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COMPARATIVE ANALYSIS OF MATERNAL AND FETAL OUTCOMES IN PCOS AND NON-PCOS WOMEN: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract:

Background: The purpose of this study is to examine the medical outcomes of women and their unborn children in communities that do not have polycystic ovarian syndrome (PCOS) and communities that do have PCOS. There will be a comparison between the two groups. The comparison will take into consideration a variety of factors, including but not limited to premature delivery, birth weight, hospitalizations to the Neonatal Intensive Care Unit (NICU), and gestational diabetes and hypertension disorders.

Methods: In this prospective longitudinal study, there were a total of 65 women who were either diagnosed with polycystic ovarian syndrome (PCOS) or did not have PCOS. The participants ranged in age from 16 to 45 years old. The length of time that the research was conducted was twenty-four months. A comprehensive investigation was carried out on a number of elements, including demographic data, the difficulties that the mother encountered, the method of delivery, and the outcomes for the infant. A successful acquisition of ethical approval was also accomplished, in addition to the successful acquisition of informed permission from persons.

Results: During pregnancy, women who were diagnosed with polycystic ovarian syndrome (PCOS) had a considerably higher incidence of gestational diabetes, pregnancy-induced hypertension, multifetal pregnancies, early labor, and losses than those who did not have the condition. I would want to bring to your notice the fact that the PCOS group had a higher incidence of preterm deliveries, low birth weight, intrauterine growth restriction, and adverse neonatal outcomes. This is an essential topic to bring to your attention. Among the female participants, those who were diagnosed with polycystic ovarian syndrome (PCOS) had a considerably greater risk of having maternal problems. These difficulties included pregnancy-induced hypertension and gestational diabetes.

Conclusion: According to the findings of this research, polycystic ovarian syndrome (PCOS) has been demonstrated to have a significant impact on the outcomes for both the mother and the fetus being carried by the mother. Women who have polycystic ovarian syndrome (PCOS) are at a greater risk of experiencing catastrophic neonatal outcomes, hypertension, and gestational diabetes. As a result, the importance of individualized therapy is brought into sharper emphasis. Having a complete comprehension of these interrelationships is absolutely necessary for those who suffer from polycystic ovary syndrome (PCOS) to reach the highest possible level of reproductive health.

Keywords: Polycystic ovary syndrome; maternal outcomes; fetal outcomes; Rotterdam 2003 criteria; Neonatal Intensive Care Unit.

Introduction:

In the realm of medicine, the condition known as polycystic ovarian syndrome (PCOS), which is among the most prevalent endocrine illnesses, is frequently overlooked by health care experts. Furthermore, it is claimed that more than fifty percent of women who have polycystic ovarian syndrome (PCOS) do not receive a diagnosis [1]. This is despite the fact that the documented prevalence of PCOS is meant to be ten percent. 2 [2] When compared to other conditions, the endocrine condition known as polycystic ovarian syndrome (PCOS) is the one that affects women throughout their reproductive years at a higher frequency than any other ailment. Polycystic ovarian morphology, hyperandrogenism, and ovulatory dysfunction are the three basic characteristics that are specified by the Rotterdam 2003 criteria. These characteristics are not interchangeable. When at least two of these traits are present, it is possible to determine that this condition is present [3]. In addition, excessive weight and obesity are associated with polycystic ovarian syndrome (PCOS) [4–5]. Furthermore, there is a positive association between the severity of the PCOS phenotype and the amount of excess weight that a person has. Women who have polycystic ovarian syndrome (PCOS) are more likely to be significantly overweight or obese, in addition to having more obvious clinical, metabolic, and reproductive difficulties. PCOS is a condition that affects many ovary cysts. Additionally, this is in addition to the fact that they have problems that are more evident.

