CHAPTER-V

SUMMARY AND CONCLUSION

5.1 INTRODUCTION

Once a word spoken in hushed tones, 'infertility' has now become much more common than it was even a decade back. Women of child bearing age face this difficulty; its major reason is polycystic ovary syndrome (PCOS). The prevalence of polycystic ovary syndrome is on the rise because of modern day lifestyle in youngsters. Polycystic ovary syndrome (PCOS) is a reproductive disorder associated with many characteristic features, including hyperandrogenism, insulin resistance and obesity which may have significant implications for pregnancy outcomes and long term health of women. PCOS is one of the most common endocrine disorders, affecting about 5-15% of women of reproductive age (March et al., 2010; Tehrani et al., 2011). Gynecologists and endocrinologist report shows that nearly 35% of women in India in their reproductive age suffer from PCOS. But among them only 60% come to hospitals for treatment, when they recognize that they have got infertility. Although most patients present in their 20s and 30s, polycystic ovarian disease can affect females of any age, from menarche to menopause. The high prevalence of polycystic ovary syndrome in women under 35 years of age.

This condition is characterized by oligo/an ovulation, biochemical or clinical hyperandrogenism and polycystic ovaries. According to Rotterdam consensus (2003) the presence of two among three criteria fulfills the diagnosis of polycystic ovary syndrome. The cause of polycystic ovary syndrome is not clear. It may be genetic in origin because of increased prevalence of the disease in families. You are more likely to have polycystic ovary syndrome if your mother or sister has symptoms. Symptoms of polycystic ovary syndrome can include irregular periods, infertility, hirsutism, alopecia, acne, being overweight, insulin resistance and mood disorders.

Oligo-ovulation or anovulation in women with polycystic ovary syndrome is a major cause of infertility and they often require ovulation induction or assisted reproductive

technology to become pregnant. Polycystic ovary syndrome is associated with insulin resistance and hyperinsulinemia in about 50-70% of women depending on ethnicity and method of diagnosis.

Polycystic ovary syndrome is considered a syndrome with metabolic consequences that could affect women's health during different stages of reproductive age. Many women with polycystic ovary syndrome have hormonal imbalance and are overweight or obese, they may be at high risk for adverse pregnancy outcomes. Since it has been prove that pre-pregnancy maternal overweight and obesity have a negative influence on the perinatal outcome. Lifestyle modification like diet and exercise, can improve the metabolic and endocrine consequences of polycystic ovary syndrome.

Polycystic ovary syndrome in itself has a negative influence on the pregnancy and neonatal outcome for these women. There is evidence that women with PCOS are at increased risk of early pregnancy loss and miscarriages. Several studies have highlighted that in women with polycystic ovary syndrome, pregnancy is often complicated by pregnancy induced hypertension, pre-eclampsia, gestational diabetes mellitus and also risk for preterm delivery and Caesarean section.

Gestational diabetes mellitus (GDM) is defined as glucose intolerance of varying degree of severity with onset or first recognition during pregnancy. Women with polycystic ovary syndrome are at least twice as likely to develop gestational diabetes mellitus. Pregnancy induced hypertension (PIH) is a condition characterized by high blood pressure during pregnancy. Preeclampsia is defined as high blood pressure and significant amount of protein in urine of pregnant women. Risk of both preeclampsia and pregnancy induced hypertension is nearly 10% in polycystic ovary syndrome. A preterm delivery is when a baby is born before 37 weeks of pregnancy. Preterm delivery is a major cause of neonatal mortality and morbidity. Research has also indicated that neonate born to women with polycystic ovary syndrome have higher rates of admission to neonatal intensive care units.

Thus this research would obtain more detailed information about polycystic ovary syndrome and their adverse effects on pregnancy and neonatal outcomes. Maternal nutrition status is an important determinant of pregnancy outcomes since pre

pregnancy overweight has been considered a risk factor for pregnancy complication. We should continue to consider patients with polycystic ovary syndrome to be at high risk and monitor them closely. The prenatal care done in clinics is one of the most important factors in receiving information and help during pregnancy. Pre-pregnancy, antenatal and intrapartum care should be aimed to reducing the risk of adverse outcomes.

5.1.1 AIMS AND OBJECTIVES

1) To study the socio-demographic characteristics in women with and without polycystic ovary syndrome.

2) To know the anthropometric assessment in women with and without polycystic ovary syndrome.

