Original Research Article

Intrauterine foetal death and associated maternal conditions of rural pregnant women- A prospective analytical study

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Received: 21-10-2021 / Revised: 08-11-2021 / Accepted: 30-12-2021

Abstract

Objectives: Aims of this study is to evaluate the incidence, socio-epidemiological and etiological factors of intrauterine fetal death, maternal complication associated with it, evaluate the measures to improve maternal outcome in rural pregnant women. **Material and Method**: This prospective study was carried out in the department of Obstetrics and Gynaecology of Rampurhat Government medical college over a period of six months from December 2020 to 31st May,2021, after taking institutional ethical committee permission and with written informed consent form from participant. All antenatal patients who admitted in antenatal ward in our institute with diagnosed intrauterine fetal death after 28 weeks of gestation during study period were included in this study. **Result**: Incidence of intrauterine fetal death 40.76% per 1000 live birth. Maximum death (39.61%) occurred at age group 21- 24 years. Mean age group was 24.2 years. Majority (60.39%) patient were multigravida and maximum (36.71%) intrauterine death seen at gestational age 37- 39 weeks. Mean gestational age was 35.95 weeks. Maximum cases were unbooked (78.74%) and referred (73%) from other centers.67.15% were from low socio-economic class. 62.4% women are illiterate. Poor antenatal check-up in 60.38% cases. Most common mode of delivery was vaginal delivery(76.81%), followed by caesarian section(17.87%).Among the causes of intrauterine fetal death, common causes were pre-eclampsia(10.63%), anaemia(10.14%), abruptio placenta(18.70%), obstructed labour(6.28%), intrauterine growth retardation with oligohydramnios(5.80%) and post maturity(5.31%).Most common maternal complication were post- partum psychosis(28.99%) followed by need for blood transfusion(27.05%), intensive care unit support(12.08%), prolong hospital stay(13.04%). 3(1.45%) maternal death occurred in this study.40.09% babies were 2.5-3.5 kilograms birth weight. Mean birth weight 2.67 killograms.52.66% babies were female.57% were fresh and 43% were macerated. **Conclusion**: Intrauterine fetal death is an important indicator of maternal and perinatal health of a given population. Provision of quality antenatal health check-up, increasing patient's awareness regarding the risk factors and improvement of quality of social life of mothers have potential to reduce intrauterine fetal death.

Introduction

Foetal death after 20weeks of gestation is defined Intra uterine foetal death (IUFD) [1]. It can be further classified into early or late IUFD. Early IUFD, if foetal death occurs before 24 weeks of pregnancy and late IUFD, if foetal death after 24 weeks[1]. It is an important indicator of maternal and perinatal health of a given population. One of the major causes of perinatal death is intrauterine fetal death [2]. 75% cause of perinatal mortality is due to antepartum fetal death [3]. Quality of antenatal care in a society is directly indicated by stillbirth and prevalence of intrauterine fetal death [3]. In developed countries rate of IUFD has been reduced but in developing countries IUFD is still very high. Rate of IUFD varies in different part of world, ranging 5/1000 in developed countries [4] and 36/1000 live birth in developing countries [5]. In different states of India rate of still births ranges from 20 to 66 per thousand births [6].

In developing countries, most common contributing factors of intrauterine fetal death are treatable as well as preventable. Factors are pregnancy induced hypertension, antepartum hemorrhage, prolonged rupture of membranes, mismanagement of labour, congenital anomalies, medical disorders like diabetes mellitus, thyroid problem and cardiac disease. Early booking, adequate antenatal care, early identification of risk factors and timely intervention are helpful to prevent as well as to reduce incidence of still birth rate.

In our institute most of the patients are from lower socio-economic classes, illiterate and referred from peripheral centers. We get little time to act and salvage.

The objective of this study is to identify incidence, risk factors and maternal complication associated with intrauterine fetal death as well as to formulate a protocol which will be suitable locally to reduce intrauterine fetal death as well as to improve Feto-maternal outcome.

Materials and methods

This prospective observational study was carried out in the department of Obstetrics and Gynaecology of Rampurhat Government medical college, West Bengal, India over a period of six months from December 2020 to 31st May,2021 after getting permission from institutional ethical committee and taking informed written consent from study population.

