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Exploring the Multifactorial Etiology of Stillbirths: An In-depth Retrospective Analysis of Contributing Factors

Dr. N.Hema Madhuri[1],Y.V.Vandana[2], D.Purnima Yadav[3], MD.Rizvi[4], K.Charan Sai[5], B.Aruna[6], N.V.S.Kaanksha[7]

[1]PharmD, AssistantProfessor, AvanthiInstitute of Pharmaceutical Sciences, Affiliated to JNTUGV, Cherukupally (V), Chittivalasa (M)Vizianagaram (Dist.) 531162.

[2,3,6] Associate Professor, Department of Pharmaceutics,AvanthiInstitute of Pharmaceutical Sciences, Affiliated to JNTUGV, Cherukupally (V), Chittivalasa (M)Vizianagaram (Dist.) 531162.

[4,7] Clinical Pharmacist, MIMS Hospital, Nellimarla, Vizainagaram

[5]Assistant Professor, Department of Pharmacy, Srinivasa College of Pharmacy, Affiliated to A.U, Visakhapatnam 5300016

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Abstract:

Stillbirth, the loss of a fetus after 20 weeks of gestation, remains a global tragedy. This review explores maternal health conditions, such as pre-eclampsia, eclampsia, premature rupture of membranes, hypertension, diabetes, autoimmune diseases, infections, and lifestyle factors, which increase the risk of stillbirth. It delves into placental abnormalities like insufficiency and abruption, detailing their impact on fetal well-being. Through analysis of 100 cases, it provides insights into epidemiology, risk factors, causes, and outcomes, emphasizing the need for targeted interventions and early detection strategies. This synthesis underscores the urgency of reducing the global burden of stillbirth through research, clinical practice, and public health interventions to improve maternal and fetal health outcomes.

Keywords: Stillbirth,correlation, Pre-Eclampsia,Eclampsia,PROM.

INTRODUCTION:

Stillbirth is defined the loss of a fetus before it is fully expelled or removed from the mother's body, regardless of how far along the pregnancy is. It is typically identified when the fetus weighs at least 1000g and the gestation period has reached 28 weeks. [1]

Worldwide, almost 2 million stillbirths occur annually, equating to approximately one every 16 seconds. Alarmingly, more than 40% of these losses happen during labor, highlighting the potential for prevention through enhanced quality and compassionate childbirth care. This

includes regular monitoring and prompt access to emergency obstetric services when required. India, in particular, grapples with a substantial stillbirth challenge. According to the World Health Organization (WHO), the country's stillbirth rate stands at 22 per 1000 total births, ranking it highest globally in terms of absolute numbers.

Stillbirths are categorized into three types based on the stage at which they occur:
- **Early stillbirth**: Transpiring between 20 and 27 weeks of pregnancy.
- **Late stillbirth**: Manifesting between 28 and 36 weeks of pregnancy.
- **Term stillbirth**: Occurring at 37 weeks or more of completed pregnancy.

The ReCoDe (Relevant Condition of Death) classification system identifies various factors contributing to stillbirth, organized as follows: [2]

A)Fetus:

- Lethal congenital anomaly
- Infection
- Chronic – e.g. TORCH
- Acute
- Non-immune hydrops
- Iso-immunisation
- Fetomaternal hemorrhage
- Twin-twin transfusion
- Intrapartum asphyxia
- Fetal growth restriction

B)Umbilical Cord:

- Prolapse
- Constricting loop or knot
- Velamentous insertion

C)Placenta:

- Abruption
- Previa
- Vasa Previa
- Placental infarction

D)Amniotic fluid:

- Chorioamnionitis
- Oligohydramnios
- Polyhydramnios
- Anhydroamnios

E)Uterus:

- Rupture
- Uterine anomalies

F)Mother:

- Diabetes
- Thyroid diseases
- Hypertensive diseases in pregnancy

- Antiphospholipid syndrome
- Cholestasis
- Drug abuse
- Epilepsy
- Trauma

PRE-ECLAMPSIA:

Preeclampsia is described as a systemic disorder marked by the sudden onset of high blood pressure (systolic blood pressure (SBP) $\geqslant$ 140 mmHg and/or diastolic blood pressure (DBP) $\geqslant$ 90 mmHg) and Proteinuria (> 300 mg/24 h) after 20 weeks of pregnancy in a previously normotensive woman.

Prevention of preeclampsia includes:-

1. Administration of low-dose aspirin to women at risk of or prone to preeclampsia if necessary[3].
2. Calcium supplementation, which has been observed to modestly reduce blood pressure in pregnant women at higher risk for hypertensive disorders or with low dietary calcium intake.[4]
3. Nutritional supplements do not consistently show preventive effects on preeclampsia.

Treatment of preeclampsia involves careful monitoring and management:-Blood pressure typically normalizes within a few hours after delivery, but may remain elevated for several weeks. Persistent high blood pressure at 12 weeks postpartum may indicate chronic hypertension, necessitating regular screenings to assess severity. Prenatal care is crucial in managing preeclampsia.[5]For women with systolic blood pressures of 160 to 180 mm Hg and diastolic blood pressures of 105 to 110 mm Hg, antihypertensive drugs are preferred to lower systolic pressure to 140 to 155 mm Hg and diastolic pressure to 90 to 105 mm Hg.

