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Original Research Article

Association between Polycystic Ovary Syndrome (PCOS) and Pregnancy Complications

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Abstract

Background: Polycystic ovarian syndrome (PCOS) pregnant women appear to be more vulnerable to poor maternal and neonatal outcomes. The purpose of this study was to assess the outcome of pregnancies in women with PCOS. ***Methord:*** This descriptive study was conducted at a tertiary care hospital Jashore Medical College hospital, Jashore Bangladesh, on 115 pregnant PCOS patients. SPSS version 20 was used for data analysis on the recent pregnancy, PCOS, and maternal and perinatal outcomes. Parity and others perinatal and maternal outcomes were examined as categorical variables. ***Result:*** The average age was 25.07 years, 82% had a history of primary infertility, and 66% had a high BMI. The percentage of pregnant women with hypertensive problems was 18.26%, PROM was 33.91%, and the low APGAR score at five minutes was 12.17%. gestational diabetes (23.47%), miscarriage (2.1%), preterm delivery (13.91%), caesarean delivery (37.39%), low birth weight babies (2.6%), macrosomia (0.7%), PPROM (19.52%), perinatal mortality (1.73%) and NICU admission (21.74%). ***Conclusion:*** Pregnant women with PCOS were identified with either similar or lower rates of GDM, miscarriage, preterm delivery, meconium-stained liquor, caesarean delivery, small for gestational age/IUGR, macrosomia, PPROM, perinatal mortality, NICU admission, and congenital anomalies, but higher rates of hypertensive conditions of pregnancy, PROM, low birth weight babies, and low five-minute APGAR scores.

Keywords: PCOS, Pregnancy complications, hypertension, Perinatal outcome.

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INTRODUCTION

The estimated prevalence of polycystic ovarian syndrome (PCOS), a frequent and complex female endocrinopathy, varies from 3% to 20% according on the diagnostic criteria applied. Menstrual irregularity (oligomenorrhea or amenorrhea), hirsutism, chronic acne, androgen-dependent alopecia, abdominal obesity, hypertension, and infertility are among the clinical signs of PCOS [1]. Sixty to eighty percent of PCOS patients are obese, and obesity has a malignant cumulative effect on insulin resistance, hyperandrogenism, infertility, hirsutism, and pregnancy problems [2]. Moreover, there is a higher risk of diabetes mellitus type 2 (DM2), metabolic syndrome (MS), cardiovascular diseases (CVD), miscarriage, and late pregnancy problems (preeclampsia, gestational diabetes) when insulin resistance, hyperandrogenism, and obesity are combined. This suggests that PCOS affects women of all ages and is a chronic illness [3]. These days, there is mounting evidence that suggests PCOS women have a high frequency of pregnancy difficulties. Therefore, PCOS is linked to more than just metabolic disorders, irregular menstruation, or infertility as was previously reported. It is also becoming more widely acknowledged that gestational diabetes (GDM), pregnancy-induced hypertension, preeclampsia, premature delivery, neonatal birth weight, caesarean section rates, and NICU admission rates are all negative pregnancy outcomes associated with PCOS during pregnancy [4-6]. There was considerable variation in the increased risk of unfavorable obstetric complications among women with PCOS, contingent on the distinct characteristics and phenotypes of the condition [7].

Neonatal risks described in the previous studies include small for gestational age newborns, macrosomia, meconium aspiration syndrome, low APGAR score at 5 minutes, NICU hospitalization, and perinatal mortality. Pregnant individuals with PCOS have a higher risk of congenital abnormalities, according to one study [8]; however, other investigations have not confirmed this. However, other research has also revealed that, in comparison to women without PCOS, certain outcomes are either the same or occur less frequently. [9-17]. Therefore, it is impossible to say for sure how these pregnancies will turn out.