All antenatal patients who admitted in antenatal ward or labour room with diagnosed intrauterine fetal death after 28 weeks of gestation during study period were included for this study.

Those antenatal patient with intrauterine fetal death less than 28 weeks, patients who will deliver fetus weighting less than 500gms, patients who delivered stillbirth outside of our institute and those who

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did not give written consent to participate in this study were excluded from our study.

Detailed history regarding socio-demographic factors, obstetrical history, past history of stillbirth, past and present medical history was taken. History related to any drug intake or any radiation exposure were recorded. Any factors leading to intrauterine fetal death was thoroughly investigated. Blood pressure, weight, height and all others basic investigations including hemoglobin percentage, ABO and Rh typing, VDRL, fasting and postprandial blood sugar, urea creatinine, thyroid profile, viral serology, ultrasonography were recorded., Maternal age, parity, booked-Unbooked status, immunization status, gestational age at time of admission, mode of delivery, sex and weight of babies were recorded. All the finding were recorded in a predesigned proforma. Numerical value was plotted in an excel sheet. Continuous data was expressed in percentage and categorical data as mean. Microsoft excel and SPSS software was used for statistical calculation.

Result

During our study period of 6 months total number of conducted deliveries was 5305 in our department. Among these 5079 were live birth, intrauterine fetal death fulfilling our criteria was 207. Incidence of intrauterine fetal death per 1000 population in our hospital was 39.01 and per 1000 live birth was 40.76.

Out of 207 intrauterine fetal death, majority of patients (39.61%, n= 82) were of age group 21-24 years, followed by 25.60% was of age group 25-28 years, 18.84% was of less than 20 years,20 patient (9.67%) was of 29-32 years, 6.28% (n=13) was above 32 years. Mean age of our study mother was 24.2 years and standard deviation was 4.50, 95% confidence interval 24.2±1.978(± 8.15%) Showed in Table 1.

Table 1: Maternal characteristics

Maternal age	No of Patient	Percentage
<20 Y	39	18.84
21-24	82	39.61
25-28	53	25.60
29-32	20	9.76
>32	30	6.28

Figure 1 highlighted about the gravida of the patients who delivered stillborn baby. Out of 207 mother's majority were multigravida (n=125, 60.39%), only 82 mothers (39.61%) were of primigravida.

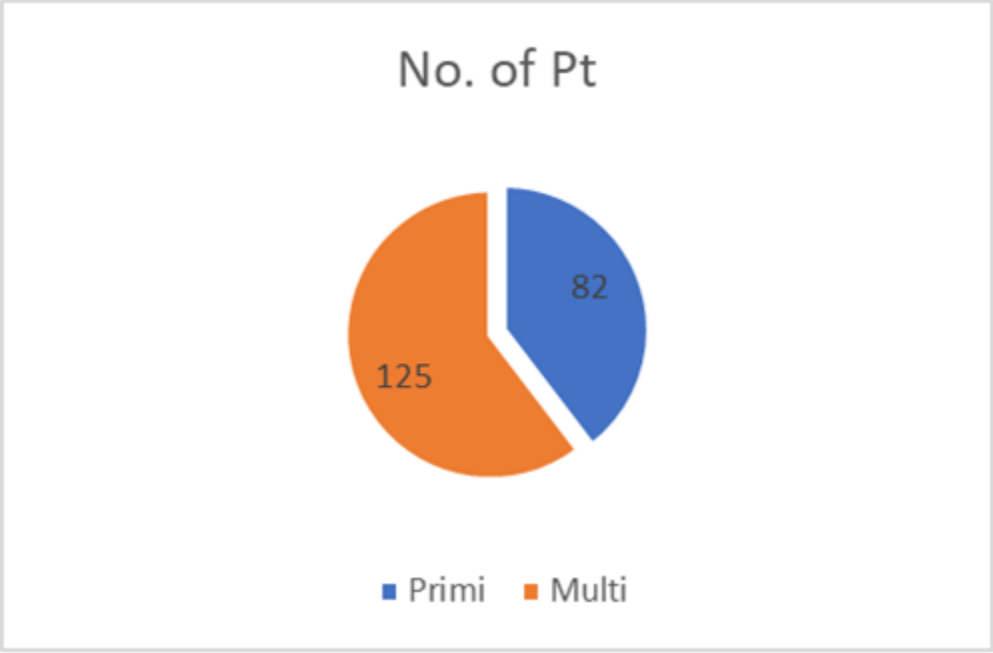

Fig 1: Patient distribution according to gravida.