Antihypertensive drugs commonly used include:

- Hydralazine (Apresoline) - Initial dose: 5 mg IV or 10 mg IM
- Labetalol (Normodyne, Trandate) - Initial dose: 20 mg IV bolus[6]

These drugs are frequently employed to manage hypertension in pregnant women with preeclampsia. ACE inhibitors are contraindicated in pregnancy, while Labetalol is contraindicated in pregnant women with asthma and COPD.

ECLAMPSIA:

Eclampsia is a condition characterized by seizures or epileptic attacks occurring in pregnant women, typically within 48 hours of delivery. Its primary clinical manifestations include seizure-induced aspiration, pulmonary edema, and neurologic sequelae.[7]

Prevention strategies include:- The use of MgSO4 as the most effective prophylactic measure against eclamptic seizures. Additionally, since eclampsia is often associated with high blood pressure levels (pre-eclampsia), pregnant women at high risk should receive recommended antihypertensive drugs.[8]

Treatment modalities for eclampsia include:

- Supportive care, such as maintaining oxygenation and monitoring with pulse oximetry.
- Delivery, which is an effective treatment for pregnant women at severe risk of pre-eclampsia and eclampsia.
- Continuous intravenous infusion of MgSO4, with a loading dose of 4-6g over 15-30 minutes diluted in 100 to 150 mL of IV fluids, followed by a maintenance dose of 2g/hr.

Maintenance doses should be administered if respiratory rate exceeds 12/min and urine output exceeds 100 mL in 4 hours.

- In case of magnesium toxicity, immediate cessation of MgSO4 infusion and administration of 10mL of 10% calcium gluconate infusion over 3 minutes are recommended. Caution should be exercised when administering magnesium sulfate alongside calcium channel blockers.
- If magnesium sulfate fails to control recurrent seizure attacks, other neuroleptic agents such as Phenytoin and Diazepam may be considered.[9]

POLYHYDROAMINOS:

Polyhydramnios is characterized by an excessive accumulation of amniotic fluid, typically ranging from 1.5 to 2.1 liters, which can lead to fetal malformations and premature labor. Amniotic fluid, surrounding the fetus, is vital for development and serves as a protective barrier. Its inherent antibacterial properties shield the fetus from infectious agents. The volume of amniotic fluid increases progressively throughout gestation, reaching 800-1000 ml by 36 to 37 weeks. Polyhydramnios is often associated with fetal anomalies and gestational diabetes, potentially culminating in preterm birth if left untreated.[10]
Prevention involves managing blood sugar levels to mitigate the risk of gestational diabetes.

Treatment strategies include:

•Weekly sonography measurements to monitor amniotic fluid levels, with the expectation of spontaneous resolution over time.

• Consultation with an obstetrician regarding therapeutic options in cases of severe maternal discomfort, complications, or imminent preterm delivery.

• Amnion drainage, removing up to 3.5 liters of fluid in less than 30 minutes, may be necessary to reduce amniotic fluid volume in severe polyhydramnios cases.

•Prostaglandin synthetase inhibitors like Indomethacin, administered at a daily dose of 3 × 25 mg before 32 weeks of gestation (maximum 5 × 25 mg), are effective in reducing excessive amniotic fluid.[11]

OLIGOHYDROAMINOS:

Oligohydramnios is characterized by a deficiency of amniotic fluid (AF), typically less than 400 mL, until 34 to 36 weeks of gestation. It signals potential maternal and placental complications as well as fetal abnormalities, suggesting improper uterine development, reduced fetal movements, and an increased risk of premature labor. Additionally, the presence of oligohydramnios heightens the risk of fetal growth restriction.
Treatment strategies for oligohydramnios emphasize management and early detection to mitigate associated risks. Rigorous surveillance with serial ultrasound examinations is essential for promptly identifying fetal malformations, intrauterine growth restriction, or other factors influencing prognosis. While some studies have explored interventions like amnioinfusion and amniopatches for managing oligohydramnios, their efficacy remains uncertain. Sildenafil citrate, a phosphodiesterase-5 inhibitor, has been suggested to support intrauterine growth in cases of oligohydramnios.[12]

ANHYDROAMINOS:

Anhydroamnios, the absence of amniotic fluid surrounding the fetus, can occur due to various factors such as ruptured membranes (PROM), placental dysfunction, or impaired fetal

renal function. Typically observed around 22 weeks of gestation, EPRA (early pregnancy renal anhydroamnios) is primarily attributed to conditions like bilateral renal agenesis, cystic kidney disease (CKD), and obstructive uropathies such as lower urinary tract obstruction (LUTO).

Treatment options for EPRA include:

•RAFT (Renal AnhydroamniosFetal Therapy)

•Serial amnioinfusions in the womb

•For cases of LUTO, interventions such as vesicoamniotic shunting and fetal cystoscopy may be performed to address the underlying issue.[13]

GESTATIONAL DIABETES:

Gestational diabetes is a hyperglycemic condition that arises during pregnancy and typically resolves after childbirth. Elevated glucose levels characterize hyperglycemia, making it the most common complication in pregnant women. Gestational diabetes poses risks for long-term complications such as obesity, impaired glucose metabolism, and cardiovascular disease in both the mother and infant. Contributing factors may include maternal obesity, advanced maternal age, and a family history of type 2 diabetes mellitus.