MATERIALS AND METHODS

The Jashore Medical College hospital, Jashore Bangladesh. Department of Obstetrics and Gynecology, January 2023 to September 2023 conducted this study. The ethical committee gave its approval to the study protocol. Women who agreed to take part in this research study and had a PCOS diagnosis were. A thorough interview schedule including sociodemographic information, menstrual, marital, obstetric, previous, personal, and family history was obtained after they gave their informed consent. A thorough medical history was taken, including the period of the PCOS diagnosis, the criteria taken into consideration (e.g., oligomenorrhea, ultrasound results, and levels of testosterone in PCOS-affected women). It was noted how the patient had treated PCOS and the history of infertility. Measurements taken during the physical examination were blood pressure, BMI, height, and weight. Up to the birth, the pregnancy was checked on a monthly basis. Records were kept on the mode of delivery, perinatal outcome, and maternal problems. MS Excel was used to enter the data, while SPSS version 20 was used for analysis. Age, weight, and gestational age were examples of continuous variables that were reported as mean±SD when suitable. Parity and a variety of neonatal and maternal outcomes were the categorical variables under investigation. The results were presented as percentage.

RESULTS

There were 115 pregnant PCOS ladies that took part in our study in total. Women in our study had a mean age of 25.07 years. Mean height, weight and BMI were 145 cm, 67.59 kg and 27.75 kg/m^2, respectively. Sixty-six percent (66%) of the study population were over-weight in our study, and 18% were obese.

Table 1 provides an overview of the maternal outcome for these pregnancies. 44% women had polycystic ovaries on ultrasound, and 53% had a history of irregular menstrual periods.

Table 1: Maternal outcome in study population

Characteristics	Frequency	Percentage (%)
Maternal Outcomes		
Hypertension		
Gestational hypertension	21	18.26
Pre-eclampsia	7	6.08
Diabetes		
GDMA1	12	10.43
GDMA2	15	13.04
Obstetric		
Abortion	6	5.21
IUGR/SGA	3	2.61
Rupture of membranes		
PPROM	19	19.52
PROM	39	33.91
Preterm labour	16	13.91
Delivery		
Period of gestation		
Preterm	17	14.78
Term	96	83.47
Post-term	2	1.74
Nature of labour		
Induced	54	46.95
Spontaneous	46	40.00
Mode of Delivery		
SVD	72	62.60
Caesarean section	43	37.39

Table 2 displays the perinatal result for women with PCOS who are pregnant. 95.65% of the babies were born alive and in good health. Out of the three stillborn babies (2.6%), one woman had hypertension and

gestational diabetes. Due to respiratory difficulties and low birth weight, two babies passed away on the fifth postnatal day. Two (1.3%) of the 115 fetuses that were delivered had abnormalities. The pregnancy was stopped at 19 weeks due to a cystic hygroma in one of the fetuses.

Table 2: Perinatal outcome in study population

Status of newborn	**Frequency**	**Percentage (%)**
Alive	110	95.65
Still birth	3	2.60
Neonatal death	2	1.73
Birth weight of newborn (grams)		
<1000	3	2.60
1001-1499	7	6.08
1500-1999	11	9.56
2000-2499	19	16.52
2500-2999	35	30.43
3000-3499	27	23.47
3500-3999	12	10.43
>4000	1	0.869
Characteristic	**Frequency**	**Percentage (%)**
APGAR score		
0/0	1	0.869
<8/9	14	12.17
> or =8/9	96	83.47
NICU admission	25	21.74
Congenital anomaly	2	1.739
Meconium stained liquor	9	7.8

DISCUSSION

Numerous studies have assessed the outcomes of pregnancy in women diagnosed with PCOS; nevertheless, the results are not entirely definitive. Women in our study ranged in age from 20 to 44 years old, with a mean age of 25.07. There were no pregnancies in adolescents, and the number of aged pregnant women remained 4.1%, in comparison to earlier research [8, 10, 13, 14, 16, 17]. Pregnant PCOS women in our study group had an average BMI of 27.75 kg/m^2. A comparable retrospective cohort study reported that median BMI of obese PCOS women was 30.8 kg/m^2, which was greater than that of normal-weight women [10]. In our study, 66% of participants were overweight, and 18% were obese. This is less than in another population-based study, where the prevalence of obesity was 61% [14]. Results from a retrospective study in India including 110 PCOS-affected pregnant women revealed a decreased frequency of overweight women (58%) [17]. In our study, women (6.2%) with PCOS had Acanthosis nigricans, and 78.5% of them had hypothyroidism diagnoses. We did not find Acanthosis in any other research.