Regarding gestational age at which intrauterine fetal death occurred (table 2) reflects that most of intrauterine fetal death (36.71%, n=76) occurred at gestational age of 37-39 weeks. Second most common group 34-36 weeks (21.26%, n= 44), followed by 17.39% of gestational age of 40-42 weeks, 15.46% of 31-33 weeks and only 9.18% was of gestational age of 28-30 weeks. Mean gestational age was 35.95 weeks, standard deviation was 3.804, 95% confidence interval 35.95±1.667(±4.64%).

Table no 2: Distribution of patients according to gestational age.

Gestational age (wks.)	No	Percentage
28- 30	19	9.18%
31-33	32	15.46
34-36	44	21.26
37-39	76	36.71
40-42	36	17.39

Maximum cases were unbooked and referred from other health centers. Few were of booked and follow-up patients of our outdoor. Figure 2 showed Unbooked patient were 163 (78.74%), booked patients only 44(21.26%).

134 (73%) were referred cases and 73 (35.27%) patients of our institute (unreferred).62.4% women were illiterate. Poor antenatal check-up in 60.38% cases, only 39.61% patient had proper antenatal check-up.

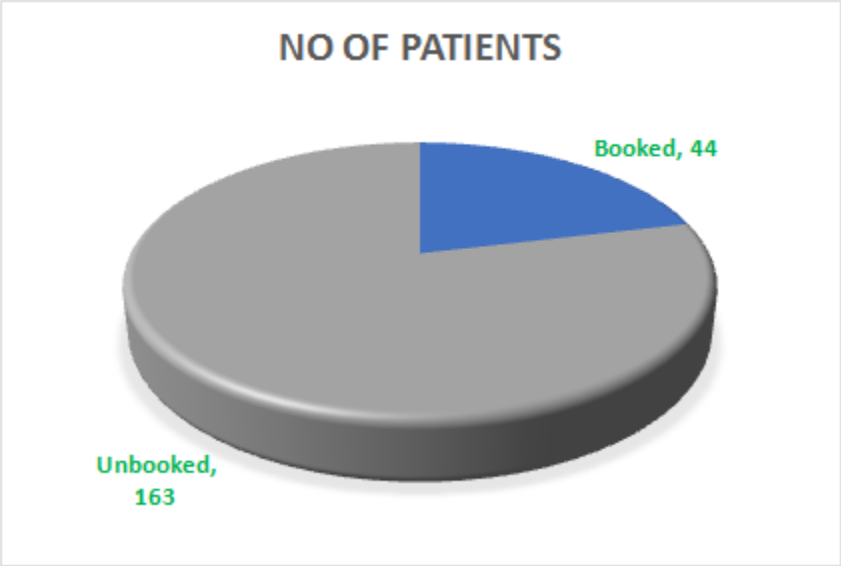

Fig 2: Percentage of booked/ unbooked patients

67.15% cases were from low-income group, 18.36% from middle income group and only 14.49% from high income group.

Stillborn baby delivered either vaginally or by caesarean section, some of patients needed laparotomy. Figure 3shows the different mode of delivery. Out of 207 cases 159 patients (76.81%) delivered vaginally and it was the most common mode of delivery. 37 cases (17.87%) delivered by caesarean section, only 11 patients (5.32%) delivered by laparotomy for ruptured uterus.