Polycystic ovarian syndrome (PCOS) is characterized by a complicated set of processes that are regulated by a variety of different situations. A tendency that is inherited from one generation to the next is regarded to be a contributing component in the development of this disorder. Additionally, an excessive amount of obesity is thought to be a contributing factor. The pathophysiology of polycystic ovary syndrome (PCOS) is hypothesized to be created by a complex interaction between hyperinsulinemia, elevated levels of luteinizing hormone (LH), and aberrant ovarian morphology. This interaction would be responsible for the development of PCOS. It is believed that the polycystic ovaries are responsible for this interaction because they secrete an excessive amount of testosterone. Research has demonstrated that women who suffer from polycystic ovarian syndrome (PCOS) have an increased production of androgens in their ovaries. This findings have been confirmed by the findings of the research. One possible explanation for this rise is that it might be attributed to the heightened enzymatic activity of 17α-hydroxylase/C17, 20 lyase, and 3β-hydroxysteroid dehydrogenase (HSD). The ovarian cells are the only cells that have these enzymes, which are both byproducts of the CYP17 transcription factor. PCOS, also known as polycystic ovary syndrome, may cause a variety of clinical symptoms to manifest in women diagnosed with the condition. Some of these hyperandrogenism symptoms may be quite modest, while others may be very evident. These manifestations have a great lot of importance for the woman who experiences them because of the impact they have on reproductive health and the potential long-term repercussions they may have on the health of her offspring. It is [8]: Polycystic ovarian syndrome (PCOS) is characterized by a number of biochemical features, and it is possible that the related risks are caused by a number of different conditions that occur simultaneously. Comorbidities, both of which are frequently found in the population of women who have polycystic ovarian syndrome (PCOS), and a high body mass index (BMI) are two of the factors that are included in this category. While conducting this study, the researchers sought to compare and assess the many ways in which a pregnancy may be formed, as well as the necessity of reproductive help and the impacts on the mother. Additionally, they wanted to determine the effects that these procedures have on the mother. Preterm delivery, birth weight, gestational diabetes, hypertensive disorders throughout pregnancy, spontaneous abortions, and the need for treatment in the Neonatal Intensive treatment Unit (NICU) were some of the outcomes that were observed.

Materials and Methods:

This research was conducted at the Veer Surendra Sai Institute of Medical Sciences and Research (VIMSAR), which is located in Burla. The department of obstetrics and gynecology was responsible for carrying out this prospective longitudinal observational study. Beginning in November 2019 and continuing until November 2021, the study was carried out over the course of a period of twenty-four months. Participants in the study comprised 65 individuals who had been diagnosed with polycystic ovarian syndrome (PCOS), as well as 65 individuals who acted as control subjects who did not have PCOS. There was a wide range of ages represented among the participants, ranging from sixteen to forty-five overall. Patients who were interested in participating in the study were recruited from the Outpatient Department (OPD) of the Department of Obstetrics and Gynecology at VIMSAR, Burla.

Infertility that was caused by factors other than polycystic ovarian syndrome (PCOS) and hyperandrogenism that was caused by factors other than PCOS, such as Cushing syndrome or adrenal tumors, were two of the criteria that were used to remove persons from the study. One of the many parameters that were evaluated was the presence of maternal complications, which included but were not limited to gestational diabetes mellitus, pregnancy-induced hypertension, multifetal pregnancy, preterm labor, and miscarriage. Additionally, neonatal complications, which included but were not limited to abortion, preterm delivery, term delivery, intrauterine growth restriction, Apgar score, fetal weight, rate of admission to the Special Newborn Care Unit (SNCU), and stillbirth, were also evaluated. For the purpose of evaluating the maternal and neonatal parameters, a complete set of parameters was also taken into consideration.

Prior to the commencement of the research, every participant gave their informed permission, and the Institutional Review Board, and more particularly the VIMSAR Ethical Committee, gave their approval for the study's ethical conduct.

In order to do the analysis of the data, IBM's SPSS Statistics 20, which is located in Armonk, New York, United States of America, and the Statistical Package for Social Science version 20 for Windows were utilized. Both of these programs were utilized. While the statistics are provided in the form of means, along with standard deviations or percentages, they are presented in line with the criteria that are deemed to be suitable. When doing categorical statistical data analysis, the chi-square test was applied, whilst the Student's t-test was utilized for the purpose of conducting group comparisons. Both tests were utilized for the goal of analyzing the data. In terms of statistical significance, a cutoff point of 0.05 was decided upon; this barrier was set.