3) To know the health status in women with and without polycystic ovary syndrome.

4) To assess the mean nutrient intake in women with and without polycystic ovary syndrome.

5) To compare adverse pregnancy outcomes in women with and without polycystic ovary syndrome.

6) To compare birth outcomes in women with and without polycystic ovary syndrome.

7) To assess mean nutrient intake in pregnancy outcomes in women with and without polycystic ovary syndrome.

5.2 MATERIALS AND METHODS

In the present study, 150 pregnant women are included from Indore city. The women who got enrolled for the study with their consent were randomly selected. The study population were divided into two groups, (Group I) 75 pregnant women diagnosed with PCOS and (Group II) 75 pregnant women without PCOS. They were followed from early pregnancy till the delivery.

LOCALE OF THE STUDY

The study was conducted in Indore city, Madhya Pradesh. Data was collected from fertility center in Hospitals. Permission for data collection was taken from respective places.

1. CHL Hospital Indore
2. Dr. Shefali Jain Test Tube Baby Center & Asian Institute of infertility Management Indore

Data was collected from April 2014 to September 2015 from respective hospitals.

SELECTION CRITERIA

Inclusion Criteria

- Women with age between 20 to 40 years.
- Women who willing to provide information with consent.
- Women with an antenatal card with necessary information for the study.
- Women were followed from early pregnancy till the delivery.

Exclusion Criteria

- Women with known history of diabetes and other serious illness.
- Women with multiple pregnancies.
- Women who did not provide consent for the study were excluded.

VARIABLE UNDER THE STUDY

The dependent variables:

- Adverse pregnancy outcomes
- Birth outcomes

The independent variables:

- Socio-demographic characteristics
- Women with PCOS, women without PCOS

The extraneous variables:

- Method of conception
- Obstetric factors

TOOLS AND TECHNIQUES

INTERVIEW SCHEDULE

In the initial phase of the study, a pilot study was carried out. The interview schedule was implemented to elicit information. For achieving accurate information, interview was conducted skillfully. Structured and semi structured open ended questions were used to collect required information for the study. The schedule contained two sections.

Section (A): Related to pregnant women with PCOS and without PCOS

7) Socio-demographic characteristics: age, age at menarche, duration of marriage, education, occupation, monthly family income and socio-economic status
8) Anthropometric measurement: pre pregnancy weight, height, pre pregnancy body mass index, weight before delivery and weight gain during pregnancy
9) Biochemical assessment: haemoglobin value, blood pressure and blood glucose value
10) Health status: menstrual cycle, anaemia, hypothyroid, family history of disease
11) Obstetric Factors: obstetric history, length of gestation, type of gestation, type of delivery and mode of delivery
12) 24 hrs. dietary recall

Section (B): Related to neonate born to a women with PCOS and without PCOS

4) Anthropometric assessment: weight, length and head circumference
5) Neonatal Complication: low birth weight, small for gestational age, large for gestational age, jaundice requiring therapy and stay in neonatal intensive care unit
6) Apgar scoring

PATIENT CONSENT

Prior to interview, the purpose and objectives of the study was explained to the respondents. Data collection was performed after consent and all findings were treated with confidentiality. Each respondent was given a separate identity number. To get information from the patients after written consent.

DIAGNOSTIC CRITERIA USED FOR POLYCYSTIC OVARY SYNDROME

Rotterdam criteria (2003) were used for diagnosis of PCOS in respective hospital.

According to the Rotterdam consensus 2003, two of the following three criteria must be fulfilled for the diagnosis:

1. Oligo-ovulation/anovulation
2. Hyperandrogenism
3. USG-Polycystic ovary.

SOCIO-ECONOMIC STATUS:

In the present study to find out socio-economic status of respondent, we used Kuppuswamy's socio- economic status scale-a revision of economic parameter for 2012. To know socio-economic status by total scoring of 3 criteria: 1) education, 2) occupation and 3) monthly family income.

ANTHROPOMETRIC ASSESSMENT:

Anthropometric assessments were used to determine a human being's nutritional and general health status. The most basic of anthropometric measurements are Weight and height. In the present study height and weight of selected women were collected and then BMI (kg/m^2) was calculated. It was derived by dividing weight in kilograms by square of height in meters.

BIOCHEMICAL ASSESSMENT:

All biochemical parameters (hemoglobin value, blood pressure and blood glucose value) were collected from the antenatal card and hospital file.

