



Pregnancy Outcomes among High-Risk Pregnant Women at Our Tertiary Centre: Svims, Tirupati

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KEYWORDS

High risk pregnancy, obstetric outcome, neonatal outcome.

ABSTRACT:

Background:

Even though the majority of pregnancies and deliveries across the world are uncomplicated, all pregnancies are at risk. Approximately 15% of pregnant women may experience potentially fatal problems that require expert care, with some needing significant intervention to survive.

Materials and methods:

It's a Prospective observational Study conducted on High-risk pregnancy patients. Detailed present and previous obstetric history, present and previous medical history were taken. Measurement of neonatal outcome includes the incidence of stillborn, neonatal death, mode of delivery, birth weight, and admission to the NICU.

Results:

A total of 100 high-risk pregnant women were included in the study. The majority were in the age group between 26- 30 years (34%). Most of the women are from urban areas of residence(76%), and most of them are graduates(51%). On assessment of socioeconomic status, 81% belong to the middle class. In our study, only 8% are referred from the primary center to our center. The risk factors for high-risk pregnancy in our study showed the previous history of lower segment cesarean section (LSCS) was 38(38%), followed by 19 (20.87%), Oligohydramnios(21.0), IUGR(12.0%), PPROM (11.0%), and GDM(7.0%).. In our study, most of them underwent emergency LSCS(78%), followed by elective LSCS(15%). Only 5 % underwent normal vaginal delivery. Only 2 babies had a prolonged ICU stay of 5-7 days; both of them belonged to the delayed referral group.

Conclusion:

Previous history of cesarean sections, followed by oligohydramnios, were the most prevalent high-risk variables. Despite the high rate of cesarean sections among high-risk pregnancies, the fetal outcome was favorable.

Introduction:

Even though the majority of pregnancies and deliveries across the world are uncomplicated, all pregnancies are at risk. Approximately 15% of pregnant women may experience potentially fatal problems that require expert care, with some needing significant intervention to survive.[1] Problems can arise at any point throughout pregnancy and delivery, which can impact the mother's and the fetus's general health and survival.[2] According to the World Health Organization, problems during pregnancy and delivery claim the lives of over 830

women every day. Pregnancy-related hypertension disorders, including preeclampsia and eclampsia, severe hemorrhage, maternal infections, unsafe abortion, and medical complications, including diabetes, HIV/AIDS, or heart conditions, are the five main causes of pregnancy-related deaths.[3] As a result, all pregnancies must be assessed for high-risk pregnancy via standard prenatal care by medical specialists.

Fetal variables include exposure to medications (phenytoin, Warfarin, and lithium) and infections (hepatitis, syphilis, and rubella) [4].



Achieving positive maternal, obstetric, and neonatal outcomes is facilitated by the identification of high-risk pregnancies, their causes, and their consequences through high-quality prenatal care. To prevent the development of any maternal or fetal issues, women who have been recognized as being at high risk must also be followed up with frequently through routine care from health facility staff and home visits. In addition to follow-up treatment, proper laboratory testing and referral services are necessary to enhance the pregnancy outcome. Pregnant women's high-risk pregnancy type also affects the prognosis [4-5]. Therefore, determining the kind of high-risk pregnancy as soon as possible can help guide the right intervention strategies for expectant mothers.

These individuals are occasionally identified during the first prenatal appointment due to a well-known medical issue or a bad obstetrical history. In some instances, women who have unanticipated problems during otherwise healthy pregnancies end up with high-risk pregnancies. Only if the woman has access to prenatal care can they be detected. Poverty and the standard of prenatal care itself are limiting factors that make it impossible to identify people who are at risk.

To guarantee the best possible outcome for the mother, obstetrician, and newborn, research on the high-risk factors linked to pregnancy is crucial for early identification and prompt care.

The purpose of this study was to ascertain the frequency of high-risk pregnancies and their outcomes among expectant mothers who were hospitalized to the obstetrics and gynecology unit of a tertiary care hospital for delivery.

Materials and methods:

It's a Prospective observational Study conducted on High-risk pregnancy patients attending the Emergency Department of Obstetrics and Gynaecology at SVIMS, TIRUPATI. Patients who fulfill the inclusion criteria, attending to outpatient department of obstetrics and gynaecology at Sri Venkateshwara Institute of Medical Sciences, Tirupati, are included.