Results:

In Table 1, a comparison is made between persons who have polycystic ovarian syndrome (PCOS) (N = 65) and those who do not have PCOS (N = 65) in terms of major clinical and demographic factors. N = 65 individuals were included in the study. Those who were under the age of 20, those who were between the ages of 20 and 25, those who were between the ages of 26 and 30, and those who were between the ages of 31 and 35 were those who were classified into the four categories that were formed based on the age distribution. The groups of individuals who had polycystic ovarian syndrome (PCOS) and those who did not display this disease did not differ from one another in a way that was statistically significant (P = 0.1795). As the study progressed, the participants were separated into two distinct groups: those who lived in rural areas and those who lived in urban areas. There was not a statistically significant difference between the distributions of each group and those of the other groups (p = 0.3766). This was the conclusion reached by the statistical analysis. In the process of categorizing individuals, the three categories that are most frequently utilized are upper, medium, and lower socioeconomic status. It is the value that is P(= 0.5368). No discernible difference was observed between the groups that tested positive for polycystic ovary syndrome (PCOS) and those that tested negative for the condition. PCOS patients had a mean maternal weight that was considerably higher than the weight of women who did not have PCOS (P = 0.0323). This was the case when comparing the two groups of women. Statistical analysis demonstrated that there was a substantial disparity between the two groups. According to the findings of a research that compared the group of women

who had polycystic ovarian syndrome (PCOS) to the group of women who did not have PCOS, the PCOS group showed a significantly higher incidence of premature deliveries (37 weeks) (P = 0.0046). When compared to females in the general population, patients diagnosed with polycystic ovarian syndrome (PCOS) had a significantly lower mean gestation age (p = 0.0031). They also had a significantly shorter gestation age. A comparison was made between the group with polycystic ovary syndrome (PCOS) and the group without PCOS, and the results showed that the PCOS group had a considerably higher percentage of individuals who were first-time moms (P = 0.0028). It was shown that the group that was diagnosed with polycystic ovarian syndrome (PCOS) had a body mass index (BMI) that was significantly higher than the group that did not have PCOS (p<0.0001). Table 2 illustrates the distribution of the connected medical conditions and treatments that were delivered to each specific group that was the focus of the inquiry. These treatments were administered after the investigation was completed. According to the findings of the research (P = 0.0332), the group that was diagnosed with polycystic ovary syndrome (PCOS) had a significantly higher prevalence of diabetes in comparison to the group that was not involved in the study. The group that did not have PCOS, on the other hand, had a significantly lower incidence of hypertension (P = 0.0192) compared to the group that did have PCOS. There was a significant difference between the two groups. In terms of the prevalence of thyroid disorders, a statistically significant difference was discovered between the group that had polycystic ovarian syndrome (PCOS) and the group that did not have PCOS (p = 0.0244). In terms of the prevalence of a variety of medical conditions that are associated with polycystic ovary syndrome (PCOS), a statistically significant difference (P = 0.0290) was discovered between the groups that had PCOS and those that did not have PCOS. It was shown that the prevalence of these disorders was considerably greater in the PCOS group compared to the PCOS group. When comparing the group that did not have polycystic ovarian syndrome (PCOS) to the group that did have PCOS, the incidence of ovulation induction was significantly greater in the group that had PCOS (p<0.0001). In the group that did not have polycystic ovarian syndrome (PCOS), antiretroviral treatment (ART) was never discovered. This finding implies that there is a statistically significant difference (p<0.0001) between the two groups. It was shown that the administration of luteal phase support was much more common in the group of women who had been diagnosed with polycystic ovarian syndrome (PCOS) as compared to the group of women who did not have PCOS. It was established that the statistical significance of this difference was p<0.0001, which is a very small value. The classification of the patients into groups according to the existence of maternal issues is presented in Table 3, which can be seen here. There is a statistically significant difference in the prevalence of gestational diabetes mellitus (GDM) between the group that has polycystic ovarian syndrome (PCOS) and the group that does not have PCOS (p = 0.0051). In the group that had PCOS, it was demonstrated that the prevalence of GDM was much greater than in the typical group. According to the findings, the PIH of the group that had PCOS was found to be significantly higher than that of the group that did not have PCOS (p = 0.0024). Between the group that had polycystic ovarian syndrome (PCOS) and the group that did not have PCOS, there was a statistically significant difference in the incidence of multifetal pregnancies (p = 0.0417). This difference was shown to be statistically significant. On the other hand, the group that did not have polycystic ovarian syndrome (PCOS) had a much lower risk of preterm labor compared to the group that did have PCOS, and this difference was statistically significant (p=0.0196). In terms of the number of miscarriages that occur in contrast to the PCOS group, there is a statistically significant difference (p=0.0068) between the women who have PCOS and the women who do not have PCOS. This difference is observed in the category of women who have PCOS. A comparison of the techniques of delivery that are utilized by individuals who have polycystic ovarian syndrome (PCOS) and those who do not have the condition themselves is presented in the table that can be seen below. On the other hand, the incidence of NVD was found to be 46.15 percent in the group that did not have PCOS, but it was found to be 38.46 percent in the group that did have PCOS. On the other hand, this difference (p=0.3767) does not satisfy the requirements for statistical significance, and as a result, it cannot be regarded significant. According to the findings of the research, the utilization of external delivery devices was seen in

