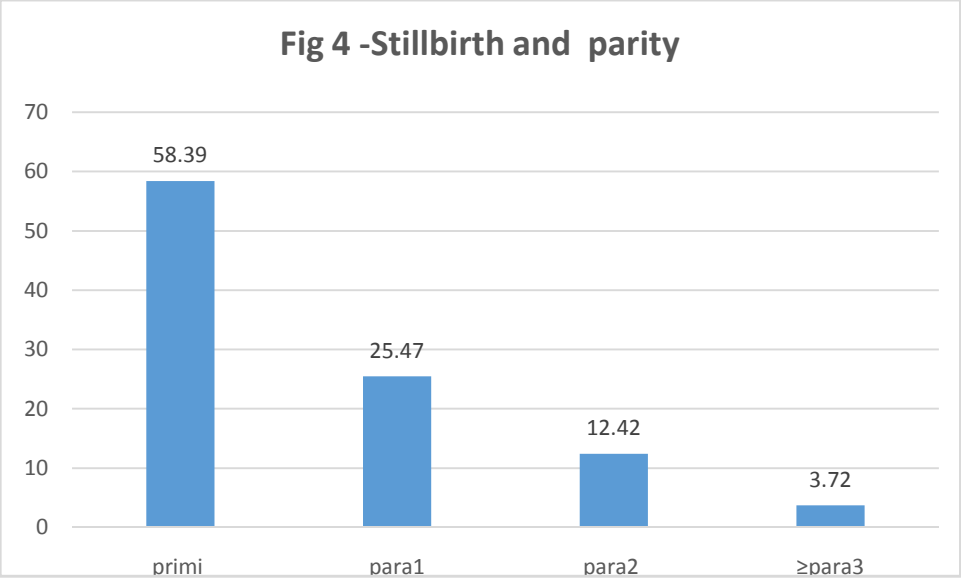
Age (years)	Total number	Percentage
< 20	25	16.15%
20-25	74	44.10%
26-30	52	32.30%
>30	10	7.45%
Total	161	100%



Stillbirths were more in the mothers inthe age group of 20-25 yearswhich was 44.10%, followed by 26-30 years with 32.30%. The mean age was 24.8 ± 4.12.

Table 6: Stillbirth and parity

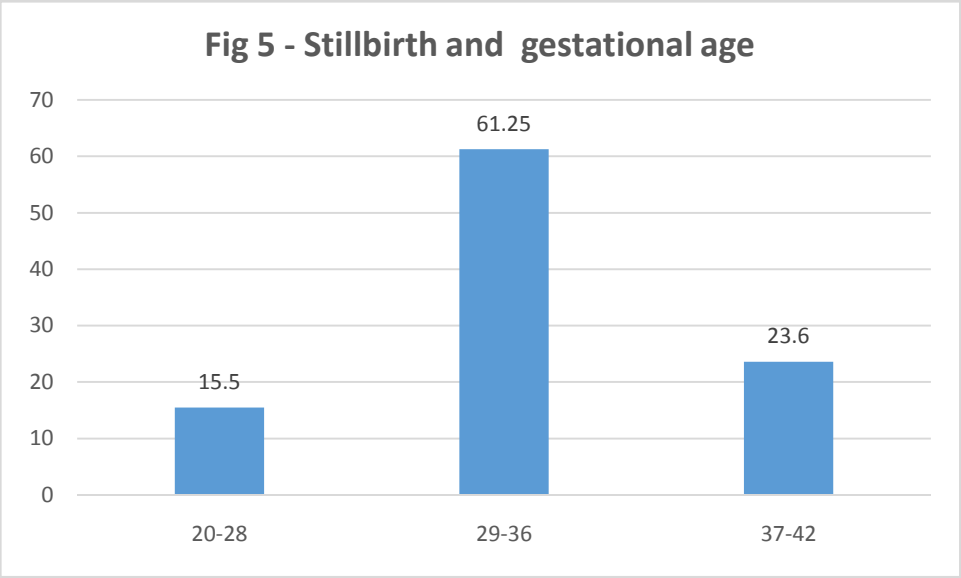
Parity	Number	Percentage
Primi	94	58.39%
Para1	41	25.47%
Para 2	20	12.42%
≥Para 3	6	3.72%
Total	161	100%



Our study showed higher risk of stillbirth among primi(58.39%), followed by firstpara(25.47%). Third paraor moreshowed lower risk (3.72%).

Table 7: Stillbirth and gestational age

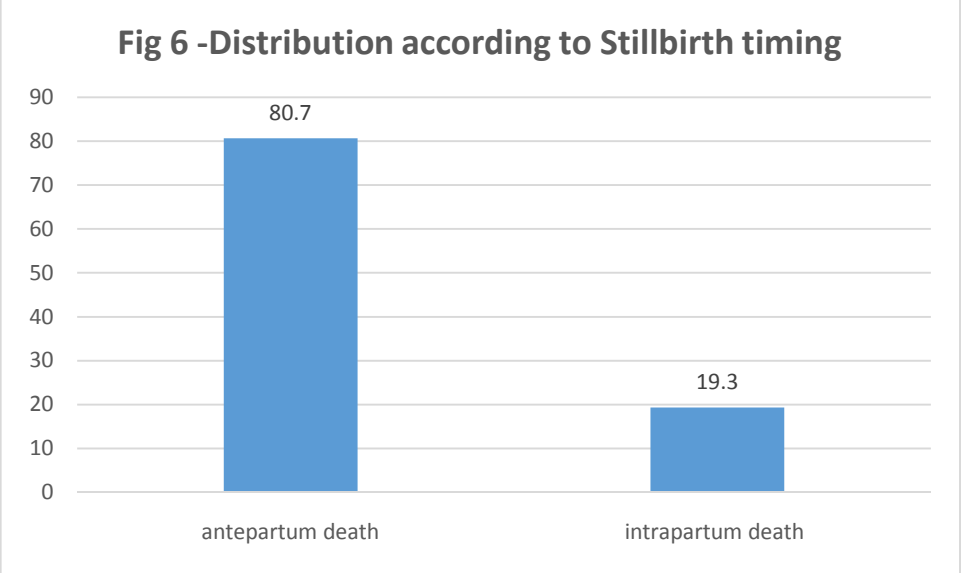
Gestational age (wks)	Number	Percentage
20-28	25	15.5%
29-36	98	61.25%
37-42	38	23.6%
Total	161	100%



Highest number of stillbirths were noted in the gestational age group of 29-36 weeks i.e 61.25%, followed by 23.6% amongst 37-42 weeks and 15.5% in 20-28 weeks. The mean gestational age was 33.14 ± 4.60.

Table 8:Stillbirth timing

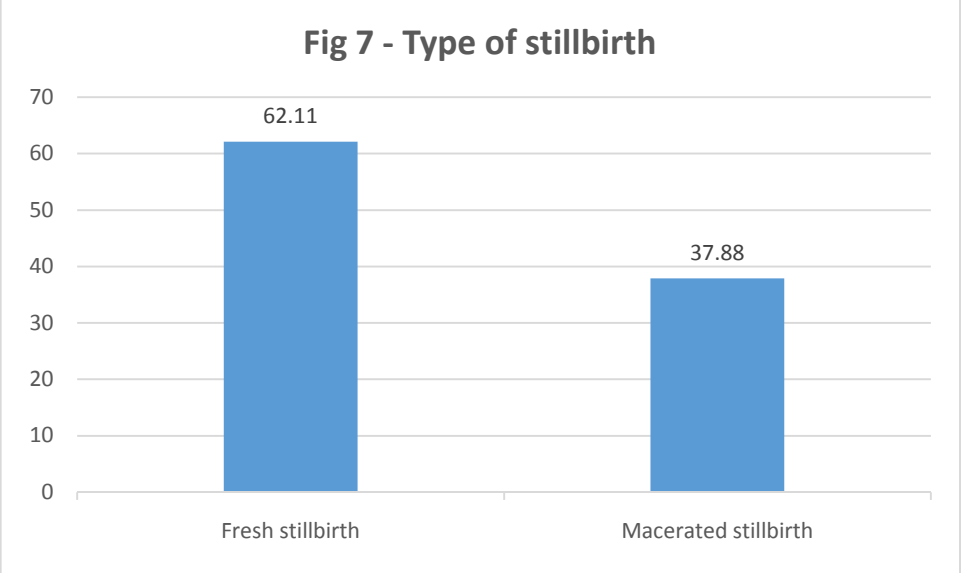
Time	Number	Percentage
Antepartum	130	80.7%
Intrapartum	31	19.3%
Total	161	100%



In our study 80.7% stillbirths occurred in the antepartum period and remaining 19.3% in intrapartum period.