According to World Health Organization (WHO), cut off point for haemoglobin value for diagnosis of anaemia in pregnant women was <11g/dl.

Gestational diabetes mellitus (GDM) was defined according to American Diabetes Association as fasting blood glucose level ≥95mg/dl and oral glucose tolerance test (75 gm glucose orally administered and plasma glucose measured after 2 hours) ≥155mg/dl.

Pregnancy induced hypertension (PIH) was defined according to American Congress of Obstetricians and Gynecologists as high blood pressure (≥140/90 mmHg) recorded twice or more at first time in pregnancy period.

Preeclampsia was defined according to American Congress of Obstetricians and Gynecologists as high blood pressure (≥140/90 mmHg) and often large amount of protein in the urine (≥300mg/24hrs) after 20 weeks of gestation.

DIETARY INFORMATION:

The basic aim of a dietary survey is to assess the diet of population groups or individuals. To obtain information regarding various aspects of food, 24 hrs dietary recall method was used in the present study.

ANTROPOMETRIC ASSESSMENT OF NEONATE:

Anthropometric measurements (weight, length and head circumference) of neonate were taken from their medical records. Low birth weight was defined as birth weight less than 2500gm. Large for gestational age (LGA) was defined as birth weight above the 90^{th} percentile for gestational age and Small for gestational age (SGA) was defined as birth weight below the 10^{th} percentile for gestational age.

APGAR SCORING:

Evaluation of a new born's physical status by assigning numeric value (0 to 2) to each of the 5 criteria: 1) heart rate, 2) respiratory effort, 3) muscle tone, 4) response to stimulation and 5) skin colour. In this study the recorded score at 5 min of birth has been included.

The Apgar rating is based on a total score of 1 to 10. A score of 7 to 10 is normal and is a sign that the new born is in good health. Any score lower than 7 is a sign that the body needs medical attention.

STATISTICAL ANALYSIS

The statistical tests were used to know the relationship between variables. The z test and t test were used to evaluate difference between continuous variables and chi square test was performed for categorical variables to compare between women with and without PCOS. Statistical software, SPSS version 21.0 and MS Excel 2007 were used for analysis and graphical representation.

HYPOTHESIS

In the present study data have been collected, analyzed and arrived at conclusion under the following hypothesis:

H_{01}: There shall be no significant difference in socio-demographic characteristics of women with and without polycystic ovary syndrome.

H_{02}: There shall be no significant difference in anthropometric assessment of women with and without polycystic ovary syndrome.

H_{03}: There shall be no significant difference in health status of women with and without polycystic ovary syndrome.

H_{04}: There shall be no significant difference in mean nutrient intake of women with and without polycystic ovary syndrome.

H_{05}: There shall be no significant difference in adverse pregnancy outcomes of women with and without polycystic ovary syndrome.

H_{06}: There shall be no significant difference in birth outcomes of women with and without polycystic ovary syndrome.

H_{07}: There shall be no significant difference between pregnancy outcomes and mean nutrient intake of women with and without polycystic ovary syndrome.

5.3 RESULTS

5.3.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS

AGE OF RESPONDENTS

The mean age of women with PCOS (31.26±4.40 years) was found to be more as compared to women without PCOS (29.63± 4.09 years). Statistically, significant difference was observed regarding mean age between the women with PCOS and women without PCOS (z value=2.305, $p<0.05$).

AGE AT MENARCHE

The mean age at menarche of women with PCOS was observed to be slightly more (13.93±1.65) as compared to without PCOS (13.37±1.34). Statistically, significant difference was observed regarding mean age at menarche between the women with PCOS and without PCOS (z value=2.280, $p<0.05$).

DURATION OF MARRIAGE

The mean duration of marriage of women with PCOS was found to be more (7.77±4.75 years) as compared to women without PCOS (5.50±3.65 years). Statistically, significant difference was observed regarding mean duration of marriage between the women with PCOS and without PCOS (z value=3.28, $p<0.01$)

TYPE OF WORK

According to type of work, maximum women with PCOS 89.33% and without PCOS 81.33% were doing sedentary work, followed by 10.67% of women with PCOS and 18.67% of without PCOS were doing moderate work and none of the women with PCOS and without PCOS were doing heavy work. Statistically, no significant association was observed regarding type of work between women with and without PCOS (chi square = 0.924, df = 1, $p > 0.05$).