18.46% of cases in the group affected by polycystic ovary syndrome (PCOS), and in 27.69% of cases in the group that did not include patients with PCOS. There was no difference that could be regarded statistically significant between the two groups when they were compared to one another (p = 0.2135). When the prevalence of LSCS is examined between the group that has PCOS and the group that does not have PCOS, there is a statistically significant difference (p=0.0433) in the prevalence of LSCS in the PCOS group. When compared to the other groups, the PCOS group exhibited a significantly higher prevalence of LSCS than the other categories. A comparison of the outcomes of pregnancies among persons who have polycystic ovarian syndrome (PCOS) (N = 65) and those who do not have PCOS (N = 65) is presented in Table 5. The number of individuals who have suffered from PCOS is 65. There were a total of 15.38% of women who had polycystic ovarian syndrome (PCOS) who had an abortion, but only 6.15 percent of women who did not have PCOS had an abortion. The PCOS group had a change toward increased incidence, despite the fact that the trend in this group did not meet the criteria for statistical significance (p = 0.1553). Throughout the entirety of the study, this remained the case. When compared to the group that did not have polycystic ovarian syndrome (PCOS), the group that had PCOS had a considerably greater risk of preterm deliveries, which are defined as births that take place before 37 weeks of pregnancy. Statistical analysis revealed that this difference was significant (p = 0.0046). If we compare the prevalence of IUGR between the group of women who have PCOS and the group of women who do not have PCOS, we find that there is a statistically significant difference (p = 0.0008) in the prevalence of IUGR. Comparing the group that does not have PCOS to the group that does have PCOS, it is evident that the PCOS group had a much higher prevalence of IUGR. Contrary to the group that does not have polycystic ovarian syndrome (PCOS), the group that does have PCOS has a much greater prevalence of birth weights that are less than 2500 grams. This is the case when compared to the group that does not have PCOS. There is a statistically significant difference between these two groups, even if the p-value is only 0.0280. A statistically significant difference (p=0.0008) was found to exist between the group of individuals with polycystic ovary syndrome (PCOS) and the group of individuals who did not have PCOS in terms of the percentage of APGAR scores that were significantly lower than seven at five minutes. Furthermore, the prevalence of these scores was considerably greater in the group identified as having PCOS. There is a statistically significant difference (p=0.0417) between the two groups when comparing the likelihood of admission to the Special Newborn Care Unit (SNCU) between those who have polycystic ovary syndrome (PCOS) and those who do not have PCOS. A significantly higher probability of acceptance into the SNCU was associated with the PCOS group in comparison to the other categories. The group that is known to have polycystic ovarian syndrome (PCOS) and the group that does not have PCOS have a statistically significant difference in the incidence of stillbirth, with the PCOS group having a significantly higher frequency (p). This difference comes about as a result of the fact that the PCOS group has a significantly higher frequency. Stillbirths, on the other hand, were observed in 6.15 percent of the instances that were connected with polycystic ovary syndrome for women. There were no occurrences of stillbirths recorded in the group of women who did not have polycystic ovary syndrome (PCOS).