Table 9: Type of stillbirth

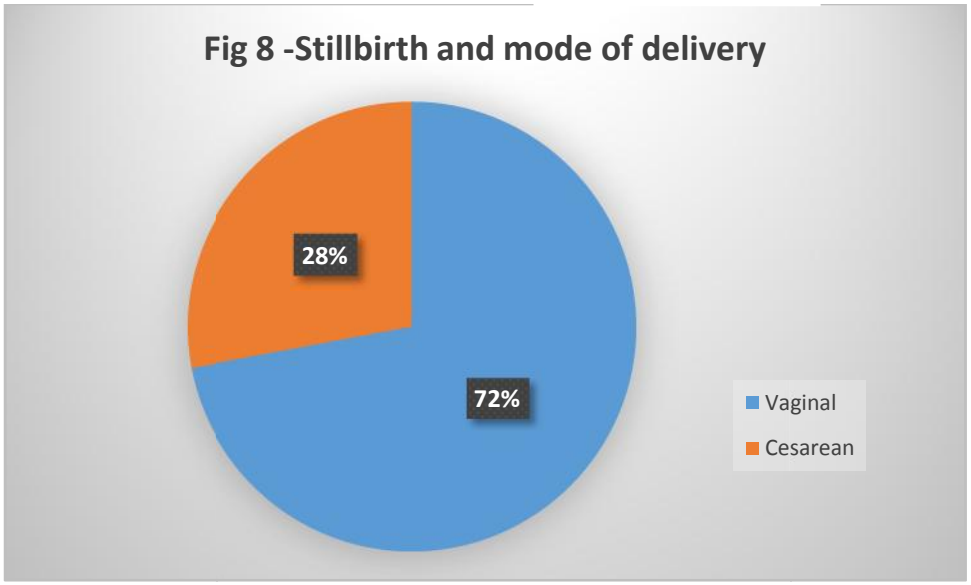
Type of Stillbirth	Number	Percentage
Fresh	100	62.11%
Macerated	61	37.88%
Total	161	100%



Out of 161 stillbirths 62.11% were categorized as fresh and 37.88% were macerated.

Table 10: Stillbirth and mode of delivery

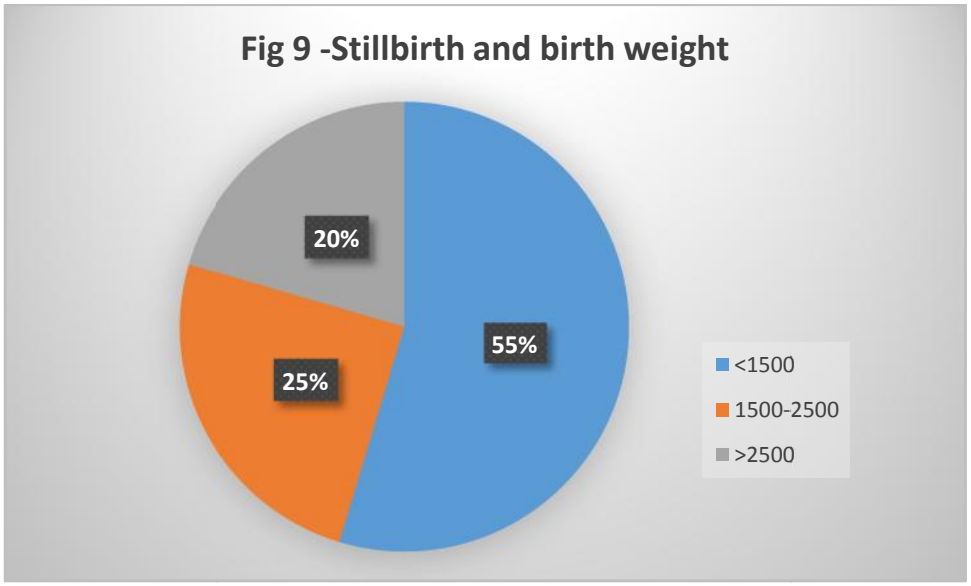
Mode of delivery	Number	Percentage
Vaginal	116	72%
Cesarean section	45	27.9%
Total	161	100%



Out of 161 stillbirths 72% were delivered through vaginal route and the remaining 27.9% by cesarean section.

Table 11: Stillbirth and birth weight

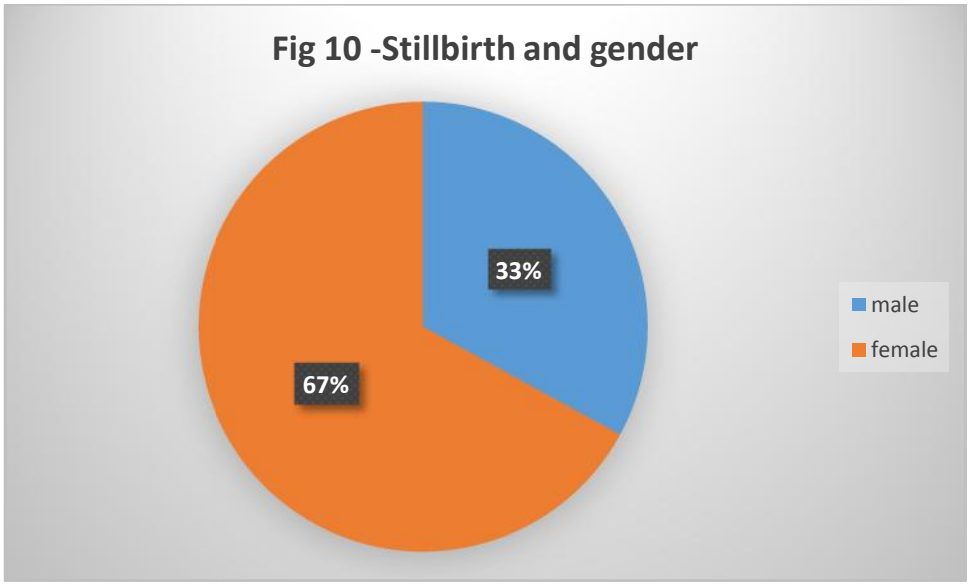
Birth weight (gms)	Number	Percentage
<1500	88	54.66
1500-2500	40	24.84
>2500	33	20.50
Total	161	100%



In our study out of 161 stillbirths, 54.66% were <1500grams, 24.84% weighed between 1500-2500 grams and 20.50% were >2500 grams. Mean birth weight was 1570±890 grams.

Table 12: Stillbirth andgender

Gender	Number	Percentage
Male	69	42.86%
Female	92	87.14%
Total	161	100%



In our study 87.14% stillbirths were female and remaining 42.86% were male.

Table 13: Causes of stillbirth as per Clinician

Cause of stillbirth	Number	Percentages
Congenital anomaly	18	11.18%
Infection	06	3.76%
Asphyxia	111	68.94%
Complications of prematurity	07	4.35%
Unknown	10	6.21%
Miscellaneous	09	5.59%
Trauma	00	00
Total	161	100 %

Clinical diagnosis for the cause of stillbirthassigned by the clinician were regrouped as per algorithm for easy comparison. Asphyxia (68.94%)was the major cause (consisting of Pre-eclampsia , eclampsia, antepartum hemorrhage, fetal distress,malpresentations,obstructed labor and cord complication),(11.18%)due to congenital anomalies (visible as well as noted on antenatal scans), (6.21%)cause not defined, (5.59%) were due to miscellaneous*(like fetal growthrestriction ,overt diabetes, hydrops fetalis) , (4.35%)complications of prematurity, (3.76%)due to infection whichincluded conditions like chorioamnionitis , sepsis with multiorgan dysfunction andTORCH infection .

*Conditions that could not be regrouped were designated as miscellaneous.

Table 14: Causes of stillbirth as per investigator

Cause of stillbirth	Number	Percentages
Congenital anomaly	18	11.18%
Infection	03	1.86%
Asphyxia	110	68.32%
Complications of prematurity	07	4.35%
Unknown	23	14.29%
Trauma	00	00
Total	161	100 %

Based on assignment by investigator using the algorithm, 68.32% were due to asphyxia, 14.29% were classified as unknown, 11.18% because of congenital anomalies, 4.35% due to complications of prematurity and infection in 1.86%.