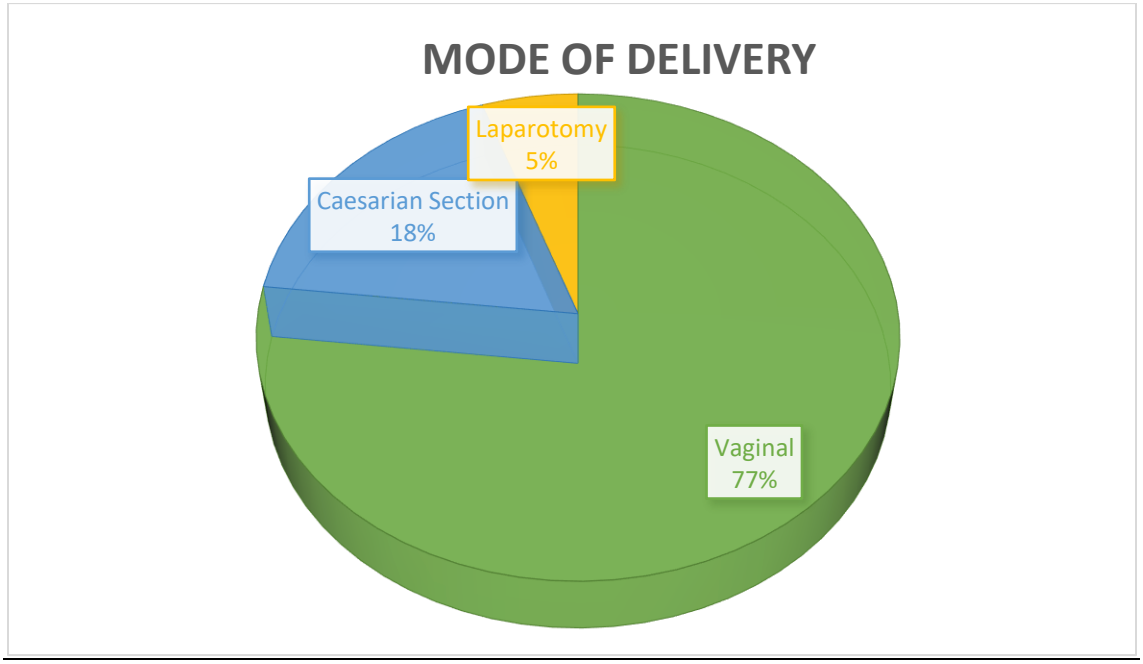

Fig 3: Mode of Delivery

Table 3 describes the different causes of intrauterine fetal death. In our study pre-eclampsia (10.63%) was most common cause of intrauterine fetal death. Anaemia (10.14%) was second most common factor, followed by abruptio placentae (8.70%), obstructed labour (6.28%), intrauterine growth retardation with oligohydramnios (5.80%), post maturity (5.31%), cord around neck (4.83%), meconium aspiration (4.35%) was common. Others causes were eclampsia (2.41%), placenta previa (2.90%), Rh negative status (3.87%), premature rupture of membrane (4.35%), cord prolapse (2.90%), abnormal lie with hand prolapse (1.93%), congenital anomalies (1.45%). Among the medical causes gestational diabetes

(2.41%), hypothyroidism (1.93%), jaundice (1.45%) was found in our study. For 18.36% cases no identified causes were found in our study and termed as unexplained causes.

Table 3: Causes of IUFD:

Causes	No	Percentage
Pre-eclampsia	22	10.63
Eclampsia	5	2.41
Abruptio placenta	18	8.70
Placenta previa	6	2.90
Anaemia	21	10.14
GDM	5	2.41
Hypothyroidism	4	1.93
Jaundice	3	1.45
Post-maturity& oligohydramnios	11	5.31
PROM	9	4.35
Rh negative status	8	3.86
Cord prolapse	6	2.90
Obstructed labour	13	6.28
Cord around neck	10	4.83
Abnormal lie	4	1.93
Meconium aspiration	9	4.35
Congenital anomalies	3	1.45
Unexplained	38	18.36

There was various maternal complication developed in antenatal period, during intrapartum or postpartum period. One mother developed more than one complication. Table 4 shows various maternal complications. Most common complication we had to faced was postpartum psychological upset of mothers (28.99%), followed by 27.05% mothers needed blood transfusion, hospital stay more than 7 days for 13.04% cases. 12.08% mother needed intensive care unit support. Other complication was: postpartum haemorrhage (4.83%), sepsis (3.38%), abnormal coagulation profile (2.42%), obstetric hysterectomy (1.93%), acute renal failure (1.45%), obstructed labour and shoulder dystocia (4.35%). Four (4) patients developed multiorgan failure and among them 3 patients died (maternal death 1.45%).