Table1: Characteristics of the study population.

Variables		**PCOS (N=65)**	**Non-PCOS (N=65)**	**p-value**
Age	**< 20 years**	9 (13.85%)	02 (3.08%)	0.1795^{NS}
	20 – 25 years	21 (32.31%)	23 (35.38%)	
	26 – 30 years	24 (36.92%)	28 (43.08%)	
	31 – 35 years	11 (16.92%)	12 (18.46%)	
Ethnicity	**Rural**	30 (46.15%)	25 (38.46%)	0.3766^{NS}
	Urban	35 (53.85%)	40 (61.54%)	
SES	**Upper**	16 (24.62%)	18 (27.69%)	
	Middle	34 (52.31%)	37 (56.92%)	0.5368^{NS}
	Lower	15 (23.08%)	10 (15.38%)	
Maternal weight (Kg)		60.37 ± 7.58	57.74 ± 6.21	0.0323^{*}

Gestation age (in weeks)	**Preterm (<37 weeks)**	35 (53.85%)	19 (29.23%)	0.0046*
	Term (≥ 37 weeks)	30 (46.15%)	46 (70.77%)	
	Mean±SD	36.22 ± 1.88	37.25 ± 2.01	0.0031*
Parity	**Primi**	45 (69.23%)	28 (43.08%)	0.0028*
	Multi	20 (30.77%)	37 (56.92%)	
BMI		25.02 ± 2.78	21.15 ± 1.52	<0.0001*

NSNot significant, *Significant; SES: Socioeconomic status.

Table 2. Distribution of associated medical conditions and treatment given to the study population.

Parameters		**PCOS (N=65)**	**Non-PCOS (N=65)**	**p-value**
Associated medical conditions	**DM**	24 (36.92%)	9 (20%)	0.0332*
	HTN	26 (40.63%)	14 (21.54%)	0.0192*
	Thyroid	17 (26.15%)	7 (10.77%)	0.0244*
	Others	15 (23.44%)	6 (9.23%)	0.0290*
Treatment Given	**Ovulation induction**	28 (43.08%)	4 (6.15%)	<0.0001*
	ART	13 (20%)	0 (0%)	<0.0001*
	Luteal phase support	24 (36.92%)	3 (4.62%)	<0.0001*

*Significant; DM: Diabetes mellitus: HTN: Hypertension: ART: Assisted Reproductive Technology

Table 3: Distribution of patients according to maternal complications.

Maternal Complication	**PCOS (N=65)**		**Non-PCOS (N=65)**		**p-value**
	No.	**Percentage**	**No.**	**Percentage**	
GDM	20	30.77%	7	10.77%	0.0051*
PIH	15	23.08%	3	4.62%	0.0024*
Multifetal pregnancy	10	15.38%	3	4.62%	0.0417*
Preterm Labor	13	20%	4	6.15%	0.0196*
Miscarriage	7	10.76%	0	0%	0.0068*

*Significant; GDM: Gestational diabetes mellitus: PIH: Pregnancy induced hypertension

Table 4: Distribution of patients according to mode of delivery.

Mode of delivery	**PCOS (N=65)**		**Non-PCOS (N=65)**		**p-value**
	No.	**Percentage**	**No.**	**Percentage**	
NVD	25	38.46%	30	46.15%	0.3767NS
Instrumental	12	18.46%	18	27.69%	0.2135NS
LSCS	28	43.08%	17	26.15%	0.0433*

NSNot significant; *Significant; NVD: Normal Vaginal Delivery; LSCS: Lower Segment Cesarean Section

Table 5: Comparison of neonates according to fetal complications.

