Original Article

Determining the perinatal outcome among women with high risk pregnancies

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Abstract

Background: Pregnancy is a physiological process and should ideally yield no morbidity and mortality; however, in some instances, pregnancy becomes a high-risk. A high-risk pregnancy carries significant danger to the fetus and mother before, during and after delivery. The objective of the study was to determine the perinatal outcome among women with high-risk pregnancies.

Methodology: This cross-sectional study was conducted from June to December 2015, including 287 women with high-risk pregnancies scheduled to undergo delivery at Liaquat University Hospital in Karachi, Pakistan. Data pertaining to sociodemographic details, gestational, obstetric history, Apgar score and the perinatal outcome was recorded using a pre-structured questionnaire and analyzed using SPSS version 16.0.

Results: The mean age of the enrolled participants was 29.12 ± 5.46 years. The perinatal outcomes included stillbirths (8%), early neonatal deaths (4.2%), low birth weight (22.6%) and poor Apgar score i.e., < 7 at 1 minute (10.5%) and 5 minutes (3.8%). Stratification revealed a significant risk of poor perinatal outcome (low birth weight) among women aged above 30 years (p-value = 0.002).

Conclusion: It is concluded from the study results that high-risk pregnancies yield poor perinatal outcomes, including stillbirths, low birth weight, early neonatal death and poor Apgar scores.

Keywords

High-Risk Pregnancies, Perinatal Outcome, Low Birth Weight, Still-Birth & Early Neonatal Death.
Introduction

Being a developing country with limited resources, Pakistan faces many challenges, specifically with the healthcare sector. One of them includes providing maternal and child health services; its absence has led to the current scenario of high feto-maternal morbidity and mortality\(^1\). As per recent estimates of the World Health Organization (WHO), perinatal deaths worldwide number at 7.6 million or higher, with developing countries reporting a vast majority (up to 98%) of these deaths. The rate of perinatal mortality in Pakistan stands to be 9.5%, according to reliable statistics\(^3\). A more recent national survey reports the perinatal mortality rate to be as high as 92 per 1000 births, with most deaths (72%) due to stillbirths\(^4\). These issues might be more critical in the rural areas, as we lack research concerning this particular locality\(^2\).

Hence providing appropriate perinatal service is key to reducing perinatal mortality\(^5\). The first step towards achieving this goal is identifying the factors that entail additional complications that lead to poor perinatal outcomes, despite standard perinatal and intrapartum care. A high-risk pregnancy poses a significant danger to the mother and fetus/newborn before, during and after delivery\(^6\). Aggressive and timely intervention is increasingly important to ensure success in managing high-risk patients and yield good maternal and fetal outcome\(^7\). A detailed history is required to identify high-risk factors that can have an adverse effect on maternal or fetal outcomes\(^7\),\(^8\). Maternal anemia, pregnancy-induced hypertension, and preterm labour are a few known obstetric problems that make a pregnancy high risk\(^9\),\(^10\).

Since high-risk pregnancies are more likely to yield poor perinatal outcomes than normal pregnancies, thus we aimed to study the perinatal outcomes among women with high-risk pregnancies.

Methodology

This cross-sectional study was conducted from June to December 2015 over a sample of 287 women with high-risk pregnancies scheduled to undergo delivery at Liaquat University Hospital. While patients with stroke, renal impairment, chronic obstructive pulmonary disease, chronic liver disease, or any other chronic condition were excluded.

The patient’s sociodemographic details, gestational, obstetric history, risk factors and the perinatal outcome were recorded using a structured questionnaire. The perinatal outcome included poor Apgar score, low birth weight, stillbirth, neonatal death. The Apgar score was measured once a minute after birth and then 5 minutes following the delivery.

The participants were enrolled after taking written informed consent, and ethical approval was obtained from College of Physician & Surgeon Pakistan (CPSP/REU/OG-2008-164-3880; June 12, 2012). The data was analyzed using SPSS version 16.0; inferences were presented as frequencies and percentages. A chi-square test was used for significance testing where a p-value < 0.05 was considered statistically significant.

Results

A total of 287 women with high-risk pregnancies were included in this study; of them, 125 (44%) were booked, and 162 (56%) were un-booked. The enrolled participants’ mean maternal and gestational age was 29.12 \(\pm\) 5.46 years and 39.72 \(\pm\) 2.35 weeks, respectively. Of the total, 89 (31%) were primipara, 152 (53%) had multiparty (parity 2-5) and 46 (16%) had grand multiparty (parity > 5). Anemia was determined as the major contributory factor for high-risk pregnancy, observed in 59.6% cases, followed by previous lower segment cesarean section (26.1%), previous history of miscarriages (19.9%) and history of hypertension in the current pregnancy (18.1%). The perinatal outcomes are given in table 1; poor Apgar score, i.e., < 7 after 1 minute of birth, was the most observed, i.e. 10.5%, followed by low birth weight, stillbirth, neonatal death, and Apgar score < 7 after 5 minutes of birth.
Table 1: Risk factors & perinatal outcomes among women with high-risk pregnancies.