Table 15: Comparison of cause of stillbirth assigned by investigator as per the algorithm and clinician

Causes of stillbirth	Assigned by clinician,n(%)	Assignedbyinvestigator as per algorithm, n(%)	Assigned by both clinician &algorithm,n(%)	Cohen's Kappa *
Trauma	0 (00.00)	0(00.00)	0 (00.00)	---
Congenital anomaly	18 (11.18)	18 (11.18)	17 (10.56)	0.93 (0.81-1)
Infection	06 (3.76)	03 (1.86)	03 (1.86)	0.65(0.61-0.80)
Asphyxia	111 (68.94)	110 (68.32)	110 (68.32)	0.98 (0.81-1)
Complications of prematurity	07 (4.35)	07 (4.35)	07 (4.35)	1 (0.81-1)
Unknown	10 (6.21)	23 (14.29)	10 (6.21)	0.56(0.41-0.60)
Miscellaneous	9 (5.59)	00	00	-0.11 <0
Total	161 (100)	161 (100)	140 (86.96)	

*Cohen's Kappa agreement levels

<0 - less than chance agreement

0.01-0.20 – slight agreement

0.21-0.40 - fair agreement

0.41-0.60 - moderate agreement

0.61-0.80 - substantial agreement

0.81- 1 - Perfect agreement

The results obtained by the investigator as per Global Network cause of stillbirth algorithm were compared with clinician assigned (regrouped as per algorithm) causes. Interrater agreement was assessed by Cohen's Kappa.In 86% of cases clinician and investigator agreed on the cause of stillbirth.There is perfect agreement for Complications of prematurity (1), Asphyxia (0.98) and Congenital anomaly (0.93). Infection (0.65) showed a substantial agreementand forUnknown (0.56)agreement is moderate.

DISCUSSION

Developing countries account for 98% of estimated 3.3 million stillbirth annually. A large number of factors have been associated with the risk of fetal death like genetic, maternal, systemic infections, placental and fetal pathology. Classifying the cause of fetal death has been onerous since ages, as the pathway to demise is frequently indistinct and therefore the decrease in the global burden of stillbirths is relied upon the planned actions and require clear understanding of the stillbirth as it is an important step towards goal of reducing stillbirth. Currently, many systems that assign the cause of death illustrate poor comparison and in about two-thirds of stillbirths the cause is written as "unknown". Most systems were developed based on data from high-income countries. Thus, information required to use them successfully may not be available in low resource settings. The present study was undertaken to compare assigning the cause of stillbirth by two methods and to know the stillbirth rate.

One year observational study was conducted from January 2018 to December 2018 in the Department of Pediatrics, KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi. A total of 161 stillbirths were included in the study.

The Stillbirth rate varies worldwide among different countries and in the various regions of the same country. The current stillbirth in LMIC is 18.4 per 1000 births and rate in India is 22 per 1000 births with variation from 22 to 66 per 1000 births in different states[11]. In our study, stillbirth rate is 38/ 1000 births (Table 3). Vaishali et al[59] reported a stillbirth rate of 35.2 per 1000 births which is comparable to

our study. It is low compared to reports in Indian studies, Kothiyal S et al[56] reported rate of 78.3 per 1000 births, Prasanna N et al[57] 57.9 per 1000 birth and 43 per 1000 births reported by Bellad et al [58]. Nayak et al[60] reported an incidence of 23.4 per 1000 births which is low compared to our report.

Women who had minimum three antenatal visits in our setting are considered as registered. In the present study, there were 44.09% registered cases and 55.90 % unregistered cases (Table 4). Devi KS et al [64] and Rajagopal VM et al[61] reported 42.9% and 45.5% registered cases, respectively. A multi-national study, reported that mothers who did not have antenatal care were almost twice the risk of experiencing a stillbirth than mothers who attended (RR: 1.6; 95% CI: 1.4 – 1.9)[34]. Bhattacharyya et al [18] reported 70.28% pregnant women not attending obstetric care had an augmented risk of stillbirth.

In our study 76.4% of stillbirths occurred in women in the age group of 21-30 years with a mean age of 24.8±4.12 years (Table 5), similarly Rajagopal VM et al[61] showed, 71.4% of mothers were in the age group of 20-30 years. Balu et al [62] found 80 % of mothers were in 21-30 years of age group with mean age of 25.24±6.28 years and also Avachat S et al[63] reported 75.8% women were in 21-30 years age group. However systematic reviews showed that mothers >35 years have higher risk of stillbirth which is not seen in our study. Lee et al[25] from rural Nepal, reported a high risk (RR 2.0, 95% CI: 1.51 – 2.63) of stillbirth among mothers aged 35 years or older. In contrast Engmann et al [27], reported that teenage mothers are at increased risk of stillbirth than older mothers [OR 1.49 (CI: 1.12–1.99)].

Our study reported, 58.39% of mothers were primigravida (Table 6) which is similar to reports by Bhattacharya et al [18] (56.72%). Nayak et al [60] reported 52%

primigravida and 48% multigravida. A study in England during 2009-2011 to evaluate the key risk factors related to stillbirth recognized a noteworthy risk of stillbirth and parity (primi and parity ≥ 3)[30]. Engmann et al[27] and McClure et al, [29] reported nulliparity and multi-parity are associated with higher peril of stillbirth.

Better prediction of stillbirth is possible based on gestational age estimation. In our study 61.25% of stillbirths were between 29-36 week, 23.6% between 37-42 week and 15.5 % below 28 week of gestation with a mean gestational age of 33.14 ±4.60 (Table 7). Devi KS et al[64] (57%) and Rajagopal VM et al[61] (75%) observed increased rate of stillbirths in 28-36week of gestation. This increased risk of stillbirth rate reported in this gestation are due to conditions like pre-eclampsia (44%), fetal growth restriction (36%), abruption (16 %) and preterm delivery. However, Singh et al [65] reported 52% stillbirths in 37-40 week of gestation.

Depending on timing, stillbirth is broadly classified into antepartum and intrapartum. This helps in understanding the cause and also planning preventive intervention. In our study 81.2% were antepartum and 18.75% intrapartum stillbirths (Table 8). Intrapartum stillbirth rate in the present study is comparable to reports of Rajagopal VM et al[61] (15 %) Prasanna et al[57] (12.1 %) and Kothiyal S et al [56](14%). Lawn et al[4] reported intrapartum stillbirth rate to be 39 % in low middle- income countries. However, a study from rural Pakistan reported high rate (65%) of intrapartum stillbirths[66]. Low rates of intrapartum stillbirth reflect quality of intrapartum care, use of partograph and active and close monitoring by the trained personnel[34]. High antepartum stillbirths reported by us are due to causes like placental insufficiency secondary to pregnancy induced hypertension, antepartum hemorrhage, fetal growth restriction, overt diabetes that indicate the need for better antenatal care[38].

We reported 62.1 % fresh stillbirths and 37.8% macerated stillbirths (Table 9). Reports by Rajagopal VM et al [61], Bhattacharya et al [18]and jehan et al [66] show fresh stillbirth rates of 75%, 59.7% and 51.7% respectively. As our institute is a tertiary care centre high rate of fresh stillbirths is due to late referral of women with obstetric emergencies like antepartum hemorrhage, severe pre-eclampsia, fetal growth restriction with doppler changes and absence of fetal movements just few hours prior to hospitalization.

In our study 72% of stillbirths were delivered by vaginal route and 27.9% by caesarean section (Table 10). This is similar to report by Bhattacharya et al[18] which showed 72.9% vaginal delivery and 16.20% caesarean section. Rajagopal VM et al[61] reported 90% stillbirths were delivered by vaginal route and 10 % by caesarean section. Kothiyal S et al [56] in their study reported 60.7% vaginal delivery and 35.1% caesarean delivery. Vaginal route is preferred compared to caesarean section unless any obstetric emergencies like antepartum hemorrhage arise during intrapartum period.

In our study 54.66 % weighed < 1500 grams. Mean weight is 1570 ±0.89 (Table 11). Devi KS et al[64] reported, 67% of stillbirths weighed less than 1500 grams. However, Bhattacharya et al[18] observed 12.3% of stillbirths were <1500 grams, 71.2% between 1500-2500 and 16.4% more than 2500 grams.