Preventive measures include:

- Dietary adjustments, such as reducing sugar intake
- Lifestyle modifications, including physical activities like walking, cycling, yoga, and aerobic exercises.[14]

Treatment strategies entail:

•Continuing daily physical activity and initiating pharmacological treatment if glycaemia remains elevated after 1-2 weeks of lifestyle interventions.

• Insulin is the preferred and traditional agent for managing gestational diabetes due to its safety for the fetus, as it does not cross the placenta barrier.

• Oral hypoglycemic agents are not recommended due to their potential to cross the placenta barrier, affecting the fetus and causing teratogenicity.

Post-delivery treatment includes:

-Continuing lifestyle interventions and encouraging breastfeeding.

- Discontinuing pharmacotherapy immediately after delivery.

- Regular screening for the development of diabetes mellitus is advised.[15]

INFECTION:

Infection may be especially important as a cause of stillbirth occurring early in pregnancy.Infection may cause stillbirth by several mechanisms, including direct infection, placental damage, and severe maternal illness. Various organisms have been associated with stillbirth, including many bacteria, Spirochetes,viruses, and protozoa. Infection may cause stillbirth by a variety of mechanisms including severe maternal illness, direct infection, and placental damage.The most common intrauterine infection causing stillbirths appears to be bacteria ascending from the vagina.A maternal infection may precipitate preterm labor with the fetus unable to tolerate labor and born dead.[16]

ROLE OF CLINICAL PHARMACIST IN REDUCING STILLBIRTHS OCCURRENCE:

Clinical pharmacists can play a significant role in preventing stillbirth occurrence through various avenues:

1. Medication Management: Clinical pharmacists can review medications that pregnant individuals are taking to ensure they are safe during pregnancy. Some medications can increase the risk of stillbirth, so pharmacists can work with healthcare providers to identify safer alternatives or adjust dosages if necessary.
2. Educational Support:Pharmacists can provide education to pregnant individuals about the risks associated with certain medications during pregnancy. They can also offer guidance on lifestyle factors, such as avoiding tobacco, alcohol, and illicit drugs, which can contribute to stillbirth risk.
3. Preconception Counseling:Pharmacists can offer preconception counseling to individuals who are planning to become pregnant. This counseling may involve discussing medication management, health conditions that can impact pregnancy outcomes, and lifestyle modifications to reduce the risk of stillbirth.
4. Monitoring and Follow-Up:Pharmacists can monitor pregnant individuals who are taking medications that may pose a risk of stillbirth and provide follow-up care to ensure that their medication regimens are optimized throughout pregnancy.
5. Collaboration with Healthcare Team:Clinical pharmacists can collaborate with other members of the healthcare team, including obstetricians, maternal-fetal medicine specialists, and primary care physicians, to provide comprehensive care for pregnant individuals and reduce the risk of stillbirth.
6. Research and Advocacy:Pharmacists can engage in research activities aimed at better understanding the factors contributing to stillbirth and identifying strategies for prevention. They can also advocate for policies and guidelines that support optimal medication management and healthcare practices during pregnancy.

By actively participating in these roles, clinical pharmacists can contribute to efforts to prevent stillbirth and improve pregnancy outcomes for individuals and their families.

MATERIALSAND METHODS:

STUDY SITE: The study was conducted in pediatric department at maharaja institute of medical sciences (MIMS), Nellimarla, Vizianagaram.

STUDY PERIOD: The study was conducted for a period of 8 months.

STUDY DESIGN: Retrospective observational study.

SAMPLE POPULATION: A total of 100 subjects enrolled in the study.

STUDY CRITERIA: The study criteria were enrolled inpatients and outpatients of Maharaja Institute of medical sciences, Nellimarla, Vizianagaram.

INCLUSION CRITERIA:

- Subjects who signed the informed consent form prior to study procedure.
- Pregnant women of age between 18 to 40 years

EXCLUSION CRITERIA:

- Patients who are not willing to provide ICF.
- Pregnant women below 18years and above 40years of age are excluded.
- Women who will not be able to provide the completeinformation about their health condition.

STUDY PLAN

PHASE 1:

- Obtaining consent from the hospital authority.
- Obtaining ICF from individuals.
- Literature survey.
- Designing data collection form.
- Taking patients' demographics data.
- Data collection.
- Case Review.

PHASE 2:

- Evaluation of etiological factors of stillbirths.
- Assess the impact of Gestationalage,Socioeconomicfactors,Birth weight and disease condition of mother on foetus.
- Data validation.
- Statistical analysis.

OUTCOMES OF STUDY:

1.Stillbirth Pattern: The study can identify the major causes of stillbirth like pregnancy complications,congenital anomalies and risk factors like gestational age,residentialarea,type of pregnancy that leads to stillbirth.

2.Pharmacist Interventions: Assessing the role of clinical pharmacists can reveal specific interventions that have contributed to minimizing pregnancy complications. This might include

Medication Safety and Counseling,medicationreconciliation,patient education regarding obstetric care,antenatal care.

RESULTS:

Here are the results of the parameters that are taken into consideration of the study.