EDUCATION LEVEL

Maximum percentage of women with PCOS (40.00%) and women without PCOS (41.33%) are educated up to graduate level. Similarly minimum percentage of women with PCOS (12.00%) and women without PCOS (10.67%) are educated up to high school level. Statistically, no significant association was observed regarding the education level between the women with PCOS and without PCOS (chi square = 1.026, df = 3, $p>0.05$).

SOCIO-ECONOMIC STATUS

The percentage of women with PCOS (44.00%) and women without PCOS (50.67%) were from upper middle group, followed by women with PCOS and without PCOS (26.67 vs. 33.33%) from middle group, minimum (9.33% vs. 6.66%) from upper group and none of them were from lower group. Statistically, no significant association was observed regarding socio economic status between the women with PCOS and without PCOS (chi square = 4.150, df = 3, $p>0.05$).

5.3.2 ANTHOPOMETRIC FINDING

HEIGHT

The mean height of women with PCOS (156.57±5.52 cm) was found to be similar as controls (156.70±4.97 cm). Statistically, no significant difference was observed regarding mean height between women with PCOS and without PCOS (z value = 0.152, $p>0.05$).

PRE PREGNANCY WEIGHT

First recorded weight in the antenatal card during this pregnancy was known as pre pregnancy weight. The mean pre pregnancy weight of women with PCOS (64.73±12.43 kg) was found to be more as compared to women without PCOS (59.27±9.21 kg). Statistically, significant difference was observed regarding mean pre pregnancy weight between women with and without PCOS (z value = 3.067, $p<0.05$).

PRE PREGNANCY BMI

Body mass index (BMI) was calculated from first recorded weight in the antenatal card during this pregnancy was known as pre pregnancy BMI. The mean pre pregnancy BMI of women with PCOS (26.08±4.91 kg/m²) was observed to be more as compared to women without PCOS (23.36±3.26 kg/m²). The prevalence of overweight was more in PCOS group as compared to non PCOS group. Statistically, significant difference was observed regarding mean pre pregnancy BMI between women with and without PCOS (z value = 3.997, $p<0.01$).

WEIGHT GAIN DURING PREGNANCY

The mean weight gain during pregnancy of women with PCOS (11.20±4.53 kg) was found to be similar as women without PCOS (12.10±4.22 kg). Statistically, no significant difference was observed regarding mean weight gain during pregnancy between women with PCOS and without PCOS (z value=1.255, $p>0.05$).

5.3.3 HEALTH STATUS

MENSTRUAL CYCLE

Regular menstrual cycle was observed to be less in women with PCOS as compared to women without PCOS (24.00% vs. 57.33%). Statistically significant association was observed regarding the type of menstrual cycle between women with PCOS and without PCOS (chi square = 19.228, df=2, $p<0.01$).

FAMILY HISTORY OF DISEASES

33.33% women with PCOS and 24.00% women without PCOS had family history of diabetes. 18.67% women with PCOS and 13.33% women without PCOS had family history of thyroid. 37.33 % women with PCOS and 33.34% women without PCOS had family history of hypertension. 10.67% women with PCOS and 29.33% women without PCOS had no family history. Statistically, significant association was observed regarding family history of disease between women with and without PCOS (chi square = 8.509, df = 3, $p<0.05$).

ANAEMIA

Cut off point for haemoglobin value for diagnosis of anaemia in pregnant women was <11 g/dl according to WHO. The mean haemoglobin level in women with PCOS was 10.79±1.28where as in women without PCOS group that was 10.43±1.21. None of women was found to have Hb<7 g/dl in PCOS and non PCOS group. 38.67 % of women with PCOS and 45.33 % of women without PCOS were found to have anaemia. Statistically, no significant association was observed regarding anaemia between women with and without PCOS (chi square = 0.682, df = 1, p>0.05).

HYPO THYROID

38.67 % of women with PCOS and 17.33 % of women without PCOS were found to have hypo thyroid. Statistically, significant association was observed regarding hypothyroid between women with and without PCOS (chi square = 8.464, df = 1, p<0.01).

OBSTETRIC HISTORY

Parity referred to the number of times a women has given birth. 81.33% women with PCOS and 52.00% without PCOS were found nulliparous. Only 18.67% women with PCOS and 48.00% without PCOS were found parous. Statistically, significant association was observed regarding parity between women with PCOS and without PCOS (chi square = 14.520, df = 1, p<0.05).