Pregnant women with any risk factor (Medical risk, Obstetric in present & previous pregnancies), Gestational age >28 weeks with a live fetus. All cases that had regular

antenatal check-ups outside and came for the first time to our hospital. Unbooked cases with uneventful pregnancy and normal delivery, Cases who refused to give consent, Cases with Gestational age <28 weeks, and Antenatal cases with intra-uterine death before admission were excluded.

Institutional review board approval was obtained. Informed consent was obtained from all the patients before the procedure, and consent was also obtained for surgical intervention.

Detailed present and previous obstetric history, present and previous medical history will be taken. A thorough clinical examination, including height, weight, presence of Anaemia, Oedema, and Icterus, will be done. The vitals - temperature, pulse rate, blood pressure, and respiratory rate will be noted. Systemic examination of the antenatal case and including obstetric palpation, gestational age, presentation, and position, will be noted. All preliminary baseline investigations like: Complete blood count, Blood grouping & typing, Random Blood sugar, Serum creatinine, Blood urea, HIV, Complete urine examination and other investigations for specific medical complications like Liver function test, Sr-Uric acid, Plasma fibrinogen, Oral Glucose Tolerance test, Fasting & Post prandial blood sugars, Peripheral smear, Blood culture etc. will be done wherever necessary. Measurement of neonatal outcome includes the incidence of stillborn, neonatal death, mode of delivery, birth asphyxia, birth weight, and admission to the NICU.

Statistical analysis:

The data obtained will be entered in a Microsoft Excel sheet, and statistical analysis will be performed using the statistical package for the social sciences (SPSS Version 21). Results will be presented as Mean±SD, counts and percentages, and diagrams. For normally distributed continuous variables will be compared using the ANOVA test For abnormally distributed variables Kruskal-Wallis test with a post hoc test will be used. Categorical variables will be compared using the Chi-square test. Sensitivity, Specificity, PPV, NPV, and Accuracy will be used. P<0.05 will be considered statistically significant. All statistical tests will be performed two-tailed.



Results:

A total of 100 high-risk pregnant women were included in the study. The majority were in the age group between 26- 30 years (34%), followed by 21-25 years(29%). The basic demographic variables were displayed in Table 1.

Most of the women are from urban areas of residence(76%), and most of them are graduates(51%).

On assessment of socioeconomic status, 81% belong to the middle class. In our study, only 8% are referred from the primary center to our center. Among these, 50% were referred beyond 24 hrs and 25% were referred within 12 hrs, and 25% between 12 to 24 hrs. It is shown in Table 2.

The obstetric variables are shown in Table 3.

The age of attainment of menarche, marital duration, and degree of Consanguinity are shown in Table 4.

The risk factors for high-risk pregnancy in our study showed the previous history of lower segment cesarean section (LSCS) was 38(38%), followed by 19 (20.87%), Oligohydramnios(21.0), IUGR(12.0%), PPRM (11.0%), and GDM(7.0%).

It is shown in Table 5.

The obstetric and neonatal outcome is shown in Table 6. In our study, most of them underwent emergency LSCS(78%), followed by elective LSCS(15%). Only 5 % underwent normal vaginal delivery. Only 2 babies had a prolonged ICU stay of 5-7 days, both of whom belonged to the delayed referral group.

The birth weight, gender are shown in Table 7.

Discussion:

The purpose of this study was to ascertain the obstetric consequences of high-risk pregnancy. Only pregnant women with risk factors have been included. 53 percent of the sample size belongs to the middle class, according to our findings. According to a study conducted in Karnataka by Jaideep et al., socioeconomic level and parity were shown to be independently related to high-risk pregnancy[6].

In our study, most of the women(81%) attained menarche at the age of 13 years, and most are married for a 1 to 5-

year duration. In 83% of families, no Consanguinity was noted. On 2% had second degree and 4% had 3rd degree consanguinity.