1.GENDER

GENDER	NO.OF CASES
Male	39
Female	61

Fig 1.1 Tabular representation of gender

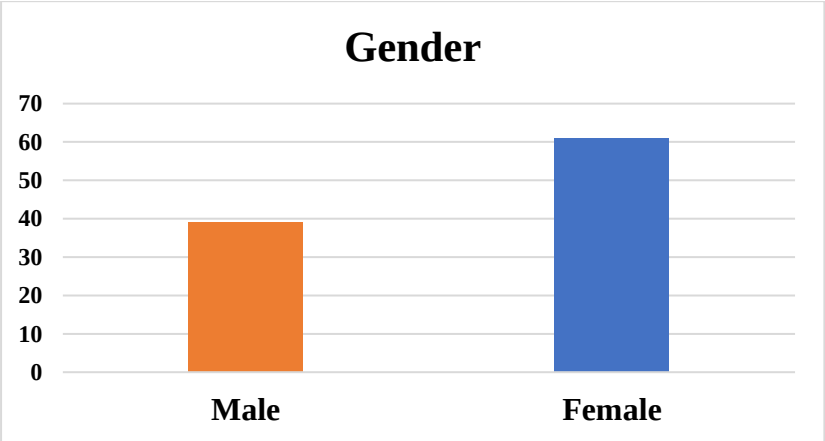

Fig 1.2 Graphical representation of gender

Both the male and female genders were included in the study. A total of 100 samples are taken out of which 39 are males and 61 are females. The highest rate of stillbirths was observed amongfemales compared to males.

2. GESTATIONAL AGE

GESTATIONAL AGE	NO.OF CASES
18-20	2
21-25	37
26-30	27
31-35	27
36-40	7

Fig 2.1 Tabular representation of Gestational age

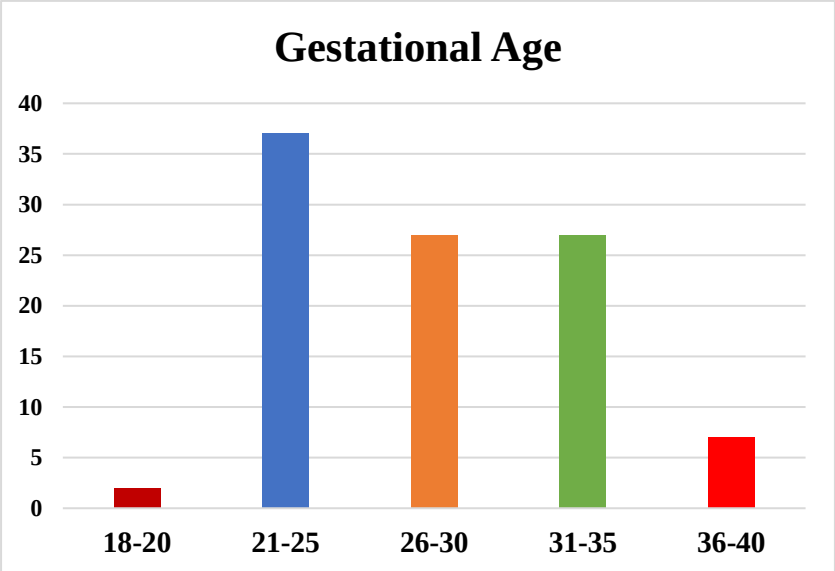

Fig 2.2 Graphical representation of Gestational age

The age groups of pregnant women that are taken in the study are 18 to 40 years which are divided into five different categories. The age group from 18-20 years have 2, 21-25 years have 37,26-30 years have 27, 31-35years have 27 and 36-40 years have7 in number. The highest number of stillbirths occurred among pregnant women in the 20-25 years age group, followed by those in the 26-30 and 31-35 years of age groupsand least number of stillbirths was observedin age group 18-20 years.

3. MODE OF DELIVERY

MODE OF DELIVERY	NO.OF CASES
Normal	66
Caesarean	34

Fig 3.1 Tabular representation of mode of delivery

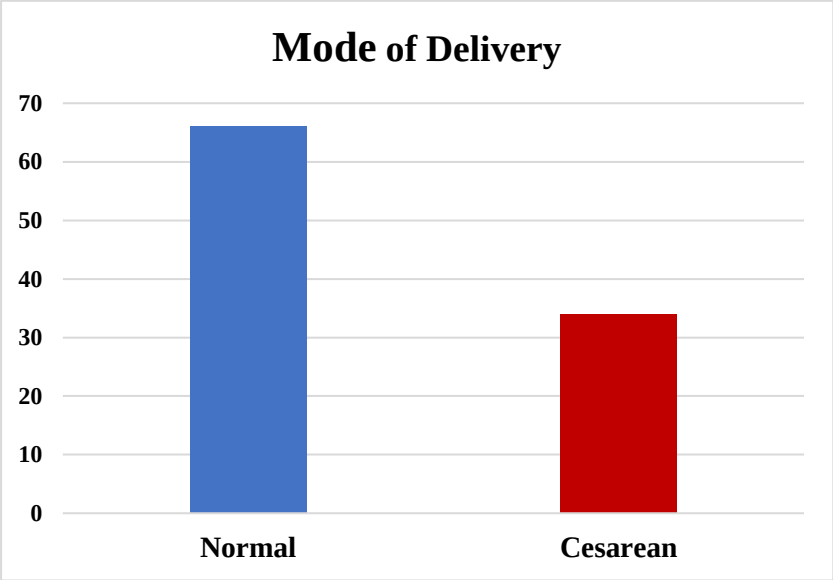

Fig 3.2 Graphical representation of mode of delivery

In our study,we considered two modes of delivery i.e normal delivery and caesarean delivery. Among the 100 samples 66 were delivered normally and 34 were delivered by caesarean section. The higher number of stillbirths was observed with pregnant women who underwentnormal delivery .

