Adverse Pregnancy Outcomes in Women with Polycystic Ovary Syndrome (Pcos): Study inaTertiary Care Hospital at Rajshahi

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Abstract
Background: *Polycystic ovarian syndrome (PCOS) is the most common endocrine abnormality among reproductive-age women. Having a diagnosis of polycystic ovary syndrome (PCOS) is associated with an increased risk of adverse pregnancy outcomes. This studyaimed to assess the adverse pregnancy outcomes in women with polycystic ovary syndrome.*
Methods: *This prospective comparativestudy was conducted at the Department ofDepartment of Obstetrics and Gynaecology, Islami Bank Medical College Hospital, Rajshahi, Bangladesh from January 2023 to October 2023.Among the total 108 participants, 54 pregnant women with PCOS were included in the case group, while the control group comprised 54 pregnant women without PCOS, selected randomly as study subjects. Pregnancy outcomes for both groups were assessed, and MS Office tools were utilized for data analysis.*
Results: *The control group had a 39% cesarean delivery rate and 6% received a subarachnoid block, while the PCOS group had higher rates at 63% and 7%, respectively. Complications affected 54% of the control group, including gestational diabetes mellitus (9%) and pregnancy-induced hypertension (22%). In the PCOS group, 78% experienced complications, with gestational diabetes mellitus (13%) and pregnancy-induced hypertension (24%) being prevalent, along with higher rates of preterm birth (33%) and subarachnoid block (7%).*
Conclusion: *Women diagnosed with PCOS may be at a heightened risk of adverse pregnancy outcomes, suggesting the importance of increased medical monitoring and specialized management during pregnancy and childbirth, even after considering variations in maternal characteristics.*
Keywords:*Pregnancy outcome, Polycystic ovary syndrome (PCOS), Gestational DM, Preterm birth.*

I.   INTRODUCTION

Polycystic ovary syndrome (PCOS) stands out as one of the most prevalent endocrine disorders, impacting 5%–15% of women of reproductive age, with variations based on the studied population and diagnostic criteria applied [1]. The Rotterdam criteria characterize PCOS through the presence of any two of the following: oligomenorrhea/amenorrhea, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries [2]. Polycystic ovaries are identified by either having ≥12 follicles measuring 2 to 9 mm or ovaries with a volume exceeding 10 ccs [3]. Oligo- or anovulation, hyperandrogenism, and polycystic ovaries are the hallmark features of PCOS [4], with insulin resistance and obesity playing crucial roles in its pathogenesis [5,6]. These endocrine disorders are recognized risk factors for inducing metabolic syndrome, pregnancy loss, and late pregnancy complications, signifying that PCOS is a chronic condition with manifestations throughout the lifespan [7]. Nevertheless, the pathophysiological explanation remains a subject of debate. In these studies, various characteristics of the PCOS population, including maternal age, body mass index (BMI), and the use of assisted reproductive technologies, might independently contribute to adverse pregnancy outcomes, potentially confounding the study conclusions. Prior research has indicated an elevated risk of pregnancy complications among individuals with PCOS, including gestational diabetes mellitus (GDM), pregnancy-induced hypertension (PIH), and preterm delivery [8,9]. Oligomenorrhea was defined as having fewer than 8 cycles per year or a menstrual interval longer than 35 days, while amenorrhea was defined as the absence of menses for the last 6 or more months. Clinical hyperandrogenism was defined by a Ferriman-Galwey score exceeding 6 [10], while

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biochemical hyperandrogenism was defined by a total testosterone level greater than or equal to 0.481 ng/ml. Polycystic ovarian morphology (PCOM) was defined as having 12 or more follicles in either ovary, measuring 2–9 mm in diameter, and/or an increased ovarian volume of each ovary exceeding 10 ml on ultrasound scan [11]. The objective of this current study was to assess the pregnancy outcome in women with polycystic ovary syndrome.

II.   METHODOLOGY

This prospective comparative study was conducted at the Department of Obstetrics and Gynaecology, Islami Bank Medical College Hospital, Rajshahi, Bangladesh from January 2023 to October 2023. Among the total 108 participants, 54 pregnant women with PCOS were included in the case group, while the control group comprised 54 pregnant women without PCOS, selected randomly as study subjects. Pregnancy outcomes for both groups were assessed. Properly written consent was obtained from all participants before data collection. Detailed history-taking included information on age, parity, socioeconomic status, menstrual history, marital status, past medical history, family history, and personal history. According to the exclusion criteria of this study, women with anovulation not due to PCOS, those under 18 or over 40 years old, individuals with obesity not attributed to PCOS, hirsutism due to adrenal or other causes, and women exhibiting clinical signs of hyperandrogenism, polycystic ovaries in ultrasound, individuals on drug therapy, those with other medical illnesses such as diabetes mellitus, hypertension, and thyroid disorders, as well as those with multiple pregnancies and a previous history of gestational diabetes mellitus (GDM) and pregnancy-induced hypertension (PIH), were excluded. All demographic and clinical information of the participants was recorded. Data were processed, analyzed, and disseminated using MS Office.

