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ORIGINAL ARTICLE

EVALUATION OF INTRAUTERINE FETAL DEATH AT TERTIARY CARE CENTRE: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: *Intrauterine fetal death (IUFD) is unpredictable despite of regular antenatal checkup. Early assessment and timely intervention may reduce the incidence of IUFD. This study aimed to find out the prevalence of IUFD among pregnant women at tertiary care center.*

Materials and Methods: *A descriptive cross-sectional study was conducted in a tertiary care center from 1st November 2020 to 31st October 2021. Ethical approval was obtained from the Institutional Review Committee (Registration number: F-NMC/515/076-077). Demographic data were collected using predesigned proforma in pregnant women with intrauterine fetal demise identified before, during labor and delivery.*

Result: *Among 1441 deliveries, IUFD was found in 81 (5.62%). The highest stillbirth rate occurred in the 3rd trimester between 37 - 42 weeks 41 (50.61%), 85.18% unemployed, 36% were primigravida, 46.91% in 20-24 years age group. The commonest obstetric complications encountered were hypertensive disorders at 14.81%, unexplained (13.58%). Macerated stillbirths accounted for 49 (60.49%. Over 85% of the mothers had vaginal delivery while 15% had cesarean section.*

Conclusion: *A significant portion of IUFD can be prevented by providing patient and community health education for regular antenatal care regarding warning signs during antenatal, hospital delivery, early referral.*

Keywords: *Fetal deaths, Fetal demise, Perinatal deaths, Prevalence, Stillbirth.*

INTRODUCTION

Intrauterine Fetal Death (IUFD) is defined as death prior to complete expulsion or extraction from the mother of a product of human conception irrespective of the duration of pregnancy and which is not an induced termination of pregnancy.[1] Literally, IUFD embraces all fetal deaths weighing 500 g or more and more than 22 weeks of gestation.[2] In Nepal, the period of viability for a fetus is later than that in a developed country and IUFD can be defined as fetal death occurring after 28 weeks period of gestation.[3] Prevalence of IUFD and stillbirths is the direct indicator of the quality of antenatal care in that society.[4] Stillbirth is a common adverse pregnancy outcome, with nearly 3 million third-trimester stillbirths occurring worldwide each year. 98% occur in low-income and middle-income countries, and globally stillbirth rate is 13.9 per 1000 total births occur in the intrapartum period, despite many being preventable.[5] The incidence ranging from 3.4 per thousand (%) total births in high-income countries to 36 in the Sub-Saharan and Southern Asia regions.[6] A complex chain of events often precedes the fetal death which leads to no decrease rate of stillbirth in most of countries since 2000 till 2019.[7]

Service providers are responsible for providing support to families and for investigating the cause of death and intervene in time to decrease stillbirth rate. Care during pregnancy and childbirth to reduce the rate of stillbirth is important marker of a health system`s quality by global health community.[8] Unfortunately, the cause of death is reported as unexplained in up to two thirds of stillbirths.[9] Risk factors for IUFD include intrauterine fetal asphyxia which impaired placental blood gas exchange leading to progressive fetal hypoxemia and hypercapnia with metabolic acidosis, malpresentation, abruptio placentae, cord prolapse.[10,11] IUFD risk increases by four times with pregnancy at an early age i.e. age of 16 years or less than 16 years.[12] Stillbirth is still the largest contributor to perinatal death rate and is ten times more common than sudden and unexpected infant deaths.[13] Classifying causes of death in stillbirths has been an ongoing source of controversy for many years.[14] There are now more than 50 stillbirth cause of death classification systems based on clinical and laboratory testing.[15] Fetal causes include chromosomal problems, infection, covid-19, anaemias of fetal origin, eg. alpha thalassaemia, cord accidents, gastroschisis, prolonged PROM and fetal structural abnormalities.[16] Maternal associations include hypertension, diabetes mellitus, renal disease, autoimmune disorders, placental abruption, IUGR, Rhesus isoimmunisation, multiple gestation, post-term pregnancy, antiphospholipid syndromes, infections (malaria and Syphilis), previous history of stillbirths, thrombhophilias, SLE as well as advanced age, alcoholism, obesity, low socioeconomic status, illiteracy, smoking and diseases of the cardiac and haematological systems.[17,18] Placental and its vessels pathology result in fetal death.[19] Stillbirth remains hidden from society, and has wide-reaching consequences for parents, care providers, communities, and society that are frequently overlooked and underappreciated. The estimated direct financial cost of a stillbirth is 10-70% greater than the cost of a live birth.[20] An estimated 4.2 million women are living with depression associated with stillbirth.[20,21] Low utilization and access to healthcare could be a key contributing factor, as were unmanaged condition in pregnancy that increase women`s risk of complication and stillbirth. Sociocultural factors related to the treatment of women and perception about medical interventions deprived women of interventions that could potentially prevent stillbirth.