Table 4: Maternal Morbidities& mortalities

Morbidities	No	Percentage
PPH	10	4.83%
Blood transfusion	56	27.05%
Abnormal coagulation profile	5	2.42%
Hospital stay> 7 days	27	13.04%
ICU admission	25	12.08%
Obstructed labour with shoulder dystocia.	9	4.35%
Sepsis	7	3.38%
Post-partum psychological upset	60	28.99%
Acute renal failure	3	1.45%
Obstetrical hysterectomy	4	1.93%
Multiorgan failure.	4	1.93%
Maternal death	3	1.45%

Regarding baby particulars birth weight of babies, sex of babies and type of stillborn was evaluated in our study. Table 5 showed birth weight of babies. Most of babies (40.09%, n= 83) were of 2.5 to 3.5 kilogram followed by 30.92% (n= 64) of 1.5-2.5-kilogram weight, 39 babies (18.85%) were of more than 3.5 kilogram, only 21 babies (10.14%) were of less than 1.5 kilogram. Mean weight of babies were 2.67-kilogram, standard deviation 0.775, 95% confidence interval 2.67± 0.34 (±12.73%).

Table 5: Baby particulars

Particulars	No	Percentage
1.Birth Weight		
<1.5 kg	21	10.14
1.5-2.5 kg	83	40.09
2.5-3.5 kg	64	30.91
> 3.5 kg	39	18.85
2.Sex:		
Male	98	47.34
Female	109	52.66
3.Type		
Fresh	89	43
Macerated	118	57

Maximum sex of babies was female 109 (52.66%). 98 babies (47.34%) were male babies. Regarding type of stillborn 118 (57%) fresh stillbirth and 89(43%) macerated stillbirth in our study. Incidence of stillbirth per 1000 population was 39.01 and per 1000 live birth was 40.76.

Discussion

Intrauterine fetal death is a traumatic condition to mother and her family. It is also stressful event for our obstetrician. In spite of development of advanced modalities for diagnosis and management of high-risk pregnancy, intrauterine fetal death is still high in our developing countries specially in underprivilege rural area. In our study 39.61% are of age group 21-24 years which is comparable with studies of Mathuriya G, Bunkar N - maximum 40.43% fetal death at age group 21-25 years [7] and Jamal s, Agarwal S where 32.1% foetal death of mother aged 21-25 years [8]. 18.84% patient was of less than 20 years which indicates teenage pregnancy with lack of proper knowledge of pregnancy and antenatal check-up.

Majority (60.39%) of stillbirth occurred in multipara women, only 39.61% in primipara. This indicates multipara women are reluctant, less careful about the proper antenatal check-up. Our study is similar to that of Mathuriya G, Bunkar N [7]- multipara vs primipara 68.27% vs 31.72%) and study of Ajini KK et al 59.32% vs 40.68% for multipara vs primipara [9]. Our finding also comparable to finding of Bhattacharya et al [10] showed 43.27% and 56.72% for multipara vs primipara.

Regarding gestational age at which maximum stillborn occurred in this study is 37-39 weeks, followed by 21.26% were of 34-36 weeks Gestation. Mathuriya G, Bunkar N [7] showed in their study 55.51% fetal death is in 38-40 weeks. Our study is comparable to study of, Bhattacharya et al [10] resulted that maximum (47.26%%) stillbirth occurred at gestational age group 28-37 weeks.

Our study result showed 21.26% booked, 78.74% unbooked and unsupervised. About 67.15% cases were from low-income group, 18.36% from middle income group and only 14.49% from high income group. Our finding about booking and socio- economic status similar to Susmita Sharma, Harpit Sindhu et al [11] reported that 11.2% booked, 88.8% unbooked and 71.2, 17.2%, 11.2% were from low, middle- and high-income group respectively.

62.4% women are illiterate and 37.6% literate in our study which is comparable with study of Achala et al illiterate vs literate 32.2% versus 67.8%. [12]. 64.73% cases were referred in our study.

Our study resulted 76.81% vaginal delivery and 17.87% caesarean section which is identical to study of Susmita Sharma, Harpit Sindhu et al [11] 70.8% versus 16% for vaginal delivery versus caesarean section., Mathuriya G, Bunkar N [7] resulted 84.18% vs 12.77% for normal delivery vs caesarian section. In our study only 5.32% cases underwent laparotomy for suspected ruptured uterus which is similar to study of Garg s, kumar N- 5% [13] cases needed laparotomy.