The percentage of primigravida found in our study was 83.1%; this is significantly higher than the prevalence found in other investigations, which ranged from 47 to 81% [10, 14, 16]. In our study, around 46% of women conceived naturally, and 54% of women conceived following treatment with ovulation-inducing medications or assisted reproductive technologies. Previous studies found that using ART plus OI increased the rate of pregnancy to 71.4% and decreased the rate of spontaneous conception to 29% [16]. Similar to our findings, another Australian study involving 2,566 women with PCOS found that 8% of them had conceived after in vitro fertilization [8]. Our investigation found that 10% of pregnant PCOS women had multiple fetal pregnancies by comparing a study conducted in Finland on 99 PCOS women [19]. However, it is significantly higher than the 3.3% found in an Australian study [8]. In line with previous research, the percentages of preeclampsia and hypertension in this study of PCOS associated pregnant women were determined to be 6.08% and 18.26%, respectively. But a lower 2.4% to 11% incidence of hypertension [9, 10, 17] and a greater 8–12% preeclampsia percentage has also been shown [8, 10].

In this study, 13% of pregnant PCOS women were diagnosed with GDM; this rate is comparable to another Indian case-control study that included 56 PCOS women16. However, other research has indicated a lower rate of GDM ranging from 7.2% to 8% [8, 10, 18]. In contrast, two other studies revealed that PCOS pregnant women had a greater incidence of GDM, at 22% [19, 17]. Thus far, meta-analyses have reported a two- to three-fold increased incidence of GDM in PCOS pregnant women [11-15]. In our analysis, the percentage of SGA/IUGR newborns among PCOS-affected women was 3% greater than in another retrospective study conducted in India [12]. In comparison to other studies that reported a greater rate of SGA/IUGR newborns, ranging from 8% to 13%8, this is less. Certain studies

have reported a 1.5–2 fold higher risk compared to typical pregnant women [13, 15, 20]. In our study, 19.52% and 33.9% of the women experienced membrane rupture during preterm or term gestation, respectively. While the prevalence of preterm rupture of membranes was comparable to a meta-analysis [13], the incidence of rupture at term was significantly higher than that of another Indian retrospective investigation on 110 PCOS patients, which found 8% [17]. Our study's preterm delivery incidence of 14.78% is greater than that of a prospective Indian study on 56 PCOS women [18]. In our analysis, the percentage of women who had assisted vaginal delivery or a caesarean section was 62.6% and 37.39%, respectively. Our study's incidence of cesarean sections was lower than previous research', which reported a greater prevalence of 39–64% [7-8, 17, 18]. Of the 27 studies that included 4982 PCOS women, one meta-analysis showed no discernible change in risk [12].

In our study, the prevalence of underweight at birth children, very low birth weight, and severe low birth weight was 2.6%, 6.08%, and 26.08%, respectively; in two different investigations, the reflection was lower (4.9–11.4%) [8,10]. In contrast to the general pregnant population, the percentage of pregnant women with PCOS in our study who experienced GDM, miscarriage, preterm delivery, meconium-stained liquor, caesarean delivery, short gestational age/IUGR, PPROM, perinatal mortality, NICU admission, and congenital anomalies was either similar or lower. However, the percentage of hypertensive disorders of pregnancy, PROM, low birth weight babies, and low APGAR score at five minutes was found to be higher [21].

CONCLUSION

The findings of our study provide more insight into how PCOS mothers are currently assumed to be impacted by maternal and neonatal difficulties; certain findings confirm and some contradict the dangers associated with pregnancy in PCOS women. More extensive cohort studies with extended follow-up periods are required to investigate the degree of correlation between PCOS and the restrictive negative consequences for mothers and fetuses during pregnancy.

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