In our study 87.14% stillborn were female and 42.86% male (Table 12). Gardosi et al[20] (54.6%) and Kothiyal S et al[56] (60.2%) reported male predominance. However, studies suggest there is no association between stillbirth and gender.

Causes of stillbirth, assigned by clinician were regrouped into broad categories as per the algorithm (Table13). Asphyxia accounted for 68.94% (consisting of Pre -

eclampsia, eclampsia , antepartum hemorrhage, fetal distress, malpresentations, obstructed labor and cord complication), 11.18% due to congenital anomalies (visible as well as those noted on antenatal scans), 6.21% cause not defined ,5.59% were due to miscellaneous[*](like fetal growth restriction ,overt diabetes , hydrops fetalis),4.35% complications of prematurity,3.76 % due to infection which included conditions like chorioamnionitis, sepsis with multiorgan dysfunction and TORCH infection .

As per investigator, 68.32% were due to asphyxia, 14.29% classified as unknown, 11.18% due to congenital anomaly, 4.35% as a result of complication of prematurity and 3 % due to infection (Table 14). McClure et al[55] by using algorithm to assign cause of stillbirth showed 46.6% were attributed to asphyxia, 21.3% to infection, 8.4% congenital anomalies and 6.6% complication of prematurity. No cause was assigned in 17.1% of stillbirths.

We compared clinician assigned cause of stillbirth with investigator (Table 15). Interrater agreement was assessed by Cohen's Kappa. Overall agreement between Clinician and investigator on the cause of stillbirth was 86%. Perfect agreement was seen with Complication of prematurity (1), Asphyxia (0.98) and Congenital anomaly (0.93). Infection (0.65) showed substantial agreement and Unknown (0.56) moderate agreement.

[* Conditions that could not be regrouped were designated as miscellaneous]

LIMITATION AND SCOPE OF THE STUDY

- As the study included limited population from single centre, results cannot be extrapolated to the whole population. A study with large sample size from different geographical areas should be conducted to have reliable results.
- With use of the algorithm subtle or rare causes of stillbirths are missed.
- Assigning the cause using the algorithm provides advantages of comparability, consistency and transparency.
- As majority of the data available is from developed nations hence, there is need for developing standard method of classification system for stillbirth which will be useful across multiple settings in developing countries.

CONCLUSION

Assigning the cause of stillbirth, is accepted as crucial step towards the goal of reducing stillbirth. Rate of stillbirth in our study is 38/1000 births. Common causes of stillbirth include Asphyxia (68.32%), congenital anomalies (11.18%), complications of prematurity (4.35%) and infection (1.86%). The Global Network Cause of Death algorithm is simple and reliable method to assign cause of stillbirth in low resource settings. The results obtained by the investigator as per algorithm were compared with clinician assigned (regrouped as per algorithm) cause of stillbirth. Interrater agreement assessed by Cohen's Kappa. Clinician and investigator agreement in assigning cause of stillbirth is 86%. There is perfect agreement noted for Complications of prematurity (1), Asphyxia (0.98) and Congenital anomaly (0.93).

This simple classification system provides advantages of comparability, consistency and transparency can be used to inform and offer public health strategies to reduce the stillbirth rate and achieve better pregnancy outcome.

SUMMARY

One year observational study was conducted from January 2018 to December 2018 in the Department of Pediatrics, KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi. A total of 161 stillbirths with gestation more than or equal to 20 weeks were included in the study. The salient findings of the study are summarized below:

- During the study period there were 4232 deliveries and 161 (3.80%) stillbirths, with Stillbirth rate of 38 /1000 births.
- Stillbirth in unregistered and registered pregnancies were 55.90% and 44.09% respectively and were more common in the mothers in the age group of 20-25 years which was 44.10%, followed by 26-30 years with 32.30%.
- Our study showed higher risk (58.39%) of stillbirth among primi, followed by first para (25.47%). Third para and more showed lower risk (3.72%).
- In our study out of 161 stillbirths, highest number of stillbirths were noted in the gestational age group of 29-36 weeks i.e 61.25% and lowest in 20-28 weeks i.e 15.5%. About 54.66% stillbirth weighed <1500grams and 20.50% >2500 grams.
- In our study 80.7% stillbirths occurred in the antepartum period and rest in the intrapartum period. Fresh stillbirths were 62.11% and remaining 37.88% were macerated.
- In our study 87.14% stillbirths were female and remaining 42.86% male.
- The clinical diagnosis for the cause of stillbirth assigned by clinician were regrouped as per algorithm for easy comparison. Asphyxia (68.94%) was the major cause (consisting of Preeclampsia, eclampsia, antepartum hemorrhage, fetal distress, malpresentations, obstructed labor and cord complication), 11.18% due to congenital anomalies (visible as well as noted on antenatal scans) and 6.21%

cause not defined, 5.59% were due to miscellaneous [*](like fetal growth restriction, overt diabetes, hydrops fetalis) ,4.35% complications of prematurity, 3.76% due to infection which included conditions like chorioamnionitis , sepsis with multiorgan dysfunction and TORCH infection .

- As per assignment by investigator using the algorithm, 68.32% were due to asphyxia,14.29% classified as unknown, 11.18% due to congenital anomalies, 4.35% due to complications of prematurity and infection in 1.86%
- Cause of stillbirth assigned by clinician was compared with the investigator assignment. This showed clinician and the investigator agreement on cause of stillbirth is 86%. The interrater agreement was assessed by Cohen's Kappa. There is perfect agreement for Complications of prematurity (1), Asphyxia (0.98) and Congenital anomaly (0.93). Infection (0.65) showed substantial agreement and Unknown (0.56) moderate agreement.

[*]Conditions that could not be regrouped as per algorithm were termed miscellaneous

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ANNEXURE I – CONSENT FORM

CONSENT FOR PARTICIPATION IN RESEARCH

"ASSIGNING CAUSE OF STILLBIRTH - COMPARISON OF TWO METHODS: ONE YEAR HOSPITAL BASED OBSERVATIONAL STUDY"

Principal Investigator: Dr. _____

Guide: Dr. _____

You are hereby requested to involve yourself and your stillborn baby in the above said research to be conducted at KLE'S Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum from January 2018 to December 2018 by me.

Introduction

The World Health Organization defines stillbirth as the death of a fetus at ≥20 weeks of pregnancy. A large number of factors have been associated with the risk of fetal death like genetic, maternal, systemic infections, placental and fetal pathology. Among the maternal causes infection is one of the most important causes for stillbirth. Other factors include diabetes mellitus, thyroid abnormalities, hypertensive disorders, anemia and nutritional deficiencies in the mother. Fetal causes include IUGR, multiple gestation, congenital anomalies, genetic abnormalities, fetal infection and post maturity. Placental causes include placental abruption, premature rupture of membranes, vasa previa, chorioamnionitis, vascular malformations. External factors such as obstetric trauma may also lead to stillbirth. Knowledge of the exact cause and risk factor of this problem will help in reducing its incidences and assigning preventive measures.

Voluntary participation

You and your stillborn baby's participation in this study is your voluntary decision. Whether to participate or not to participate will not affect your current or future relationship with the KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum.

You are free to discontinue the participation in the study at any time for any reasons and you will not be paid any reimbursement for participation in the research**.**

Risk and benefits

There are no potential risks and discomforts associated with any procedure involved in our study. The benefits of taking part in this research is your valuable contribution to medical research.

Withdrawal from the study

You can withdraw at any time from the study. There will be no penalty for withdrawal.

Privacy and Confidentiality

The only people who will know that you are a research participant are member of the research team. No information provided by you, during research will be disclosed to others without your written consent. When the results of the research are published or discussed in the conferences, no information will be disclosed that would reveal your identity. Any information obtained in connections with this study and that can be identified with you remain confidential and will be disclosed only with your permission.