The quality of care from government, public and private providers during pregnancy and childbirth should be exacerbated by health system constraints that lead to unnecessary delays.[22] Efforts are needed to raise awareness of stillbirth risk factors at community level to facilitate care seeking to antenatal and childbirth care quality and ensure culturally appropriate and respectful care to reduce treatment delay. Women with sepsis should be treated with intravenous broad-spectrum antibiotic therapy. Postpartum contraception choices should be discussed in detail with couple. Hence this study was planned to find the incidence of IUFD and evaluate various factors related to fetal death at tertiary care Center, so that in this area of obstetrics, improvements could be made.

MATERIALS AND METHODS

Study Design

This descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology of National Medical College and Teaching Hospital for a duration of one year from 1st November 2020 to 31st October 2021. The ethical approval was obtained from the Institutional Review Committee of the National Medical College and Teaching Hospital (Registration number: F-NMC/515/076-077). The study population included pregnant women who had IUFD prior to onset of labor, during labor, delivery, gestational age of 22 weeks and above and consent to participate.

A preformed proforma was designed to record all the available demographic details and clinical parameters. On receiving a case, participants were explained about the study in detail. They were assured of confidentiality and informed written consent was taken. Data was collected and noted on a structured proforma. Identification of all IUFD cases were done through clinical examination with the use of stethoscope, fetal doppler and confirmed by ultrasonography. Detailed history including present pregnancy and past obstetric history was taken. All baseline investigations (haemoglobin, random blood

sugar, blood group, platelet, serology, urine routine, ultrasonography obstetric scan) were done. The decision for mode of delivery was based on clinical evaluation of the progress of labour and maternal condition. The fetus was examined grossly, weighed and any gross structural anomalies were recorded. The placenta and cord were also examined, and any anomalies founded, were entered in the data collection record. No photographs or x-rays of the fetuses were taken after delivery. The mothers were followed up daily in the postnatal wards on maternal postpartum complications such as postpartum haemorrhage, sepsis and duration of hospital stay.

Selection Criteria

All participants who meet inclusion criteria in study period were enrolled in study.

Inclusion criteria - All pregnant women who had IUFD prior to onset of labor, during labor, delivery, gestational age of 22 weeks and above and consent to participate.

Exclusion criteria - Women with gestation age less than 22 weeks, mothers of IUFD delivered outside, refusal to participate.

Data analysis:

The data collected were entered daily. Analysis of the data was done by using SPSS version 20 software. These findings were then presented in the form of tables, graphs and diagrams using Microsoft Excel 2007. SPSS version 20 was the software used for calculation and tabulation of data. The final results were discussed and the conclusion was derived.

RESULTS

Among 1441 deliveries within the study period, 81 patient had intrauterine fetal demise giving a frequency of IUFD of about 1 in 18 deliveries. The incidence of eclampsia came out to be 5.62%. Over the same period a total of 1441 singleton deliveries occurred giving a stillbirth rate of 56.21 per 1000 total births. The study population and their demographic characteristics were as below:

Table 1 : Sociodemographic and Obstetric factors associated with IUFD

Characteristics	No. of cases (81)	Percentage
Maternal age (years)		
15 - 19	7	8.64%
20 – 24	38	46.91%
25 – 29	22	27.16%
30 – 34	9	11.11%
35 – 39	5	6.17%
> 40	0	0%
Occupation		
Unemployed	69	85.18%
Self employed	4	4.93%
Formal employed	8	9.87%
Parity		
Primigravida	29	36%
Multigravida	41	51%
Grandmultigravida	11	13%
Outcome of previous pregnancy		
No previous pregnancy	29	35.80%
Abortion	6	7.40%
Preterm IUFD	4	4.93%
Term IUFD	3	3.70%
Term live baby	39	48.14%
Gestation age (weeks)		
22-27	11	13.58%
28-36	21	25.92%
37-42	41	50.61%
>42	8	9.87%
Mode of delivery		
Vaginal delivery	69	85.18%
Caesarean section	12	14.81%
Timing of fetal demise		
Intrapartum deaths (Fresh SB)	32	39.50%
Macerated SB	49	60.49%

Out of women (n=81) studied in present study maximum (46.91%) were found to be between 20 to 24 years as shown in Table 1. The mean age of the study participants was 24.78, median 24 and mode was 22 years. Over 85% of the mothers were aged between 20-34 years. Maximum of the IUFD patients (85.18%) had no income generating activity as given above.

Table 1 shows that most of the women studied were multigravida (51%), primigravida were 36% and grand multigravida (13%) and 48.14% of the mothers had previous live term births, 7.40% had abortions while 8.63% had a previous stillbirth as given in Table 2. The

highest stillbirth rate occurred in the 3rd trimester between 37-42 weeks (50.61%) followed by 28-36 weeks (25.92%). Over 85% of the mothers had vaginal delivery while 15% had cesarean section. The rate of cesarean sections would be brought down significantly if mothers with IUFD confirmed by scan obstructed labor were offered instrumental delivery / destructive operation and previous scar were offered mechanical induction rather than straight repeat section. Some clinicians offered section for such mothers who were even remote from term gestations. Macerated stillbirths accounted for 60.49%, while fresh stillbirths were 39.50% as per Table1.

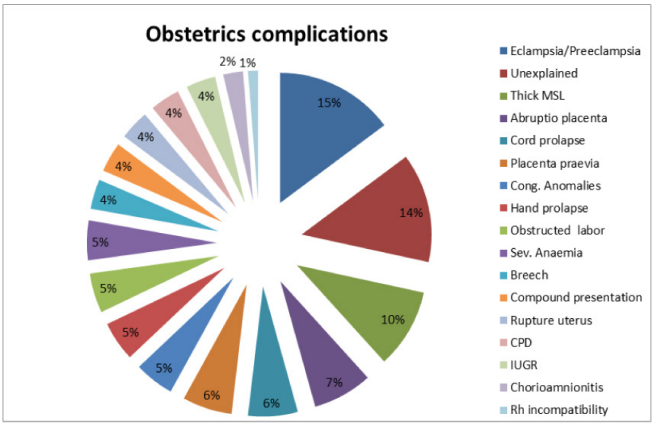

Figure 1 : Obstetrics complications

The commonest obstetric complications encountered among the study participants were hypertensive disorders (Preeclampsia / eclampsia) at 14.81%, unexplained (13.58%), thick meconium stained liquor (9.87%), abruptio 7.40%, cord prolapse and placenta praevia (6.17%), congenital anomalies, hand prolapse, severe anaemia and obstructed labor each 4.93%, cephalopelvic disproportion, malpresentation, intrauterine growth restriction and rupture uterus each (3.70%), chorioamnionitis and (2.46%), and Rh incompatibility (1.23%) as given in Figure 1. Only 22.22% of the mothers had antenatal scans done. 55.55% of the antenatal obstetric scans done were normal. Low lying placenta was in 16.66% cases. Of those with detected anomalies 11.11% showed anencephaly, 11.11% had oligohydramnios while 5.55% had breech presentation. This could be due to the financial constraints for majority of the mothers who were unemployed, unavailability of scan services in the health centers where most attended ANC and partly failure by doctors to do scans for all ANC mothers.