Major causes of stillbirth in our studies are pregnancy induced hypertension (eclampsia, pre-eclampsia), anaemia, abruptio placenta, placenta previa, cord prolapse, oligohydramnios, other causes include gestational diabetes hypothyroidism, tight cord around neck, intrauterine growth retardation, obstructed labour negative status, post maturity, transvers lie with hand prolapse, rupture uterus, deranged, multiple pregnancy, congenital malformation. Among these causes, cases of obstructed labour, cord around neck, transverse lie with hand prolapse, rupture uterus were mainly referred from other centers. In our study 18.36% for unexplained causes, 13.04% due to pregnancy induced hypertension, 8.70% for abruptio placenta, placenta previa 2.90%, anaemia 10.14%, cord prolapse2.90%, oligohydramnios 5.80%, tight cord around neck 4.83%, post maturity 5.31%, rh negative status 3.87%, hypothyroidism 1.93%, gestational diabetes 2.41%, obstructed labour 6.28%, meconium aspiration 4.35%, only 1.45% cases due to congenital anomalies. Our results are similar as well as comparable with various studies. Avachat SS, Phalke DB et al [14] reported pregnancy induced hypertension (53.3%, antepartum hemorrhage 32%, obstructed labour 8%, infection 2.6%, bad obstetric history 4%, idiopathic 34.05%. 6.14.5%, S Bhattacharya [10] founded unexplained causes 23.14%, preeclampsia eclampsia 10.66%, antepartum haemorrhage 2.68%, malpresentation 17.48%, intrauterine growth retardation 4.02%. medical disorder of pregnancy 3.47%, congenital malformation 1.27%.

There were various maternal complication in our studies 27.05% patients need blood transfusion for low haemoglobin level, post-partum haemorrhage occurred 4.83% cases, sepsis 3.38%, deranged coagulation profile in 2.42%, ccu care needed for 12.08% cases, obstructed labour 4.35%,obstetrical hysterectomy 1.93%, psychological upset 28.99%, prolong hospital stay needs 13.04%, 3(1.45%) maternal death occurred .Mathuriya G, Bunkar N [7] showed various maternal morbidities and among them post-partum hemorrhage 6.58%, DIC 5.4%, caesarean hysterectomy 2.51%, blood transfusion 59.57%, maternal mortality 39%.

In our study total stillbirth 40.76/1000 live birth. Tulshi Bhatia et al [15] reported still birth 27.76/1000 birth. In this study maximum babies (40.09%) were of 1.5-2.5kg birth weight, followed by 30.91% 2.5-3.5kg. This result are similar to Sing N et al [16] 30.06% were 2-2.49 kg, 17.22% of 2.5 -2.99 kg, 14.18% 1.5-1.99 kg. Avachat SS, al [14] mentioned 58.15% babies were of 1.5 -2.499 kg. followed by 29.07% 1-1,499%, 12.76% were > 2.5 kg.

Regarding sex of baby 47.34% were male and 52.66% of female in our study. Sinha et al [16] reported 63.07% male and 36.93% female, also mentioned that 67.69% were of low birth weight and 32.30 % of normal weight. In this present study fresh versus macerated stillbirth are 57% and 43%, 59.27% versus 40.27% reported by S Bhattacharya [10].

Conclusion

Hypertensive disorder in pregnancy, Anaemia, Abruptio Placentae, obstructed labour are major risk factors for IUFD detected in our study. Most of the patient are unbooked, illiterate and from low socioeconomic family of rural area with history of no or inadequate antenatal check-up as well as inadequate intake of Iron-folic acid. Most of the detected risk factors are preventable only with regular antenatal check-up by a trained doctor. Early intake of folic acid followed by Iron tablet is very much important for better fetal outcome, so periconceptional education regarding this is very much important. There are so many cases of obstructed labour in our study those mainly referred from peripheral health centre and we get little time to save the baby, so early detection of risk factors as well as early referral to higher center is also very much important measure. We have got many patients where time between referral and arrival to our institute is too long and searching information is self-delaying of patient party or poor road condition in very interior rural area. So, patient party counseling regarding importance of referral is also very important factor.

From our observation we conclude that though our health system protocol is well improved now a days still there is lack of health education within rural pregnant mother as well their family members. So, we should give attention for health education for proper antenatal check-up and early detection of risk factors, improvement of socioeconomic condition in rural area to reduce intrauterine fetal death as well as to improve Feto-maternal outcome.

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Conflict of Interest: Nil Source of support: Nil