Parameters		**PCOS (N=65)**	**Non-PCOS (N=65)**	**p-value**
Abortion	**Present**	10 (15.38%)	4 (6.15%)	0.1553NS
	Absent	55 (84.62%)	61 (93.85%)	
Type of delivery	**Preterm delivery (<37 weeks)**	35 (53.85%)	19 (29.23%)	0.0046*
	Term (≥ 37 weeks)	30 (46.15%)	46 (70.77%)	
IUGR	**Done**	15 (23.08%)	2 (3.08%)	0.0008*
	Not Done	40 (61.54%)	63 (96.92%)	
Birth weight	**< 2500g[b]**	9 (13.85%)	2 (3.08%)	0.0280*
	≥ 2500g[b]	56 (86.15%)	63 (96.92%)	
APGAR Scores at 5 min	**< 7**	15 (23.08%)	2 (3.08%)	0.0008*
	≥ 7	50 (76.92%)	63 (96.92%)	
APGAR Scores at 10 min	**< 7**	3 (4.62%)	1 (1.54%)	0.3114NS
	≥ 7	62 (95.38%)	64 (98.46%)	
	Yes	10 (15.38%)	3 (4.62%)	0.0417*

SNCU Admission	**No**	55 (84.62%)	62 (95.38%)	
Still Birth	**Yes**	4 (6.15%)	0 (0%)	0.0431*
	No	61 (93.85%)	65 (100%)	

[NS]Not significant; [*]Significant; IUGR: Intrauterine Growth Restriction; APGAR: Appearance, Pulse, Grimace, Activity, Respiration; SNCU: Special Newborn Care Unit

Discussion:

Between the years 2019 and 2021, this research looked at a total of 65 women who had PCOS and 65 women who did not have the disorder. In order to accomplish the goals of this inquiry, a comparison was made between the outcomes of the two groups that were associated with fetal and other maternal concerns.

In the current study, the participants included both those who had polycystic ovarian syndrome (PCOS) and those who did not have it. The results of the examination revealed that the mean age at presentation was 26.71±397 for the latter group, while it was 25.30±4.98 for the former group. The resulting p-value of 0.0766 did not meet the criteria for statistical significance, hence the results were not considered significant. According to the findings of the analysis of the age distribution of the PCOS cohort, it was discovered that 36.92% of the participants were between the ages of 26 and 30 years, 32.31 percent were between the ages of 20 and 25 years, 16.92 percent were between the ages of 31 and 35 years, and 13.85 percent were under the age of 30. While 35.38 percent of people who did not have polycystic ovary syndrome were between the ages of 20 and 25, 18.46 percent were between the ages of 31 and 35, and 3.08 percent were younger than 20, 43.08 percent of people who did not have PCOS were between the ages of 26 and 30. A p-value of 0.1795 was discovered for this comparison, which results in the conclusion that the comparison does not possess statistical significance. In the group of individuals diagnosed with polycystic ovarian syndrome (PCOS), the average age of presentation was found to be 29.8 years, with a standard deviation of 4.94 years, as reported by Haakova et al. On the other hand, the average age of the group that did not have PCOS was 29 years and 2.97 years. Nothing that could be considered statistically significant was found to be different between the two groups. among addition, study conducted by Shivananjaiah and colleagues [11] shown that there was a significantly higher incidence of polycystic ovarian syndrome (PCOS) among individuals who were between the ages of 25 and 29 on average. In contrast, the results of our research showed that the age group of 26 to 30 years old had the greatest prevalence, which is in line with the information that they provided. As a result of having a body mass index (BMI) that was higher than 25, thirty of the sixty-five individuals who were a part of the PCOS cohort were recognized as being obese. This represents 43.08% of the group. It has been determined that the findings obtained here are in agreement with a research that was carried out in 2003 by Shringi and his colleagues [12]. 37.8 percent of individuals with PCOS were obese, and 41.44 percent were overweight, according to the findings of that research.