Queries

If you have any queries you may contact

Dr._____

Post Graduate Student

Department of Pediatrics

JNMC, Belagavi-590010

Dr._____

MD (Pediatrics), DM (Neonatology)

Professor, Department of Pediatrics

JNMC, Belagavi-590010

If you have any questions about your rights or research participation you may contact

Dr. Roopa Bellad

Chairperson, Ethical Committee

JNMC Belagavi-590010

Phone No.9480275601

You will be given a copy of this form for your information and to keep for your record

STATEMENT OF CONSENT

I hereby voluntarily agree for my and my stillborn baby participation in this study. I understand that even if I choose to allow my stillborn baby to take part in this study I have the liberty to withdraw at any time. My signature below indicates that I have read or have been told about this entire consent form including the risks and benefits and have had all my questions answered. I will be given a copy of this consent form.

Signature of the authorized representative/ parent: _____

Date: _____

Name: _____

Relation to the Subject: _____

Signature of the witness: _____

Date: _____

Name: _____

Signature of investigator: _____

Date: _____

Name: _____

ANNEXURES II: ETHICAL CLEARANCE

K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 76 **Date: 22/11/2017**

To,

PG student in Paediatrics,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"ASSIGNING CAUSE OF STILLBIRTH. COMPARISON OF TWO METHODS : ONE YEAR HOSPITAL BASED OBSERVATIONAL STUDY AT KLES PRABHAKAR KORE CHARITABLE HOSPITAL, BELAGAVI ",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

For

(Dr. Aratti Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

For

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

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ANNEXURE III – PROFORMA

"ASSIGNING CAUSE OF STILLBIRTH - COMPARISON OF TWO METHODS: ONE YEAR HOSPITAL BASED OBSERVATIONAL STUDY"

IP NUMBER

DEMOGRAPHIC DETAILS

Name -

Age -

Education -

Occupation -

Address -

Type of Area (Urban /Rural/Slum) –

MATERNAL INFORMATION

OBSTETRICAL HISTORY	Gravida – Para – Abortion – Previous stillbirth – yes/no Previous birth defects Previous caesarean
PAST MEDICAL ILLNESS, **(**specify if any)	
PERSONAL HISTORY	Tobacco/ smoking/alcohol / consanguinity

HISTORY OF PRESENT PREGNANCY -

LMP- EDD-

Iron/ folic acid intake

Antenatal visits

Last visit before diagnosis of IUFD

History of drug intake

Fetus – singleton / multiple

Presentation- cephalic / breech / transverse

FHS – Present / absent

ANTEPARTUM COMPLICATIONS

DISEASE	**YES/ NO**
Anemia Mild – <10 Moderate -7-9 Severe- <7 Very severe -<4	
Infection UTI/ chorioamnionitis	
Hypertension Pregnancy induced hypertension, chronic	
Diabetes	
IUGR	
APH Placenta previa, abruptio	
PROM	

INVESTIGATIONS

		Antenatal USG		**If abnormal specify**
Hb Blood group		Ultrasound for nuchal translucency	Normal/ Abnormal	
HIV HbsAg				
S. TSH		Anomaly scan	Normal/ Abnormal	
HBA1c				
Others specify		Growth scan	Normal/ Abnormal	

DETAILS OF LABOUR

Period of gestation -

Type of labor – spontaneous / induced -

Indication for induction -

DELIVERY DETAILS

Intrapartum complications (if any specify) -

Duration of labor-

Duration of rupture of membranes-

Mode of delivery-

Indications for caesarean section-

STILLBIRTH DETAILS

Fresh / macerated –

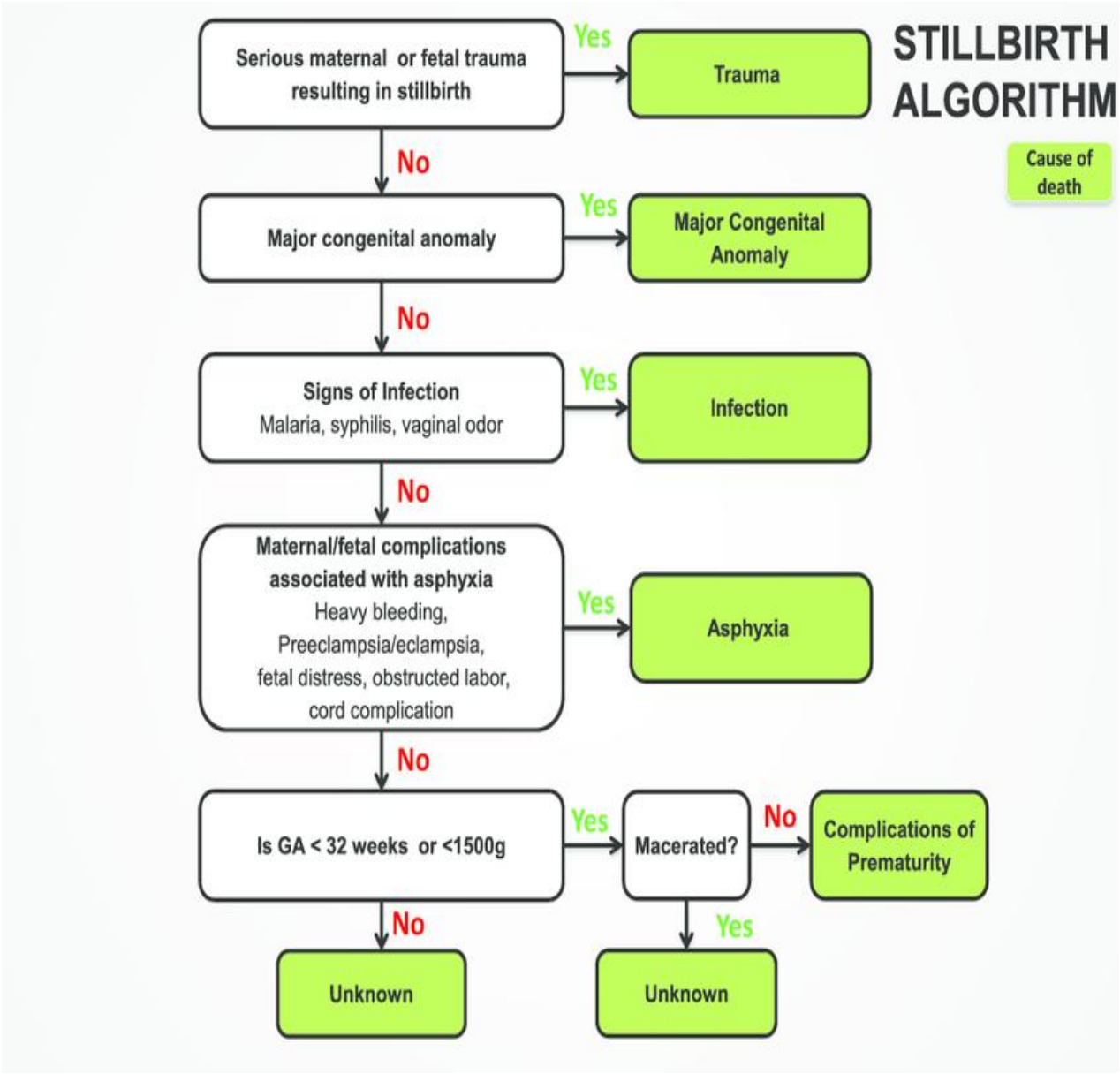
Birth weight –

Sex –

Congenital / Chromosomal anomaly (if any specify)–

CAUSE OF STILLBIRTH –

1. CLINICIAN -
2. INVESTIGATOR -


STILLBIRTH ALGORITHM
Cause of death
Serious maternal or fetal trauma resulting in stillbirth
Yes
Trauma
No
Major congenital anomaly
Yes
Major Congenital Anomaly
No
Signs of Infection
Malaria, syphilis, vaginal odor
Yes
Infection
No
Maternal/fetal complications associated with asphyxia
Heavy bleeding, Preeclampsia/eclampsia, fetal distress, obstructed labor, cord complication
Yes
Asphyxia
No
Is GA < 32 weeks or <1500g
Yes
Macerated?
No
Complications of Prematurity
No
Unknown
Yes
Unknown