4.RESIDENTIAL AREA

RESIDENTIAL AREA	NO.OF CASES
Rural	62
Urban	38

Fig 4.1 Tabular representation of residential area

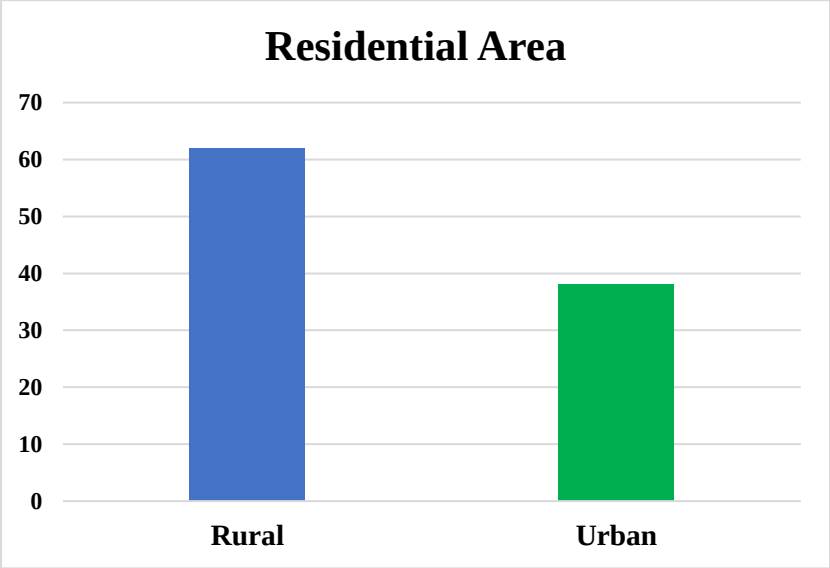

Fig 4.2 Graphical representation of residential area

Area of residence plays an important role in occurrence of stillbirth. From the total number rural account for 62 and urban account for 38 in number. Pregnant women who are residing in rural areas wereexperienced high rates of stillbirths due to lower literacy rate in rural when compared to urban population.

5.BIRTH WEIGHT

BIRTH WEIGHT	NO.OF CASES
<1	15
1-1.5	43
1.6-2	20
2.1-3	20
3	2

Fig 5.1 Tabular representation of birth weight

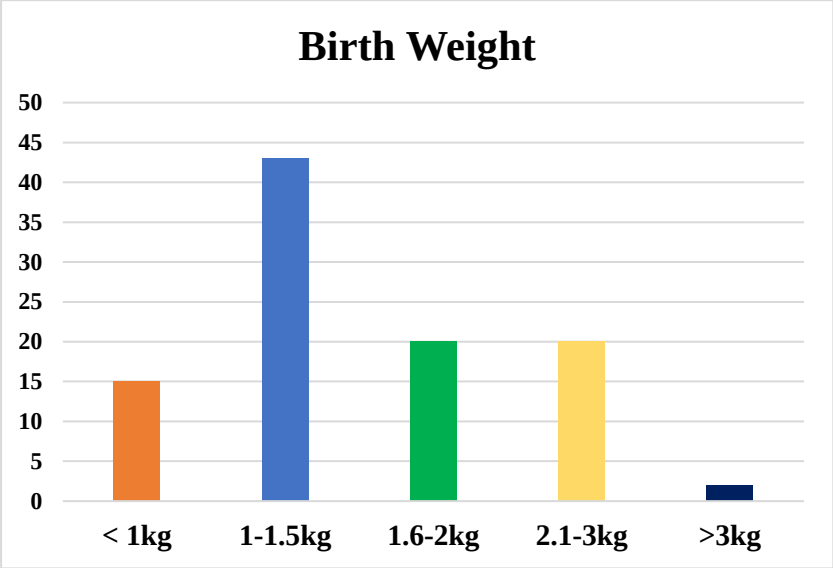

Fig 5.2 Graphical representation of birth weight

Birth weight significantly influences the occurrence of stillbirth. Lower birth weight leads to fetal demise. Among the 100 cases we have observed, the highest number of stillbirths occurred in infants with a birth weight of 1-1.5 kg, while fewer stillbirths were observed in those with a birth weight greater than 3 kg.