III.   RESULT

In this study, in the control group, the majority of participants (70%) were in the age range of 21-30 years, followed by 20% in the 31-40 years age group, and 9% in the 18-30 years age group. Conversely, among individuals with PCOS, the highest proportion (56%) was in the 21-30 years age group, followed by 43% in the 31-40 years age group, and only 2% in the 18-30 years age group.In the control group, the majority (61%) had a BMI in the range of 18.5-24.9 kg/m², followed by 24% in the 25-29.9 kg/m² range, 9% in the <18.5 kg/m² range, and 6% in the ≥30 kg/m² range. In contrast, among individuals with PCOS, the highest proportion (61%) had a BMI of 25-29.9 kg/m², followed by 22% in the <18.5 kg/m² range, 11% in the 18.5-24.9 kg/m² range, and 6% in the ≥30 kg/m² range.The mode of delivery was examined in both the control group and individuals with polycystic ovary syndrome (PCOS). In the control group, 56% underwent vaginal delivery, 39% had cesarean delivery, and 6% received a subarachnoid block. In contrast, the PCOS group had 30% undergoing vaginal delivery, 63% opting for cesarean delivery, and 7% receiving a subarachnoid block.The distribution of pregnancy outcomes was analyzed among the control group and individuals with polycystic ovary syndrome (PCOS). In the control group, 46% experienced no complications, while 54% had complications. Among those with complications, the types included gestational diabetes mellitus (9%), pregnancy-induced hypertension (22%), preterm birth (17%), and subarachnoid block (6%). In the PCOS group, 22% had no complications and 78% experienced complications. Complications in the PCOS group included gestational diabetes mellitus (13%), pregnancy-induced hypertension (24%), preterm birth (33%), and subarachnoid block (7%).

Table 1: Age distribution of study subjects (N=108)

Age (Years)	Control		PCOS	
	(n=54)		(n=54)	
	n	%	n	%
18-30	5	9%	1	2%
21-30	38	70%	30	56%
31-40	11	20%	23	43%

Table 2: Distribution of study subjects as per BMI

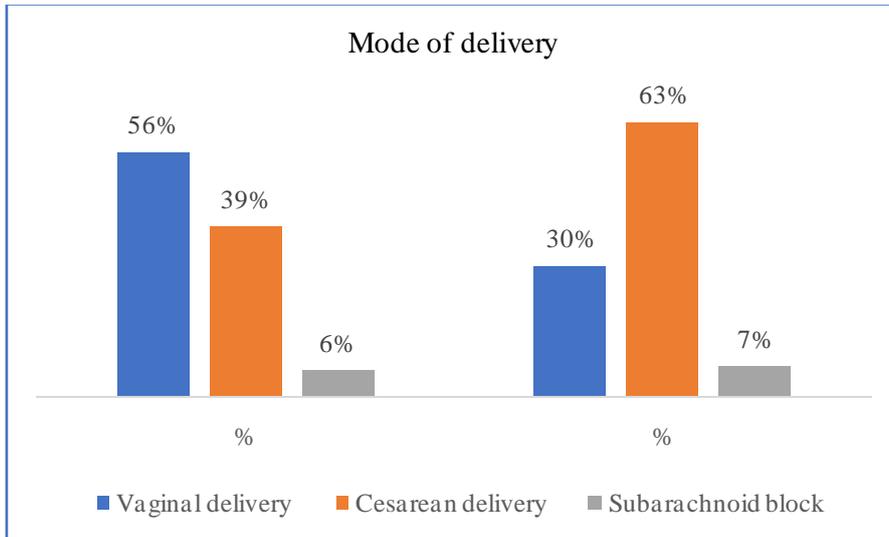| BMI in kg/m²	Control		PCOS	
	(n=54)		(n=54)	
	n	%	n	%
<18.5 kg/m²	5	9%	12	22%
18.5-24.9 kg/m²	33	61%	6	11%
25-29.9 kg/m²	13	24%	33	61%
≥30 kg/m²	3	6%	3	6%

Figure 1: Mode of delivery in both groups

Table 3: Pregnancy outcome status distribution

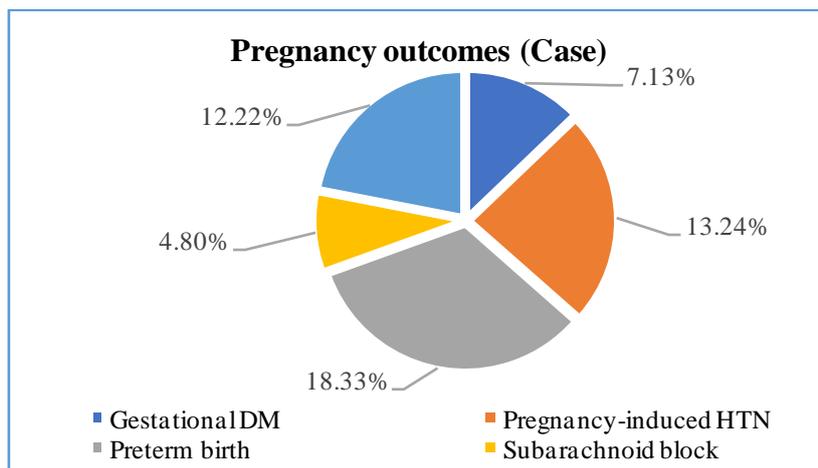| Characteristics	Control (n=54)		POCS (n=54)	
	n	%	n	%
No complications	25	46%	12	22%
With complication	29	54%	42	78%