| Variables | n(%)          |
|-----------|--------------|
| Risk Factors |              |
| Previous history of stillbirth | 40(13.9) |
| Previous history of miscarriages | 57(19.9) |
| History of hypertension in the current pregnancy | 52(18.1) |
| History of diabetes mellitus in the current pregnancy | 25(8.7) |
| Anemia | 171(59.6) |
| Preterm labour | 40(13.9) |
| Antepartum hemorrhage | 34(11.8) |
| Previous lower segment cesarean section | 75(26.1) |
| Post maturity | 17(5.9) |
| Grand multipara | 46(16.0) |
| Perinatal Outcomes |              |
| Apgar score < 7 after 1 minute of birth | 30(10.5) |
| Apgar score < 7 after 5 minutes of birth | 11(3.8) |
| Low birth weight baby (< 2500 grams) | 65(22.6) |
| Stillbirth | 23(8.0) |
| Neonatal death | 12(4.2) |

Stratification revealed that a low birth weight was significantly associated with higher age, i.e., 26 years and above (p=0.002).

Table 2: Comparison of maternal age according to perinatal outcome.

| Prenatal Outcome | Age Groups | p-value  |
|------------------|------------|----------|
| | 20-25 years (n=81) | 26-30 years (n=96) | >30 years (n=110) |
| Apgar score < 7 (after 1 minute of birth) | 8(9.9) | 10(10.4) | 12 (10.9) | 0.970 |
| Apgar score < 7 (after 5 minute of birth) | 5(6.2) | 4(4.2) | 2 (1.8) | 0.280 |
| Low birth weight baby | 9(11.1) | 32(33.3) | 24 (21.8) | 0.002* |
| Still born | 6(7.4) | 8(8.3) | 9 (8.2) | 0.970 |
| Neonatal death | 4(4.9) | 3(3.1) | 5 (4.5) | 0.810 |

Values are given as n(%)

*p<0.05 is considered significant
Discussion
The goals of providing effective antenatal care, including early identification of fetuses at risk of asphyxia, monitoring (during labour) of high-risk pregnancies, etc; are predominantly directed at achieving a good perinatal outcome which directly links to the provision of regular antenatal checkups. Routine check-ups at predetermined intervals can identify conditions such as anemia, pregnancy-induced hypertension, among other conditions that add undue risk to an otherwise normal pregnancy.

This research was established in a multi-disciplinary (tertiary care) hospital that plays host to a wide sociodemographic diaspora, with a predominant faction belonging to a lower socioeconomic class. As is expected from people in this faction, most were nutritionally deficient and, more importantly, anemic; thus, belonging to the high-risk group. This finding is substantiated by published literature which reports that anemia is endemic in the underdeveloped world, with the female population being most affected. When compounded with pregnancy (and a higher demand for iron and hemoglobin), anemia threatens the life of the fetus and the mother. The condition is most commonly linked to adverse outcomes such as prematurity and low birth weight.

In an in-depth analysis, Khan et al. revealed that among all the cases of pre-term labour, a vast majority (81.25%) occurred to anemic mothers. Bhargava et al. further substantiated this observation and reiterated that indeed the probability of encountering a premature birth was higher among anemic mothers. Both preterm labour and anemia are independent risk factors for the adverse neonatal outcome in terms of stillbirth and neonatal death.

In this study, among 59.6% anemic patients, 22.5% cases of low birth weight and poor Apgar score of < 7 at 1 minute was observed in 10.5%, and 5 minutes was observed in 3.8%. This was synonymous with the findings of Umber et al., who reported an association between maternal anemia and increased incidence of low birth weight, premature deliveries, intra-uterine deaths and sub-par Apgar scores (at 1 minute). The incidence of preterm labour is recorded to be 28.2%, and the occurrence of pre-eclampsia is noted to be 31.2% (among anemic mothers) by Sharma et al.

In addition to anemia, other factors such as previous lower segment cesarean section (26.1%), previous history of miscarriages (19.9%) and history of hypertension in the current pregnancy (18.1%). Ara et al. had also quoted the association of hypertensive disorders of pregnancy, with an increased incidence of preterm delivery of 61%. Another important cause of the adverse neonatal outcome observed in the study was hypertensive disorders of pregnancy. Zareen et al. also reported that among hypertensive disorders of pregnancy, there were cases of neonatal death (8.33%) and stillbirth (16.7%).

In this study, rate of low birth weight was significantly high in 26-30 years and above 30 years of age. Similarly, the rate of low birth weight and stillbirth was significantly high in grant multiparty. In Zareen et al. study, the mean age observed in the high-risk group was higher than the low-risk group, with a statistically significant p-value < 0.001. Among patients of age greater than 35 years, there were 11.11% delivered, low birth babies.

Conclusion
High-risk pregnancies are associated with poor perinatal outcomes such as stillbirths, low birth weight, early neonatal death and poor Apgar scores. The rate of low birth weight was significantly high in 26-30 years and above 30 years of age.

Acknowledgement
We acknowledge the scientific help and technical assistance offered by LUMHS Research Forum and Dr. Aatir H. Rajput.

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