ANNEXURE IV

KEY TO MASTERCHART

CODING

0- ABSENT

1- PRESENT

DEMOGRAPHY

Registered- R

Unregistered- U

OBSTETRIC HISTORY

Prev still- Previous stillbirth

Consang - Consanguinity

Drug int- History of drug intake

SBP- Systolic blood pressure

DBP- Diastolic blood pressure

ANTEPARTUM COMPLICATIONS

PE- Pre eclampsia

Eclamps- Eclampsia

DM -Diabetes mellitus

Multiple gest - Multiple gestation

IUGR- Intrauterine growth restriction

INTRAPARTUM COMPLICATIONS

PROM- Premature rupture of membrane

Preterm - Preterm labor

MSL-Meconium stained liquor

Obst Lab -Obstructed labor

METHOD OF DELIVERY

NVD-Normal vaginal delivery

LSCS- Lower segment caesarean section

GENDER

M- Male

F-Female

TYPE OF STILLBIRTH

FSB- Fresh stillbirth

MSB – Macerated stillbirth

CAUSE OF STILLBIRTH / COD- CAUSE OF DEATH

1. Cause assigned by the clinician
2. Cause assigned by the clinician (regrouped as per algorithm for easy comparison)
3. Cause assigned by investigator

	DEMOGRAPHY					OBSTETRIC HISTORY									ANTEPARTUM COMPLICATIONS										INTRAPARTUM										COD AS PER CLINICIAN		COD AS PER ALGORITHM						
S.NO	IP. NO	AGE(years)	RREGISTERED/UNREG	SOCIOEC	EDUCATION	GRAVIDA	PARA	LIVING	PREV STILL	ABORTION	CONSANG	DRUG INT	SBP	DBP	PE	ECLAMPS	DM	ANAEMIA	PLACENTA PRAVEIA	ABRUPTION	MULTIPLE GEST	IUGR	INFECTION	CONGENITAL ANOMALY	PROM	PRETERM	MSL	CORD COMPLICATION	OBST LAB	METHOD OF DELIVERY	GESTATION (WKS)	GENDER	TYPE OF SB	WEIGHT(Kg or Gms)	CAUSE OF DEATH CLINICIAN	COD - CLINICIAN (REGROUPED AS PER ALGORITHM)	COD-ALGORITHM	TRAUMA	CONGENITAL ANOMALY	INFECTION	ASPHYXIA	COMP OF PREMATURITY	UNKNOWN
1	907693	24	R	4	10TH	2	0	0	0	1	0	1	120	80	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	NVD	34	F	MSB	1.2	OVERT DIABETES MELLITUS	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
2	922807	28	R	3	10TH	3	1	1	0	1	0	0	180	100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	34W5D	F	FSB	2	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
3	921125	23	R	3	12TH	PRIMI	1	0	0	0	0	0	110	70	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	NVD	39	M	FSB	3.5	CORD COMPLICATION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
4	914539	23	R	3	7TH	PRIMI	0	0	0	0	1	1	120	80	0	1/C	0	1	0	0	0	0	0	1	1	0	0	0	0	NVD	28W3D	F	FSB	630G	MAJOR CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
5	855887	25	R	2	10TH	PRIMI	0	0	0	0	0	1	180	120	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	28W4D	F	FSB	600G	SEVRE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
6	855571	25	R	4	10TH	2	1	1	0	0	1	0	190	120	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	29W6D	F	FSB	600G	HTN -ECLAMPSIA WITH ABRUP	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
7	867402	26	R	4	12TH	PRIMI	0	0	0	0	0	1	170	110	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	30W2D	F	FSB	900G	HTN -PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
8	863552	22	R	3	7TH	PRIMI	0	0	0	0	0	0	160	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	26W	F	FSB	500G	HTN, ABRUPTION , ANEMIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
9	853278	38	R	3	0	4	0	0	0	1	1	1	170	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	LSCS	27W	F	FSB	950G	CHRONIC HTN WITH ANEMIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
10	880073	25	U	2	5TH	6	5	2	0	1	1	0	180	110	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	27W	F	FSB	900G	HTN-PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
11	875084	22	R	4	10TH	2	0	0	0	1	0	1	110	80	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	LSCS	28W	F	FSB	720G	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
12	879591	25	R	4	7TH	5	2	2	0	1	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	LSCS	42W	M	FSB	3.7KG	OBSTRUCTED LABOUR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
13	880932	22	R	3	10TH	PRIMI	1	0	0	0	0	0	120	80	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	NVD	31W2D	F	MSB	580G	IUGR WITH ANEMIA	MISCELLANEOUS	UNKNOWN	0	0	0	0	1	0
14	867881	20	R	2	5TH	PRIMI	1	0	0	0	0	0	110	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	LSCS	41W	F	FSB	2.8KG	MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
15	867212	30	U	5	5TH	2	1	1	0	0	0	0	120	80	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	NVD	37W6D	F	MSB	3.5KG	DIABETES	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
16	867218	26	U	4	7TH	3	1	1	0	1	1	0	110	70	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	LSCS	41W5D	M	FSB	3KG	CORD COMPLICATION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
17	868113	19	U	3	10TH	PRIMI	0	0	0	0	0	0	170	100	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	NVD	29W6D	F	FSB	700G	HTN - PREECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
18	864624	23	U	3	10TH	3	1	1	1	0	1	0	180	100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	30W5D	F	FSB	760G	PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
19	874711	29	U	4	5TH	6	5	1	2	2	1	1	170	110	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	NVD	35W6D	M	FSB	2.1KG	SEVERE PE , ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
20	874757	30	U	3	12TH	2	0	1	0	0	0	1	110	70	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	NVD	29W6D	M	FSB	650G	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
21	866869	19	U	4	10TH	PRIMI	0	0	0	0	0	0	170	100	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	30W	F	FSB	1.KG	PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
22	858269	24	U	4	1	2	1	1	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	NVD	32W	M	MSB	1.9KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
23	863411	29	R	3	3	PRIMI	0	0	0	0	0	1	170	120	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	41W	M	FSB	2.1KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
24	866528	35	U	4	1	3	2	1	1	1	1	0	110	80	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	LSCS	40W3D	F	FSB	2.6KG	MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
25	866614	20	R	3	4	PRIMI	0	0	0	0	0	0	170	100	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	LSCS	34W	F	FSB	1.9KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
26	858716	30	U	4	1	2	1	1	1	0	0	0	160	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	40W	M	FSB	2.4KG	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
27	859538	29	R	5	2	PRIMI	1	0	0	0	0	0	170	110	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	NVD	40W	M	MSB	3.8KG	GDM WITH SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
28	853438	19	R	4	4	PRIMI	0	0	0	0	1	0	120	80	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	NVD	28W	M	MSB	720G	PRETERM LABOUR	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	0	1
29	874711	28	R	3	3	6	5	3	1	0	0	1	170	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	NVD	35W6D	M	FSB	2.1KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
30	857614	26	R	2	4	PRIMI	0	0	0	0	0	1	120	80	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	LSCS	38W6D	F	MSB	2.3KG	INFECTION	INFECTION	INFECTION	0	0	1	0	0	0
31	874651	30	U	5	1	2	1	1	0	0	1	0	160	110	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	NVD	35W5D	F	FSB	2 KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
32	875081	19	R	4	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	NVD	38W2D	F	FSB	2.9KG	OBSTRUCTED LABOUR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
33	851980	24	R	4	3	PRIMI	0	0	0	0	1	1	170	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	NVD	30W3D	M	FSB	780G	PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
34	852993	21	R	3	4	PRIMI	0	0	0	0	0	0	120	100	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	NVD	40W4D	F	FSB	2.9KG	OBSTRUCTED LABOUR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
35	850618	20	R	3	4	PRIMI	0	0	0	0	0	0	170	130	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	30W	M	FSB	860G	ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