Table 2 : Causes of Intrauterine fetal death

IUFD Causes	No. of cases (81)	Percentage
Eclampsia/Preeclampsia	12	14.81%
Unexplained	11	13.58%
Thick MSL	8	9.87%
Abruptio placenta	6	7.40%
Cord prolapse	5	6.17%
Placenta praevia	5	6.17%
Cong. Anomalies	4	4.93%
Hand prolapse	4	4.93%
Obstructed labor	4	4.93%
Severe anaemia	4	4.93%
Breech	3	3.70%
Comp. presentation	3	3.70%
Rupture uterus	3	3.70%
Prolonged labor	3	3.70%
Oligohydramnios with IUGR	3	3.70%
Chorioamnionitis	2	2.46%
Rh incompatibility	1	1.23%

The most common causes of IUFD were hypertensive disorders (Preeclampsia / eclampsia) at 14.81%, unexplained (13.58%), thick meconium stained liquor (9.87%), abruptio 7.40%, cord prolapse and placenta praevia (6.17%), congenital anomalies, hand prolapse , severe anaemia and obstructed labor each 4.93%, cephalopelvic disproportion, malpresentation, intrauterine growth restriction, prolonged labor and rupture uterus each (3.70%), chorioamnionitis and (2.46%), and Rh incompatibility (1.23%) as shown in Table 2.

DISCUSSION

A total of 81 cases of mothers with intrauterine fetal demise were studied with a mean age of 24.60 years and a median age of 24 (SD 4.759). Every year, over 2.6 million pregnancies result in a third trimester stillbirth worldwide, which is 18.4/1000 total births while this stillbirth rate is different developed and in developing countries.[23] In high income countries, stillbirth rates vary from 1.3 to 8.8/ 1000 total births while stillbirth rate in Pakistan and

Nigeria is 40/1000.[18,24] The key findings in this study were the stillbirth rate for the duration of the study which was 56.21 per 1000 total births. National Medical College and teaching hospital is a tertiary referral hospital that attends to patients from other institutions with antepartum and labor complication which significantly raises the stillbirth rate. There is need to address the complications leading to referrals by early diagnosis and management in the referring institutions in which there are obstetricians serving in these institutions. Most mothers with stillbirths at National Medical College and Teaching Hospital were referred from other institutions, both for the antenatal and intrapartum deaths. Only 28.39% attended ANC while 58 were unbooked cases (71.60%). Only 22.22% of the mothers had prenatal scans done out of these 55.55% were normal scan.

The most prevalent obstetric complications found were hypertensive disorders of pregnancy (14.81%), followed by unexplained cause (13.58%), thick meconium stained liquor (9.87%), abruptio (7.40%), cord prolapse and placenta praevia (6.17%), congenital anomalies, hand prolapse, severe anaemia and obstructed labor each 4.93%, cephalopelvic disproportion, prolonged labor, malpresentation, oligohydramnios with intrauterine growth restriction and rupture uterus each (3.70%), chorioamnionitis and (2.46%), and Rh incompatibility (1.23%) in descending order. Mothers with these risk factors are at a high risk for poor fetal outcome and fetal demise. Close individualized follow-up and monitoring is therefore necessary to ameliorate these adverse outcomes. Only 11.11% of the IUFD had identifiable congenital anomalies on prenatal scans in this study 12.5% were identified on gross examination after delivery.

CONCLUSION

Stillbirth rates are used globally as an indicator of quality of care, although the rates of stillbirth is varies from 2.64 million to 3.3 million every year because of reporting and data maintenance system worldwide.[25] Among 100%, 76.2% of stillbirth occurred in south Asia and sub -Saharan Africa region which gives more than a third of the global burden of stillbirth worldwide.[24, 25] Many developed countries have proven 22 weeks survival rates can be raised to as much as 30 % with active measures, and rates are only likely to improve with new medical advances, professional recommendation.[26] To develop the appropriate preventive strategies as, reporting by phone or telemedicine could be essential model to decrease the stillbirth rate. There is a genuine need of rationalization and regionalization to provide high quality intrapartum care by skilled birth attendant and back up with comprehensive obstetrics care for better outcome.

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