The most frequent high-risk characteristics found in our study's 100 high-risk pregnancy cases were prior cesarean section history (38 percent), Polyhydramnios (7.0%), GDM (7.0%), PPRM (11.0%), IUGR (12.0%), and oligohydramnios (21%), in that order. The most common condition in the Kovvuru et al. research, which was carried out in Hyderabad, India, in 2020, was hypertension (53.1%), which was followed by younger primi and elderly gravidas (33.60%)[7]. Nesro et al. conducted a hospital-based study in South Western Ethiopia in 2021, and the main risk factors for the index pregnancies were anemia in 15 cases (4.8%), diabetes mellitus in 12 cases (3.8%), antepartum hemorrhage in 9 cases (2.87%), hypertension in 40 cases (12.5%), and malpresentation in 7 cases (2.2%)[8].

The most frequently recognized high-risk pregnancy in 34 (5.43%) instances was a prior lower segment cesarean section, followed by young primi gravida (3.19%) and breech (2.23%), according to a 2017 research done at Shree Birendra Military Hospital in Nepal[9]. On the other hand, a 2017 study conducted in Pakistan discovered that anemia (37%) was the most prevalent risk factor for systemic disorders, followed by hypertension (20%)[10].

71% of the high-risk pregnant women in the current research gave birth at term. Emergency lower-segment cesarean sections were the most prevalent birth method. 15% had elective LSCS, and just 5% gave birth vaginally. The current study's high caesarean section rate may be the consequence of improved handling of high-risk pregnant situations, which led to 99% live deliveries. Only one infant fatality was reported in our analysis, and the primary center's delayed referral was the cause of this. Only two infants spent five to seven days in the neonatal intensive care unit, while 79% spent less than a day there. In terms of postpartum problems, only one patient in our research experienced PPH, and the other suffered DIC; both recovered.

In the current research, only 10 (10%) of the kids were underweight at delivery. The fact that most mothers had middle-class socioeconomic levels and were literate may



have contributed to the lower occurrence of low birth weight by improving their nutritional health.

The majority of births in the Kovvuru et al. research were term deliveries (79.4%), followed by preterm deliveries (18.6%) and postterm deliveries (2%). Of the births in the same research, 49% were LSCS and 51% were vaginal. On the other hand, 5.4% of newborns died within the womb, and 31% of babies were born underweight[7].

Similar to the current study, there were 13 low birth weight babies (13.13%) and two (2%) stillbirths as fetal outcomes in the 2017 study carried out at Shree Birendra Military Hospital in Nepal[9].

According to a 2019 study done in Puducherry, South India, by Majella et al., the majority of vaginal births were spontaneous (73.9%); just 1.7% of births were stillborn, and 10.4% of babies had low birth weight[11].

According to a community-based study conducted in a rural region of Nagpur, Maharashtra, Central India, by Jadhao et al., 68.06% of high-risk pregnant women underwent cesarean sections section as the delivery method, while 31.94% of births were vaginal. Of the 98.61% live births, 20.83% were low birth weight babies[12]. Cesarean deliveries were significantly more common in high risk (77.9%) and extremely high risk (89.9%) pregnancies than in low risk pregnancies (51%), and the birth weight of newborns under 2500 gm was 60% in extremely high risk pregnancies as opposed to high risk pregnancies (26%), and low risk pregnancies (15%), according to a study done Shrestha et al. in Nepal (2021)[13].

One of the study's drawbacks is that it only included high-risk pregnant patients from one tertiary care hospital, which represents a tiny portion of the population. As a consequence, extrapolating the findings to the whole community may not be possible. The second limitation is the limited sample size. To learn more about high-risk pregnancy-related variables and pregnancy outcomes, further prospective cohort studies and randomized controlled trials are necessary.

Conclusion:

When compared to studies conducted in comparable contexts, the prevalence of high-risk pregnancy at our facility was shown to be comparable. Previous history of

cesarean sections, followed by oligohydramnios, were the most prevalent high-risk variables. Despite the high rate of cesarean sections among high-risk pregnancies, the fetal outcome was favorable.

Although the majority of research participants experienced positive obstetric and neonatal outcomes, high-risk pregnant women were more likely to experience adverse outcomes such as low birth weight, preterm, and postterm delivery. In order to enhance maternal, obstetric, and neonatal outcomes through high-quality, easily available prenatal care and suitable referral services, early screening of high-risk pregnancies must be carried out at the primary health care level.