36	850571	21	U	4	3	PRIMI	0	0	0	0	0	0	170	100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	38W1D	F	MSB	2.7KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
37	856063	21	U	4	3	PRIMI	0	0	0	0	0	1	160	100	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	NVD	28W	F	FSB	580G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
38	857500	24	U	4	3	PRIMI	0	0	0	0	0	0	110	80	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	NVD	30W1D	M	MSB	720G	INFECTION	INFECTION	INFECTION	0	0	1	0	0	0
39	857593	34	U	3	1	2	1	1	0	0	1	1	160	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	35W4D	M	FSB	1.9KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
40	853054	27	U	3	4	PRIMI	0	0	0	0	0	0	110	100	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	NVD	28W	M	FSB	980G	ABRUPTIO PLACENTA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
41	853572	28	U	3	3	2	1	1	0	0	0	1	200	120	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	28W6D	M	MSB	780G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
42	859169	21	R	4	3	2	1	1	0	0	0	0	120	80	0	0	0	0	0	0	0	1	1 TOR	0	0	0	0	0	0	NVD	34W	M	MSB	1.4KG	INFECTION TORCH POSITIVE	INFECTION	INFECTION	0	0	1	0	0	0
43	853406	26	U	1	3	PRIMI	0	0	0	0	0	1	180	110	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	28W1D	M	FSB	600G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
44	858716	30	U	3	3	PRIMI	0	0	0	0	0	0	130	90	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	40W	M	FSB	2.8KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
45	858443	25	U	3	3	2	0	0	0	0	0	0	120	70	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	31W3D	F	FSB	1.8KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
46	851669	22	U	2	4	3	2	2	0	0	0	0	170	100	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	NVD	33W5D	F	MSB	1.1KG	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
47	907477	21	R	3	4	PRIMI	0	0	0	0	1	1	170	110	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	36W3D	F	MSB	1.9KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
48	856063	20	R	3	3	PRIMI	0	0	0	0	0	1	180	110	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	28W	F	FSB	860G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
49	907428	19	U	4	3	PRIMI	0	0	0	0	1	0	110	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	NVD	28W	M	FSB	780G	PT WITH CONG ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
50	919570	26	R	3	4	2	1	1	0	0	0	0	110	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	39W	F	MSB	3.1KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
51	875081	19	R	3	3	PRIMI	0	0	0	0	0	0	110	70	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	LSCS	40W3D	F	FSB	3.1KG	THICK MSL WITH CORD COMP	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
52	907695	22	R	2	4	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	NVD	34W5D	M	MSB	1KG	PTVD WITH PPROM	UNKNOWN	UNKNOWN	0	0	0	0	0	1
53	861342	33	U	4	3	3	2	2	0	0	1	1	170	110	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	39W	F	MSB	2.6KG	ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
54	867593	34	U	3	3	2	1	1	0	0	0	1	160	110	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	35W4D	M	FSB	1.9KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
54	890085	25	R	3	3	6	2	1	1	3	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	680G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
55	891785	24	R	3	3	PRIMI	0	0	0	0	0	1	200	110	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W	M	FSB	580G	ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
56	903829	29	U	4	2	4	3	2	1	0	1	0	120	80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	PTVD	29W5D	M	MSB	1.4KG	PT LABOUR	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
57	905441	26	R	2	4	PRIMI	0	0	0	0	0	1	170	120	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W2D	M	FSB	580G	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
58	904801	27	R	3	3	2	1	1	0	0	0	1	120	80	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	29W	M	FSB	780G	DM WITH CONG ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
59	897005	21	U	3	3	PRIMI	0	0	0	0	0	0	130	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	33W4D	F	MSB	1.3KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
60	899068	32	U	3	3	3	2	1	1	0	0	1	130	90	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	PTVD	29W	F	FSB	800G	K/C/O EPILEPSY WITH ABRUP	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
61	899752	26	R	3	3	PRIMI	0	0	0	0	0	0	110	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W2D	M	MSB	560G	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
62	896222	32	R	3	1	3	1	1	0	1	1	0	170	100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	30W1D	F	FSB	1.2KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
63	900613	30	U	3	2	2	2	1	0	0	0	0	160	100	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	PTVD	35W	M	FSB	1.8KG	SEVERE PE WITH CORD COMP	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
64	900982	30	U	4	3	3	2	2	0	0	0	0	120	80	0	0	0	1 RH-	0	0	0	0	0	0	0	0	0	0	0	PTVD	30W	M	FSB	1.5KG	HYDROPS FETALIS	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
65	898985	28	U	4	3	3	0	0	0	2	1	0	110	70	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	PTVD	28W	F	FSB	600G	APH	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
66	903364	40	U	4	1	5	4	2	2	0	1	1	180	90	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	PTVD	29W4D	F	MSB	780G	CHRONIC HTN WITH ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
67	904053	28	U	4	1	2	1	0	0	0	0	1	170	120	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	30W	F	FSB	580G	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
68	904118	22	R	3	3	2	1	1	0	0	0	1	160	100	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	LSCS	34W1D	F	FSB	1.4KG	SEVERE PE WITH APH	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
69	904964	23	R	3	4	PRIMI	0	0	0	0	0	0	180	110	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	LSCS	30W4D	F	FSB	750G	SEVERE PE WITH APH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
70	917375	19	R	3	4	PRIMI	0	0	0	0	0	0	120	80	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W5D	F	FSB	570G	PT WITH ANAEMIA	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
71	907693	24	R	3	3	2	0	0	0	1	0	1	120	80	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	NVD	34W5D	F	MSB	1.8KG	OVERT DIABETES MELLITUS	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
72	922807	28	R	2	4	3	1	1	0	1	0	1	160	90	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	34W5D	F	FSB	2KG	SEVERE PE WITH APH	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
73	921125	23	U	4	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	NVD	39W3D	M	FSB	3.5KG	CORD COMPLICATION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
74	914539	20	R	2	3	PRIMI	0	0	0	0	1	0	110	70	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W3D	F	FSB	630G	MAJOR CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
75	855887	22	U	4	3	PRIMI	0	0	0	0	0	1	180	120	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W4D	F	FSB	600G	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
76	924753	24	U	4	3	PRIMI	0	0	0	0	0	1	140	80	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	33W5D	F	FSB	1.8KG	ECLAMPSIA WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
77	924795	24	R	2	5	PRIMI	0	0	0	0	0	1	180	110	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	PTVD	32W6D	M	FSB	880G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
78	924907	24	U	4	3	PRIMI	0	0	0	0	0	0	140	90	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	35W6D	M	FSB	2KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
79	923114	22	U	4	2	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	M	FSB	1KG	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0