72.00% women with PCOS and 77.33% without PCOS had no previous miscarriage. 28.00% women with PCOS and 22.67% without PCOS had one or more than one previous miscarriage. Statistically no significant association is observed regarding previous miscarriage between women with and without PCOS (chi square = 0.565, df = 1, p>0.05).

METHOD OF CONCEPTION

In PCOS group, 94.67% of women taken treatment for conceive pregnancy and only 5.33% women conceived pregnancy spontaneously. While in non PCOS group 78.67% women conceived pregnancy spontaneously and only 21.33 % women taken the treatment to conceive pregnancy. In term of treatment percentage, among PCOS group majority of them has taken in vitro fertilization (IVF) treatment (52.00%)

followed by medicine treatment (29.33%) and remaining has taken intrauterine insemination (IUI) treatment (13.13%). While among non PCOS group majority of them has taken medicine treatment (13.33%) followed by in vitro fertilization (IVF) treatment (5.33%) and remaining has taken intrauterine insemination (IUI) treatment (2.67%).

LENGTH OF GESTATION

The mean length of gestation of women with PCOS was found to be slightly less (34.17±5.59) as compared to women without PCOS (36.40±3.36). Statistically, significant difference was observed regarding mean length of gestation between the women with and without PCOS (z value = 2.961, $p<0.05$).

SINGLETON AND TWIN PREGNANCY

74.67% women with PCOS and 92.00% women without PCOS had singleton pregnancy. 25.33% women with PCOS and 8.00% women without PCOS had twin pregnancy. Statistically, significant association was observed regarding type of pregnancy between women with and without PCOS (chi square = 10.163, df = 1, $p<0.05$).

5.3.4 NUTRIENT INTAKE

The mean intake of energy, carbohydrate, protein and fat were found to be more among women without PCOS as compare to women with PCOS. While the mean intake of calcium, iron, vitamin C and folic acid were found to be more among women with PCOS as compare to women without PCOS. Statistically significant differences were observed regarding the mean intake of carbohydrate (z value=1.974, $p<0.05$) and fat (z value=2.518, $p<0.05$) between the women with PCOS and without PCOS.

Compared mean nutrients as per Recommended Dietary Allowances (RDA) given by Indian Council of Medical Research (2010). The energy intake was 11.60% deficient among the women with PCOS and 8.11% deficient among the women without PCOS as compared to RDA. The protein intake was 35.28% deficient among the women with PCOS and 35.24% deficient among the women without PCOS as compared to

RDA. The fat intake was 64.13% higher among the women with PCOS and 76.40% higher among the women without PCOS as compared to RDA. The calcium intake was 23.96% deficient among the women with PCOS and 28.90% deficient among the women without PCOS as compared to RDA. The iron intake was 37.14% deficient among the women with PCOS and 41.96% deficient among the women without PCOS as compared RDA. The vitamin C intake was 40.75% deficient among the women with PCOS and 44.88% deficient among the women without PCOS as compared to RDA. The folic acid intake was 35.42% deficient among the women with PCOS and 39.35% deficient among the women without PCOS as compared to RDA.

5.3.5 ADVERSE PREGNANCY OUTCOMES

MISCARRIAGE

The miscarriage rate (all spontaneous losses <20 weeks) was more in women with PCOS 12.00% (9/75) as compared to women without PCOS 2.67% (2/75).

GESTATIONAL DIABETES MELLITUS (GDM)

Gestational diabetes mellitus (GDM) was defined as high blood glucose level (≥95mg/dl for fasting and ≥155 mg/dl for oral glucose tolerance test) in pregnancy period. The mean fasting blood glucose level in women with PCOS was 89.24±12.13mg/dl where as in women without PCOS group that was 84.51±12.66mg/dl. The mean oral glucose tolerance test in women with PCOS was 136.75±19.46mg/dl where as in women without PCOS group that was 127.39±15.36mg/dl.

The prevalence percentage of GDM was more in women with PCOS 30.67% (23/75) as compared to women without PCOS 10.67% (8/75). Statistically, highly significant association was observed regarding Gestational diabetes mellitus between women with PCOS and without PCOS (chi square=9.149, df=1, $p<0.01$).