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Table 1 Sociodemographic variables of the study population

Age (Years)	Frequency(n)	Percent(%)
<= 20	12	12.0%
21 - 25	29	29.0%
26 - 30	34	34.0%
31 - 35	16	16.0%
> 35	9	9.0%
Area of Residence		
Rural	24	24.0%
Urban	76	76.0%
Educational Level		
School Level	9	9.0%
Higher Secondary	24	24.0%
Graduate	51	51.0%
Post Graduate	16	16.0%
Occupation		
Housewife	35	35.0%
Private Sector job	27	27.0%

Govt. Sector job	14	14.0%
Self-employed	24	24.0%
Table 2- Socioeconomic status and referral status		
Socio-economic Status	Frequency	Percent
Low	11	11.0%
Middle	81	81.0%
High	8	8.0%
Referral		
Yes	8	8.0%
No	92	92.0%
Timing of Referral	n(8)	
<12 hours	2	25%
12-24 hours	2	25%
>24 hrs	4	50%

Table 3- Obstetric variables

Gestational Age	Frequency	Percent
Extreme Preterm	3	3.0%



Very Preterm	25	25.0%
Term	71	71.0%
Gravida	Frequency	Percent
Primi	33	33.0%
G2	48	48.0%
G3	12	12.0%
G4	5	5.0%
G5	1	1.0%
G6	1	1.0%
Parity	Frequency	Percent
0	37	37.0%
1	53	53.0%
2	10	10.0%
Number of Living Children	Frequency	Percent
0	44	44.0%
1	49	49.0%
2	7	7.0%
Number of Abortions	Frequency	Percent
0	80	80.0%
1	15	15.0%
2	4	4.0%
3	1	1.0%
Number of Deaths	Frequency	Percent
0	92	92.0%
1	7	7.0%
2	1	1.0%

14 Years	2	2.0%
Marital duration (Years)	Frequency	Percent
1 - 5	65	65.0%
6 - 10	25	25.0%
> 10	10	10.0%
Degree of Consanguinity	Frequency	Percent
NA	83	83.0%
Second	2	2.0%
Third	4	4.0%
No Answer	11	11.0%

Table 5- Risk factors of high-risk pregnancy		
Obstetrics History	Frequency	Percent
Prior LSCS	38	38.0%
Oligohydramnios	21	21.0%
IUGR	12	12.0%
PPROM	11	11.0%
GDM	7	7.0%
Polyhydramnios	7	7.0%
Preeclampsia	6	6.0%
Anemia	5	5.0%
Fetal Distress	5	5.0%
Hypothyroidism	5	5.0%
IVF Conception	5	5.0%
FGR	4	4.0%
Peripartum Cardiomyopathy	3	3.0%
Rh Negative Pregnancy	3	3.0%

Table 4. -Attainment of menarche, marital duration, and degree of Consanguinity

Table 4- Menarche Attained Age	Frequency	Percent
NA	2	2.0%
10 Years	2	2.0%
11 Years	6	6.0%
12 Years	7	7.0%
13 Years	81	81.0%

Table 6- Obstetric and neonatal outcomes		
Obstetric Outcome	Frequency	Percent
Elective LSCS	15	15.0%



Emergency LSCS	78	78.0%
Emergency LSCS with B/L	2	2.0%
NVD with right mediolateral episiotomy	5	5.0%
ICU Stay	Frequency	Percent
1 Day	79	79.0%
2 Days	15	15.0%
3 Days	4	4.0%
5 - 7 Days	2	2.0%
Status of birth	Frequency	Percent
Live birth	99	99.0%
Neonatal death	1	1.0%
Early Complications	Frequency	Percent
Nil	98	98.0%
DIC	1	1.0%
PPH	1	1.0%

Table 7 – Birth weight and gender of the babies.

Table 7-Birth Weight (kg)	Frequency	Percent
< 1.5	5	5.0%
1.5 - 2.5	5	5.0%
2.5 - 3.0	57	57.0%
>= 3.0	33	33.0%
Gender of the Infant	Frequency	Percent
Male	57	57.0%
Female	43	43.0%