6.CAUSE OF STILLBIRTHS

CAUSES OF STILLBIRTHS	NO.OF CASES
Pre-Eclampsia	35
PROM	24
Eclampsia	10
Polyhydroaminos	8
Oligohydroaminos	3
Anhydroaminos	2
Gestational Diabetes	4
others	14

Fig 6.1 Tabular representation of causes of stillbirths

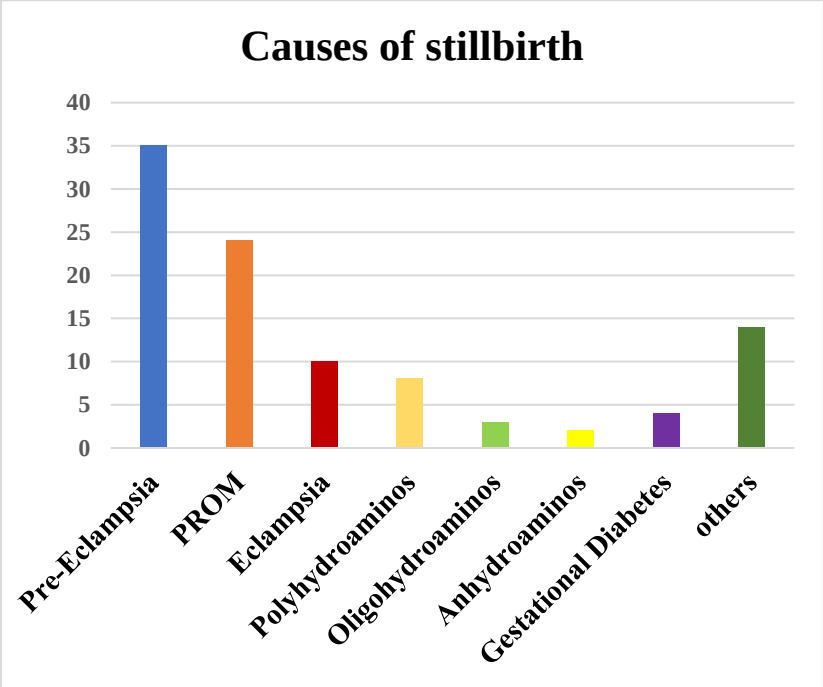

Fig 6.2 Schematic representation of causes of stillbirths

The pie chart above illustrates the primary factors contributing to stillbirths. Pre-eclampsia is the leading cause, followed by PROM (premature rupture of membranes). Conversely, the lowest number of stillbirths is seen in pregnant women with high and levels of amniotic fluid. Other contributing factors include the absence of fetal cardiac activity, acute pulmonary edema, anemia, Pneumocystis pneumonia, and sepsis.

7.BIRTH WEIGHT- GENDER CORRELATION

Birth Weight	**Male**	**Female**	**P value**
<1	5	10	0.15
1-1.5	18	25	
1.6-2	4	16	
2.1-3	12	8	
>3	0	2	
Mean±SD	7.8±7.15	12.2±8.72	

Fig 7.1 Tabular representation of correlation between birth weight and gender

The mean birth weight of males was 7.8±15and 12.2±8.72 for females.There was no significant difference in birth weight based on gender(P=0.15).The female group had a higher number of stillbirths among infants with abirthweight 1-1.5kg.Least number of stillbirths were observed in both males and females whose birth weight is exceeding 3kg.

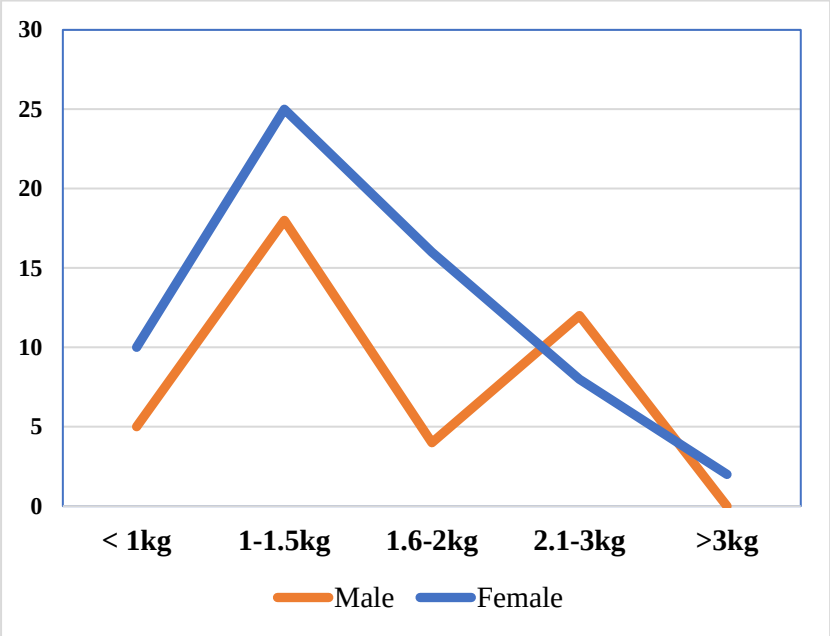

Fig 7.2 Graphical representation of correlation between birth weight and gender

8.BIRTHWEIGHT - RESIDENTIAL AREA CORRELATION

Birth Weight	Rural	Urban	P value
<1	4	11	0.21
1-1.5	29	14	
1.6-2	14	6	
2.1-3	13	7	
3	2	0	
Mean±SD	12.4±10.69	7.6±5.31	

Fig 8.1 Tabular representation of correlation between birth weight and residential area

The mean birth weightof pregnant women residing in rural areas was 12.4±10.69 and 7.6±5.31 for pregnant women in urban areas.There was no significant difference in birth weight based on residential area of pregnant women(P=0.21).The rural pregnant women had a higher number of cases among infants with a birthweight 1-1.5kg.