PREGNANCY INDUCED HYPERTENSION (PIH)

Pregnancy induced hypertension was defined as high blood pressure (≥140/90 mmHg) recorded twice or more at first time in pregnancy period. The mean systolic blood pressure

in women with PCOS was 130.26±17.93mmHg where as in women without PCOS group that was 124.52±13.77mmHg. The mean diastolic blood pressure in women with PCOS was 82.52±10.77mmHg where as in women without PCOS group that was 80.27±9.38mmHg.

The prevalence percentage of pregnancy induced hypertension was more in women with PCOS 28.00% (21/75) as compared to women without PCOS 14.67% (11/75). Statistically, significant association was observed regarding pregnancy induced hypertension between women with PCOS and without PCOS (chi square=3.972, df=1, $p<0.05$).

PREECLAMPSIA

Preeclampsia was characterized by high blood pressure and often large amount of protein in the urine. The prevalence percentage of Preeclampsia was more among women with PCOS 14.67% (11/75) as compared to women without PCOS 8.00% (6/75). Statistically, no significant association was observed regarding Preeclampsia between women with PCOS and without PCOS (chi square=1.659, df=1, $p>0.05$).

INTRAUTERINE GROWTH RESTRICTION (IUGR)

Intrauterine growth restriction was known as condition in which unborn fetus is smaller. The IUGR rate was more in women with PCOS 6.67% (5/75) as compared to women without PCOS 2.67% (2/75).

PRETERM DELIVERY

The prevalence percentage of Preterm delivery (<37 weeks of gestation) was more in women with PCOS 24.00% (18/75) as compared to women without PCOS 9.33% (7/75). Statistically, highly significant association was observed regarding Preterm delivery between women with PCOS and without PCOS (chi square=5.808, df =1, $p<0.05$).

CAESAREAN SECTION

The prevalence percentage of Caesarean Section was more in women with PCOS 69.33% (52/75) as compared to women without PCOS 58.67% (44/75). Statistically,

no significant association was observed regarding caesarean section between women with PCOS and without PCOS (chi square=1.852, df =1, p>0.05).

AGE AND ADVERSE PREGNANCY OUTCOMES

Among older (age>30 yrs) women group, the incidence of Gestational diabetes mellitus was significantly higher in women with PCOS as compared to women without PCOS (chi-square value=4.665; p<0.05). The incidence of Pregnancy induced hypertension was significantly higher in women with PCOS as compared to women without PCOS (chi-square value=3.853; p<0.05). The incidence of preeclampsia was higher in women with PCOS as compared to women without PCOS. The incidence of pre term delivery and cesarean section were higher in women with PCOS as compared to women without PCOS, but not significant.

OVERWEIGHT AND ADVERSE PREGNANCY OUTCOMES

Among overweight (BMI ≥ 25) women group, the incidence of Gestational diabetes mellitus was higher in women with PCOS as compared to women without PCOS, but not significant (chi-square value=1.887; p>0.05). The incidence of Pregnancy induced hypertension was significantly higher in women with PCOS as compared to women without PCOS (chi-square value=3.849; p<0.05). The incidence of preeclampsia was similar in both groups. The incidence of pre term delivery was higher in women with PCOS as compared women without PCOS. The incidence of cesarean section was higher in women with PCOS as compared to women without PCOS, but not significant (chi-square value=1.218; p>0.05).

5.3.6 BIRTH OUTCOMES

ANTROPOMETRIC FINDING OF NEONATE

Among singletons the mean weight of neonates was not statistically significant between PCOS and non PCOS group (p>0.05). The mean length of neonates was not statistically significant between PCOS and non PCOS group (p>0.05). The mean head circumference of neonates was not statistically significant between both groups (p>0.05).

Among twins the mean weight of neonates was not statistically significant between PCOS and non PCOS group ($p>0.05$). The mean length of neonates was not statistically significant between PCOS and non PCOS group ($p>0.05$). The mean head circumference of neonates was not statistically significant between both group ($p>0.05$).

NEONATAL OUTCOMES

The incidence of low birth weight was observed to be more in neonates born to women with PCOS as compared to women without PCOS (37.18% vs. 18.98%). The prevalence of small for gestational age (SGA) was higher in neonates born to women with PCOS as compared to women without PCOS (2.56% vs. 1.26%). Neonates born to women with PCOS were more prone to be large for gestational age (LGA) as compared to women without PCOS (3.84% vs. 1.26%). 2.56% of neonates born to women with PCOS having a low Apgar score at five minutes. 24.36% of neonates born to the women with PCOS as compared to 17.2% in women without PCOS needed Jaundice requiring therapy. 35.90% of neonates born to women with PCOS as compared to 11.39% in women without PCOS needed neonatal intensive care unit (NICU) admission.