Patients who were diagnosed with polycystic ovarian syndrome (PCOS) were found to have a specific pattern, according to the results of the research. In particular, thirty-seven point seven percent of the patients were mothers of more than one child, whereas sixty-nine point two percent of the patients were mothers for the very first time. A distinct distribution was seen among individuals who did not have polycystic ovary syndrome (PCOS). Among these patients, 43.08% were first-time mothers, whereas 56.92% were multi-mothers. There was a statistically significant difference between the two groups in the population. The findings of this research are in contrast to those of a study that was carried out by Shivananjain and colleagues [11]. That investigation revealed that 61% of patients with PCOS were categorized as multigravida, while 39% of patients were labeled as primigravida. It was surprised to find that the findings of this analysis were quite similar to those that Surendra et al. [13] had reported. There were forty PCOS patients who participated in the study. Of those forty patients, thirty-five percent were moms of multiple children, and sixty-five percent were mothers for the first time. In addition, among the women who were diagnosed with polycystic ovary syndrome (PCOS), 43.08% of them underwent ovulation induction by means of letrozole or

clomiphene, 36.92% received progesterone for luteal phase support after natural conception, and 20% became pregnant through assisted reproductive technology (ART) such as intrauterine insemination (IUI).

In the group of patients with PCOS that we investigated, we discovered that twenty percent of them went into preterm labor, ten and a half percent of them had a miscarriage, fifteen and a half percent of them had a multifetal pregnancy, and twenty-three and a half percent of them acquired pregnancy-induced hypertension (PIH). When compared to patients who did not have polycystic ovary syndrome (PCOS), 10.77% of those patients had gestational diabetes, 4.62% had preeclampsia, 4.62% had multiple fetuses throughout pregnancy, 6.15% went into preterm labor, and none of the patients had a miscarriage. After careful consideration, it was determined that the statistical significance of these discrepancies was satisfactory. In accordance with the findings of Shivananjain et al.'s inquiry into the same phenomenon, individuals who were diagnosed with polycystic ovarian syndrome (PCOS) had a greater prevalence of gestational diabetes mellitus (GDM). The findings of our analysis are in line with the findings of studies conducted by Lo et al. [14] and Haakoova et al. [10], which found that the presence of PCOS is associated with an increased risk of developing gestational diabetes mellitus (GDM). According to the findings of meta-analyses carried out by Boomsma et al. [15] and Kjerulff et al. [16], women who have polycystic ovarian syndrome (PCOS) have a three to four times higher risk of experiencing pregnancy-induced hypertension (PIH) than those who do not have PCOS. Both our findings and the conclusions that were reached from the meta-analysis are in close accord with one another. One of the primary variables that contributes to greater perinatal morbidity following reproductive therapy in persons who have polycystic ovarian syndrome (PCOS) is the presence of numerous pregnancies, as stated by Johnston et al. [17]. Particularly, twin pregnancies are associated with a sixfold rise in the chance of an early birth and a tenfold increased risk of large-for-gestational-age (SGA) children. Both of these risks are amplified by a factor of 10. Both 18 and 19: Among the findings of a recent population-based cohort research done by Løvvik et al. in 2015, it was shown that moms who had a history of polycystic ovarian syndrome (PCOS) were more likely to give birth to their twins before their due date. This study had a total of 20,965 twin pregnancies. The findings of our investigation are in a high degree of concordance with the findings that were published in the study that was alluded to before. According to the findings of a recent comprehensive research that was carried out in Australia, women who suffered from polycystic ovarian syndrome (PCOS) had a significantly higher incidence of miscarriage in comparison to the group that served as the control. The findings revealed that the disparities were twenty percent and fifteen percent, respectively ($p = 0.003$). It is essential to keep in mind that the purpose of the research was not to determine whether or not polycystic ovarian syndrome (PCOS) alone was responsible for an increased risk of miscarriage. According to the data that Joham et al. published in 2014, the body mass index (BMI) was shown to have a substantial impact on the likelihood of having a miscarriage. [21] [21] [21] [21] Along the same lines as these findings, we also found that the group of women with PCOS had a higher risk of miscarrying a child compared to the general public population. It is not well-established whether or not women who have polycystic ovarian syndrome (PCOS) are at risk for labor and delivery by cesarean section (LSCS of labor and delivery). Boomsma et al. (2006) carried out a meta-analysis, which revealed that there is a considerably increased probability of living with a spinal cord injury [15]. On the other hand, the results of a meta-analysis that Kjerulff and his colleagues carried out shown that there was no significant impact. It is [16]. Our data indicate that the PCOS group had a significantly greater prevalence of LSCS than the other groups included.The 65 women who participated in this study who had PCOS gave birth preterm, which means they gave birth before 37 weeks, and 46.1% gave birth term, which means they gave birth beyond 37 weeks. On the other hand, a statistically significant difference was found in the probability of preterm delivery among individuals who did not have polycystic ovary syndrome (PCOS), which was 30.23 percent. In addition, 13.8% of infants delivered to mothers who had polycystic ovarian syndrome (PCOS) had a birth weight that was larger than 2.5 kilograms, while 23.08% of newborns had intrauterine growth restriction (IUGR). On the other hand, the group that did not have polycystic ovary syndrome (PCOS)