87	880723	19	U	3	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	1	0	0	0	0	1 DEN	0	0	0	0	0	0	PTVD	37W6D	M	MSB	3KG	ANMNIOS WITH HYDROPS	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
88	861342	29	U	3	3	5	2	0	1	2	1	1	160	90	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	39W6D	M	MSB	2.6KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
89	874760	28	U	4	1	5	1	0	1	3	1	0	140	90	1	0	0	0	0	1	0	0	0	0	0	0	1	0	1	NVD	39W3D	F	FSB	2.5KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
90	863716	23	R	3	3	PRIMI	0	0	0	0	0	1	170	100	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	28W4D	F	FSB	780G	ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
91	841280	23	R	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	36W	M	FSB	2.1KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
92	833312	25	U	4	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	NVD	39W	M	MSB	2.9KG	CORD COMPLICATION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
93	937185	26	U	3	3	2	1	1	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W3D	F	MSB	660G	IMMUNE HYDROPS FETALIS	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
94	932450	25	U	2	3	2	1	1	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W2D	M	FSB	1.7KG	MULTIPLE CONG ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
95	938970	20	U	4	2	PRIMI	0	0	0	0	0	1	140	90	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	PTVD	29W5D	F	FSB	900G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
96	938995	26	R	3	3	PRIMI	0	0	0	0	1	1	140	100	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W2D	F	FSB	1.1KG	GEST HTN WITH FETAL ANOM	ASPHYXIA	CONGENITAL ANOMALY	0	1	0	0	0	0
97	936337	30	U	4	3	4	2	2	0	1	1	0	128	84	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	27W6D	M	FSB	1KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
98	934745	28	U	3	3	PRIMI	0	0	0	0	0	0	118	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	NVD	39W	F	FSB	2.4KG	THICK MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
99	934662	23	U	4	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	29W4D	F	FSB	1KG	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
100	928857	24	U	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	NVD	38W4D	M	FSB	2.9KG	THICK MSL WITH ANAEMIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
101	935664	29	U	3	3	2	0	0	0	1	1	1	170	100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28WK	F	MSB	600G	SEVERE PE , OLIGO , RH NEG	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
102	932545	26	U	4	4	PRIMI	0	0	0	0	0	1	160	90	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	39W1D	F	FSB	2.4KG	GESTATIONAL HTN	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
103	935572	24	R	3	3	3	2	2	0	0	1	0	120	80	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	PTVD	32W2D	M	MSB	1.1, T1	TWIN GESTATION	MISCELLANEOUS	UNKNOWN	0	0	0	0	0	1
104	937914	20	U	4	3	2	0	0	0	1	0	0	160	90	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	PTVD	36WK	M	FSB	2.5KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
105	935640	19	U	4	3	PRIMI	0	0	0	0	0	0	110	70	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	PTVD	28WK	F	FSB	800G	PRETERM LABOUR	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
106	935664	29	U	4	2	2	1	1	0	0	0	0	150	110	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	30WK	F	FSB	1KG	GESTATIONAL HTN	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
107	846108	25	R	2	3	2	1	0	0	1	0	1	160	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	40W2D	F	FSB	2.3KG	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
108	847699	29	R	3	3	4	3	2	0	0	1	1	150	100	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	LSCS	34W2D	F	MSB	1.4 KG	GEST HTN WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
109	848116	22	U	3	3	2	1	1	0	0	1	1	120	80	0	0	0	0	0	0	0	0	1 HBE+	0	0	0	0	0	0	NVD	39W	M	FSB	2.6KG	INFECTION ? DIC	INFECTION	UNKNOWN	0	0	0	0	0	1
110	848076	24	U	3	3	2	1	1	0	0	0	0	120	80	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	36W6D	F	FSB	2.8KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
111	848153	35	U	4	1	2	1	1	0	0	0	1	160	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	PTVD	28W	F	FSB	1KG	SEVERE PE,IUGR,OLIGO	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
112	848335	26	U	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	38W6D	F	MSB	2.1KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
113	848427	27	R	3	3	5	2	1	0	2	0	0	120	80	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	NVD	35W4D	F	FSB	2.09KG	ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
114	848723	27	U	4	2	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	LSCS	37W	F	MSB	2.3KG	SEPSIS MODS	INFECTION	UNKNOWN	0	0	0	0	0	1
115	849172	32	R	3	3	3	1	1	0	1	0	0	126	80	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	37W1D	M	FSB	2KG	ABRUPTION WITH RH- PREG	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
116	849176	32	U	3	2	2	1	1	0	0	0	1	150	100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	PTVD	28W	M	FSB	700G	SEVERE PE WIYH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
117	849523	21	R	3	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	35W	F	MSB	2.3KG	EBSTEIN ANOMALY	CONGENITAL ANOMALY	UNKNOWN	0	1	0	0	0	0
118	849530	23	U	4	3	3	2	0	2	0	1	0	150	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	LSCS	33W3D	F	FSB	2.2 KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
119	826720	22	U	3	3	PRIMI	0	0	0	0	0	0	140	90	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	PTVD	28W	M	FSB	600G	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
120	840549	24	U	4	3	3	2	2	0	0	0	0	150	100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	30W4D	M	FSB	1.2KG	PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
121	840717	25	U	3	4	PRIMI	0	0	0	0	0	1	160	100	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	32W6D	M	FSB	1.2KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
122	840628	25	U	3	3	3	1	1	0	1	0	1	150	100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W6D	M	FSB	900G	SEVERE PE WITH BREECH	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
123	841176	29	R	3	3	3	2	2	0	0	0	1	150	90	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	LSCS	34W4D	M	FSB	2.3KG	GEST HTN WITH PT LABOUR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
124	841280	20	U	4	3	PRIMI	0	0	0	0	0	1	180	110	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	LSCS	30W3D	F	FSB	1050G	ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
125	843388	23	U	3	3	PRIMI	0	0	0	0	0	0	150	90	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	41W5D	M	MSB	2.9KG	IMMINENT ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
126	843788	29	R	2	4	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	PTVD	28W	F	MSB	900G	PT LABOUR	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
127	844715	24	R	3	3	PRIMI	0	0	0	0	0	1	160	120	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	PTVD	35W3D	F	FSB	1.7KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
128	844527	25	U	2	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	NVD	41W1D	M	FSB	2.6 KG	THICK MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
129	844680	22	R	4	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	PTVD	28W	F	FSB	980G	CONG ANOMALY PPROM	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
130	844517	24	R	4	3	PRIMI	0	0	0	0	0	1	140	90	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	37W	M	MSB	3.5KG	OVERT DM WITH GEST HTN	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
131	845062	31	U	3	3	3	2	2	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	LSCS	40W3D	M	MSB	2.9KG	ASPHYXIATING THORACIC DYS	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
132	845470	22	R	3	3	PRIMI	0	0	0	0	0	1	140	90	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	30W2D	F	FSB	800G	IMMINENT ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
133	826803	25	U	4	3	PRIMI	0	0	0	0	0	0	150	100	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	PTVD	30W2D	F	FSB	1 KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
134	842644	29	U	4	2	2	1	1	0	0	1	0	110	80	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	NVD	39W2D	M	FSB	2.6KG	CORD COMPLICATION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
135	839800	24	U	4	2	PRIMI	0	0	0	0	0	0	110	70	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	PTVD	28W	F	FSB	960G	EXTREME PREMATURITY	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
136	835967	26	U	3	3	2	1	1	0	0	0	1	150	100	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	32W3D	F	FSB	1 KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
137	826803	22	R	4	3	PRIMI	0	0	0	0	0	0	110	70	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	PTVD	28W	F	FSB	1KG	CORD PROLAPSE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
138	826720	28	R	3	3	3	2	2	0	0	0	0	160	110	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	LSCS	38W	F	FSB	2.2KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
139	839519	20	U	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	880G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
140	831323	22	U	3	3	PRIMI	0	0	0	0	0	0	110	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NVD	37W	M	MSB	2.5KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
141	913133	24	R	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	29W	M	MSB	700G	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
142	910655	22	U	3	3	2	1	1	0	0	0	0	160	100	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	LSCS	35W2D	F	MSB	1.9KG	GESTATIONAL HTN	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
143	917221	19	U	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	NVD	28W	M	FSB	790G	PRETERM LABOUR	COMPLICATION OF PREMA	COMPLICATION OF PREMA	0	0	0	0	1	0
144	908759	20	U	3	3	PRIMI	0	0	0	0	1	1	150	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	PTVD	33W6D	M	MSB	500G	HTN WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
145	909669	28	U	3	2	2	1	1	0	0	0	1	180	110	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	PTVD	30W	F	FSB	1.08KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
146	910043	20	R	3	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	700G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
147	907885	27	R	3	3	2	1	1	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	NVD	40W3D	M	FSB	3.2KG	THICK MSL WITH CORD COMP	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
148	894154	21	U	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	PTVD	31W1D	M	FSB	1.7KG	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
149	893054	20	R	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	830G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
150	890085	23	R	4	3	6	2	1	0	3	0	0	110	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	26W	M	FSB	660G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
151	891785	24	R	4	3	PRIMI	0	0	0	0	0	1	200	110	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	28W	M	FSB	500G	IMMINENT ECLAMPSIA	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
152	807428	19	R	2	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	500G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
153	875081	19	R	2	3	PRIMI	0	0	0	0	1	1	150	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	38W	F	FSB	2.6KG	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
154	907477	21	U	2	3	PRIMI	0	0	0	0	0	0	150	100	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	36W3D	F	FSB	1.9KG	SEVERE PE WITH IUGR	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
155	916739	19	R	3	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	NVD	39W	M	FSB	3.1KG	THICK MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
156	897277	26	R	2	3	PRIMI	0	0	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	NVD	42W2D	F	FSB	3.1KG	POSTTERM THICK MSL	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
157	945951	22	U	3	3	2	1	1	0	0	0	0	120	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PTVD	30W	F	MSB	1.2KG	UNKNOWN	UNKNOWN	UNKNOWN	0	0	0	0	0	1
158	945246	24	R	2	3	PRIMI	0	0	0	0	0	0	150	90	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	PTVD	33W	F	FSB	1.3KG	SEVERE PE WITH ABRUPTION	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
159	943325	20	U	2	3	PRIMI	0	0	0	0	1	0	120	80	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	PTVD	28W	F	FSB	530G	CONGENITAL ANOMALY	CONGENITAL ANOMALY	CONGENITAL ANOMALY	0	1	0	0	0	0
160	943567	24	U	3	3	3	2	1	1	0	0	0	180	100	1		0	0	0	1	0	0	0	0	0	0	0	0	0	LSCS	35W	F	FSB	1.5KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0
161	907477	24	u	2	3	PRIMI	0	0	0	0	0	0	150	100	1		0	0	0	0	0	1	0	0	0	0	0	0	0	NVD	36w5d	F	FSB	2KG	SEVERE PE	ASPHYXIA	ASPHYXIA	0	0	0	1	0	0