Figure 2: Comparative pregnancy outcomes in Cases groups.
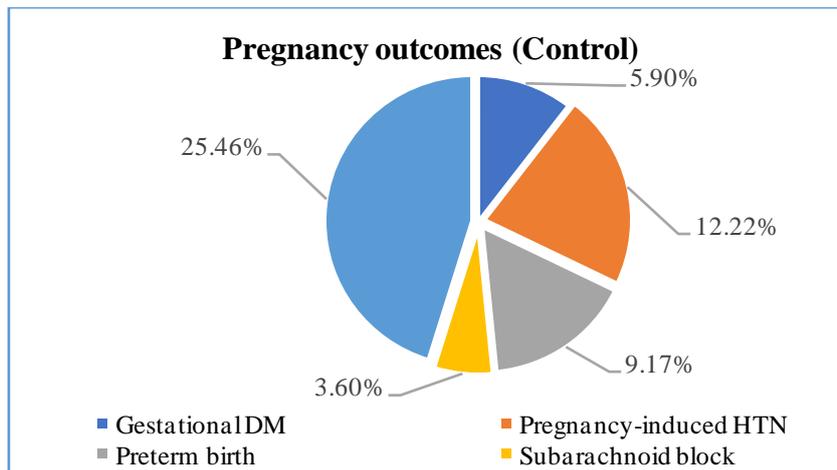

Figure 3: Comparative pregnancy outcomes in Control groups.

IV. DISCUSSION

This study aimed toassess the pregnancy outcome in women with polycystic ovary syndrome.In this study, in the control group, 70% of participants were aged 21-30 years, with 20% in the 31-40 years age group, and 9% in the 18-30 years age group. In contrast, among individuals with PCOS, 56% were in the 21-30 years age group, 43% in the 31-40 years age group, and only 2% in the 18-30 years age group. In a study conducted by Lipipuspa Pattnaik et al. [12], similar age ranges were observed. Polycystic ovary syndrome (PCOS) is an endocrine disorder that afflicts 8–26% of women of reproductive age [13]. In our study, in the control group, the majority (61%) had a BMI in the range of 18.5-24.9 kg/m², followed by 24% in the 25-29.9 kg/m² range, 9% in the <18.5 kg/m² range, and 6% in the ≥30 kg/m² range. In contrast, among individuals with PCOS, the highest proportion (61%) had a BMI of 25-29.9 kg/m², followed by 22% in the <18.5 kg/m² range, 11% in the 18.5-24.9 kg/m² range, and 6% in the ≥30 kg/m² range. These findings align with the results reported by De Frène et al [14]. Their retrospective cohort study showed a higher mean BMI (30.8 kg/m2) in women with PCOS than in women without PCOS. In our study, in the control group, 56% underwent vaginal delivery, 39% had cesarean delivery, and 6% received a subarachnoid block. In contrast, the PCOS group had 30% undergoing vaginal delivery, 63% opting for cesarean delivery, and 7% receiving a subarachnoid block. A meta-analysis demonstrated that PCOS was associated with a significantly higher risk of cesarean delivery compared to the control group [15]. Bjercke S et al., in their study [16] involving 29 PCOS women and 355 normal women, reported a higher cesarean rate in the PCOS group compared to the control group (40.3% vs. 27.3%), with a statistically significant difference ($p < 0.05$). In our study, in the control group, 46% had no complications, while 54% experienced complications, including gestational diabetes mellitus (9%), pregnancy-induced hypertension (22%), preterm birth (17%), and subarachnoid block (6%). In the PCOS group, 22% had no complications, and 78% faced complications, including gestational diabetes mellitus (13%), pregnancy-induced hypertension (24%), preterm birth (33%), and subarachnoid block (7%). PCOS group exhibited a higher prevalence of gestational diabetes mellitus (GDM) compared to the control group, aligning with findings from a meta-analysis indicating a significantly elevated risk of GDM in women with PCOS [17]. Additionally, multiple meta-analyses have reported a 1.3 to 3.9-fold increased risk of preterm delivery in pregnant women with PCOS [18].

Limitation of the study:

This study was conducted at a single center with a small sample size, and the duration of the study was relatively short. Consequently, the results obtained may not accurately represent the broader situation across the entire country.

V. CONCLUSION & RECOMMENDATION

The results of this study highlight a potential association between the diagnosis of Polycystic Ovary Syndrome (PCOS) in women and an elevated risk of adverse pregnancy outcomes. This underscores the necessity for intensified medical surveillance and specialized care throughout pregnancy and childbirth for women with PCOS. Importantly, these findings persist even after accounting for variations in maternal characteristics, emphasizing the need for tailored management strategies to optimize maternal and fetal health in this population.

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