was only diagnosed with intrauterine growth restriction (IUGR) in 3.08% of instances, and their birth weight was less than 2.5 kilograms (also known as low birth weight, or LBW). The relevance of these two outcomes was shown statistically. At five minutes, there was a statistically significant difference in the proportion of neonates given to women with polycystic ovarian syndrome (PCOS) who had an APGAR score below seven. On the other hand, the percentage of babies delivered to women who did not have PCOS who had the same score was just 3.08%. After ten minutes, there was no discernible change in the APGAR score that could be considered statistically significant. Only 6.15 percent of women who did not have polycystic ovary syndrome (PCOS) reported having an abortion in the past, but 15.38 percent of women who had PCOS reported having had one. This difference, on the other hand, did not approach the level of statistical significance. In the group that did not have polycystic ovarian syndrome (PCOS), the rate of admission to the Special Newborn Care Unit (SNCU) was 6.62 percent, but in the group that did have PCOS, the rate was 15.38 percent. Statistical analysis revealed that there was a significant difference. Stillbirth was experienced by 6.15 percent of women who were diagnosed with PCOS; however, this was not the case for the women who were not diagnosed with PCOS. The findings of a comprehensive cohort study that was carried out by Roos et al. [22] revealed that the incidence of premature birth was significantly greater among babies who were delivered to mothers who had polycystic ovarian syndrome (PCOS). In addition, another study carried out by Naver and colleagues provided support for the idea that children born to women who were afflicted by PCOS had a greater likelihood of being born prematurely from birth. [23] According to the findings of a meta-analysis that was carried out by Kjerulff and colleagues [16], women who have polycystic ovary syndrome (PCOS) have an almost twofold increased likelihood of giving birth to a baby that is both young for gestational age (SGA) and low birth weight (LBW). The most recent research conducted by Han and colleagues contributed to the existing body of evidence that supports these conclusions. [24] The results of recent studies, such as the one carried out by Palomba et al. [25], have shown that pregnant women who have PCOS and those who do not have the condition have different consequences for their children, particularly with regard to the development of the fetus. According to the findings of studies conducted by Boomsana et al. [15] and Kjerulff et al. [16], neonates who were delivered to mothers who had polycystic ovarian syndrome (PCOS) had a probability that was twice as high as the average of being admitted to the Special Newborn Care Unit (SNCU). In addition, Roos et al. found that children delivered to women who suffered from polycystic ovary syndrome (PCOS) had a higher probability of having an APGAR score from five minutes after delivery that was lower than seven. [22] The findings of this inquiry are consistent with the findings of other investigations that have been conducted in the past.

Conclusion:

The findings of the research, taken as a whole, provided an illustration of the intricate connection that exists between polycystic ovarian syndrome (PCOS) and increased risks of gestational diabetes, pregnancy-induced hypertension, premature delivery, and adverse outcomes for newborns. Assisted reproductive technology is becoming more popular among individuals with polycystic ovary syndrome (PCOS), which highlights how hard the reproductive process is. PCOS-affected pregnant women absolutely need individualized treatment strategies in order to reduce the potential for adverse effects and maximize the potential for positive outcomes. It is necessary to do research on a larger scale in order to give comprehensive knowledge and management that is evidence-based.

Conflict of interest:

The present study did not have conflicts of interest to declare.

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