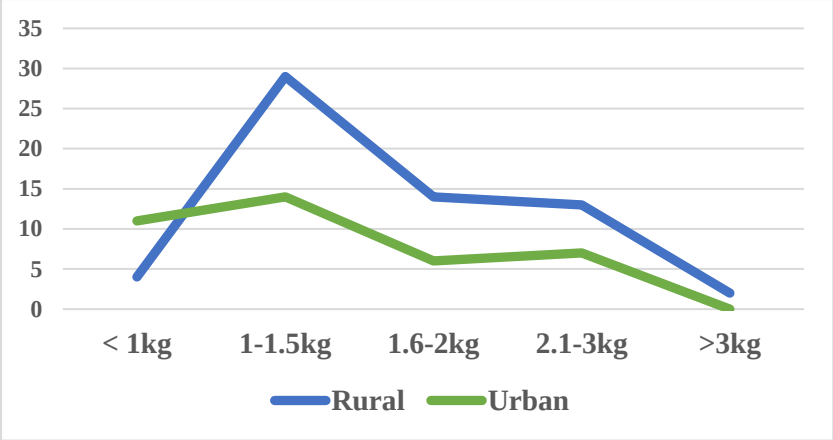

Fig 8.2 Graphical1 representation of correlation between birth weight and residential area

9.GESTATIONAL AGE – GENDER CORRELATION

Gestational age	Male	Female	P value
18-20	2	0	0.3
21-25	15	22	
26-30	5	22	
31-35	15	12	
36-40	2	5	
Mean±SD	7.8±6.68	12.2±9.9	

Fig 9.1 Tabular representation of correlation between gestational age and gender

The mean gestational age of pregnant women with male babies was 7.8±6.68 and 12.2±9.9 for pregnant women with female babies .There was no significant difference in gestational age based on the gender of the infant(P=0.3).Higher number of stillbirths occurred among pregnant women with female infants and gestational age of 21-30yrs.

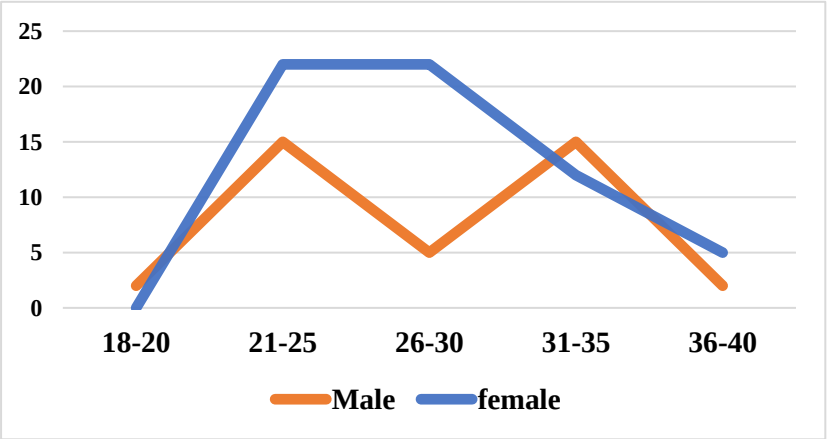

Fig 9.2 Graphical1 representation of correlation between gestational age and gender

10.GESTATIONAL AGE – CAUSES OF STILLBIRTH CORRELATION

Gestational age	Pre-Eclampsia	PROM	Eclampsia	Poly hydroamnios	Oligo hydroaminos	Anhydroaminos	Gestational Diabetes	others
18-20	0	0	2	0	0	0	0	0
21-25	13	7	4	2	3	2	2	4
26-30	8	9	4	6	0	0	2	2
31-35	7	8	0	0	0	0	0	8
36-40	7	0	0	0	0	0	0	0
Mean± SD	7±4.63	4.8±4.43	2±2	1.6±2.6	0.6±1.34	0.4±0.89	0.8±1.09	2.8±3.3

Fig 10.1 Tabular representation of correlation between gestational age and causes of stillbirth

The mean gestational age for those with Pre-eclampsia was 7±4.63, 4.8±4.43 for pregnant women with PROM and 2±2 for those with Eclampsia.There were more number of stillbirths in pre-eclampsia whose age was 21-25 years.Amniotic fluid disorders,gestational diabetes and other diseases like severe anaemia,sepsis and absence of fetal cardiac activity are minor contributing factors for stillbirths.

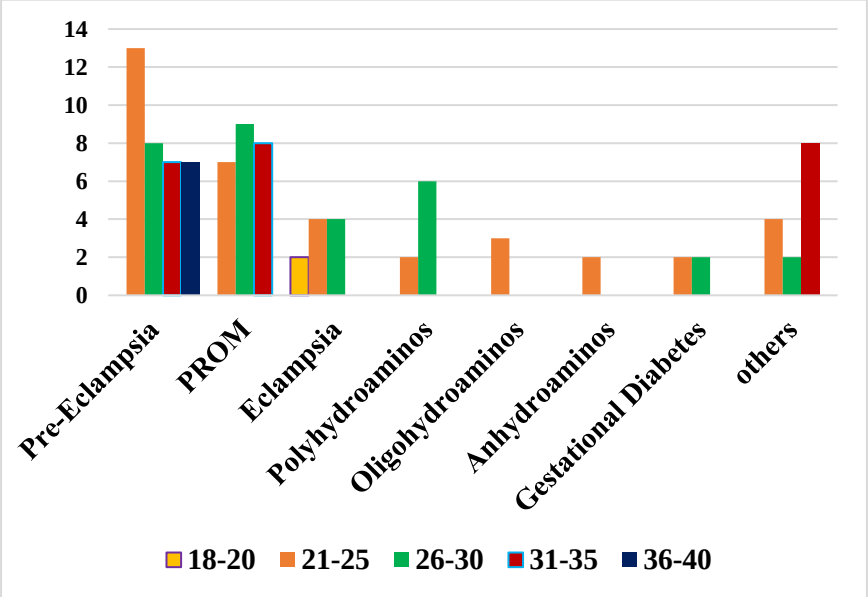

Fig 10.2 Graphical representation of correlation between gestational age and causes of stillbirth

DISCUSSION:

Stillbirth, clinically known as intrauterine fetal demise, is the death of a baby at or after the 20th week of pregnancy**.**Globally, India ranks first in the absolute number of stillbirths. Hence, the level, causes, and risk factors of stillbirths were estimated to facilitate designing of prevention strategy.[17]Annually, 2.6 million stillbirths occur worldwide, 98% in developing countries.[18]

In our retrospective study, we analyzed a sample of 100 pregnant women aged 18 to 40 years. The primary objective was to identify the major causes of stillbirths and explore the role of clinical pharmacists in mitigating pregnancy complications.

The collected sample has been grouped into males (39) and females (61). Females have exhibitedmore number of stillbirths when compared to males. In the present study we considered gestational age age which is categorized into 18-25(2), 21-25(37), 26-30(27),31-35(27),36-40(7). Among the grouped gestational ages, the age group of 21-25 had highest percentage of stillbirths.

In the current study we sort out mode of delivery into two categories that is caesarean(34) and normal vaginal delivery (66).

We also examined rea of residence ,residents of rural area (62)are more susceptible than urban area residents(38). Rural, tribal and difficult-to-reach areas of India are particularly lacking in health care facilities, and this has been recognized as significant determinants of the high infant mortality and morbidity in this country.[19]

The World Health Organization (WHO) application of the International Classification of Diseases for perinatal mortality (ICD-PM) aims to improve data on stillbirth to enable prevention.[20] Stillbirth is a devastating obstetrical outcome defined as the death of a fetus at ≥20 gestational weeks or where the fetal weight is ≥500 g.[21]In our study we divide the birthweight into five categories i.e. birthweight <1kg (15),1-1.5kg(43),1.6-2kg(20),2.1-3(20),>3kg(2).More number of stillbirths were observed among infants with birth weight in the range of 1-1.5kg.

Stillbirth has been recognised as one of the most neglected areas of public health.21]Impaired placentation is associated with the development of preeclampsia, fetal growth restriction and stillbirth.[22]According to our study,the disease state assosciated with highest number of stillbirths is pre-eclampsia(35), followed by PROM(24).Among the other disease states ,we observed
eclampsia(10),polyhydroamnios(8),oligohydroamnios(3),anhydroamnios(2),Gestational diabetes(4)and others(14).Pre-labour Rupture of Membranes (PROM) is also an important cause of maternal and fetal morbidity [23].Both gestational hypertension and pre-eclampsia were associated with an increased risk for PROM[24].According to our study,Pre-eclampsia,premature rupture of membranes(PROM),eclampsia are the major causes of stillbirths.

Correlation was done between birth weight and gender and we observed that there was no significant difference in birth weight based on gender(P=0.15).Gestational age of pregnant women and gender of infant are correlated.Among pregnant women aged 18-20 years, there were 2 males and 0 females. In the 21-25 age group, there were 15 males and 22 females. For the 26-30 age group, we found 5 males and 12 females. Lastly, in the 31-35 age group, there were 2 males and 5 .

The occurrence of stillbirths is correlated with gestational age, particularly among pregnant women aged 21-25 years. Pre-eclampsia (13 cases) was the leading cause of stillbirths in this age group, followed by prelabour rupture of membranes (9 cases) in the 26-30 age group. Other contributing factors for stillbirths include amniotic fluid disorders, gestational diabetes, severe anemia, sepsis, and absence of fetal cardiac activity.

CONCLUSION:

Our retrospective study conducted at a tertiary hospital illuminates the significant burden of stillbirths. Through our analysis,We identified key factors contributing to stillbirths, including maternal age, mode of delivery, area of residence, birth weight, and underlying medical conditions such as pre-eclampsia, eclampsia, amniotic fluid disorders, Gestational diabetes and prelabour rupture of membranes (PROM).

Our findings underscore the urgent need for targeted interventions and public health strategies to address stillbirths, especially in vulnerable populations such as pregnant women aged 21-25 years, where pre-eclampsia emerged as the leading cause. The correlation between gestational age and stillbirth occurrence emphasizes the importance of early detection and management of pregnancy-related complications.

Moreover, our study highlights the potential role of clinical pharmacists in mitigating pregnancy complications, suggesting the importance of interdisciplinary collaboration in maternal and fetal health care.Moving forward, concerted efforts are needed to address the underlying socioeconomic and healthcare disparities, especiallyin rural areas, to reduce the incidence of stillbirths and improve maternal and fetal outcomes.

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CONFLICTS OF INTREST

NIL

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