3.7 NUTRIENT INTAKE AND ADVERSE PREGNANCY OUTCOMES

CARBOHYDRATE INTAKE AND ADVERSE PREGNANCY OUTCOMES

The mean carbohydrate intake of women having Gestational diabetes mellitus was significantly similar in women with and without PCOS. However mean carbohydrate intake was significantly higher in women having gestational diabetes mellitus as compare to not having gestational diabetes mellitus in PCOS and non PCOS group ($p<0.05$, $p<0.05$ respectively). The mean carbohydrate intake of women having preterm delivery was significantly lower in women with PCOS as compare to women without PCOS ($p<0.05$). The mean carbohydrate intake was statistically similar in women having pregnancy induced hypertension, preeclampsia and cesarean section in PCOS and non PCOS group.

PROTEIN INTAKE AND ADVERSE PREGNANCY OUTCOMES

The mean protein intake was statistically similar in women having Gestational diabetes mellitus, pregnancy induced hypertension, preeclampsia, preterm delivery and cesarean section in women with and without PCOS.

FAT INTAKE AND ADVERSE PREGNANCY OUTCOMES

The mean fat intake was statistically similar in women having Gestational diabetes mellitus, pregnancy induced hypertension, preeclampsia, preterm delivery and cesarean section in women with and without PCOS. However, the mean fat intake was significantly lower in women not having either pregnancy induced hypertension or preeclampsia in PCOS group as compare to non PCOS group ($p<0.05$).

5.4 CONCLUSION

Hypothesis H_{o1}- "There shall be no significant difference in socio-demographic characteristics of women with and without polycystic ovary syndrome" is partially rejected. The results suggest that statistically significant difference was observed regarding age, age at menarche and duration of marriage between women with and without polycystic ovary syndrome. While statistically no significant difference was observed regarding education level and socio-economic status between women with and without polycystic ovary syndrome.

Hypothesis H_{o2}- "There shall be no significant difference in anthropometric assessment of women with and without polycystic ovary syndrome" is partially rejected. Statistically significant difference was observed regarding pre pregnancy weight and body mass index between women with and without polycystic ovary syndrome. While statistically no significant difference was observed regarding height and weight gain during pregnancy between both groups.

Hypothesis H_{o3}- "There shall be no significant difference in health status of women with and without polycystic ovary syndrome" is partially rejected. Statistically significant difference was observed regarding menstrual cycle, family history of diseases, hypothyroid, parity, length of gestation and type of gestation between women with and without polycystic ovary syndrome. While statistically no significant

association was observed regarding anaemia and previous miscarriage in women between both groups.

Hypothesis H_{o4}- "There shall be no significant difference in mean nutrient intake of women with and without polycystic ovary syndrome" is partially rejected. Statistically significant difference was observed regarding mean intake of carbohydrate and fat between women with and without PCOS. While statistically no significant difference was observed regarding mean intake of energy, protein, calcium, vitamin C, iron and folic acid between both groups.

Hypothesis H_{o5}- "There shall be no significant difference in adverse pregnancy outcomes of women with and without polycystic ovary syndrome" is rejected. The results suggest that risk of Gestational diabetes mellitus (GDM), Pregnancy induced hypertension (PIH) and preterm delivery were significantly higher among women with polycystic ovary syndrome as compared women without polycystic ovary syndrome.

Hypothesis H_{o6}- "There shall be no significant difference in birth outcomes of women with and without polycystic ovary syndrome" is accepted. Statistically no significant difference was observed regarding mean anthropometric measurements (weight, length and head circumference) of neonate between both groups. The incidence of low birth weight, small for gestational age (SGA), large for gestational age (LGA), low Apgar score, jaundice required therapy and stay in neonatal intensive care unit (NICU) were higher among neonate born to a women with PCOS as compared to women without PCOS, however the number in each group were small.

Hypothesis H_{o7}- "There shall be no significant difference between pregnancy outcomes and mean nutrient intake of women with and without polycystic ovary syndrome" is partially rejected. The results suggest that statistically significant difference was observed between pregnancy outcomes and mean carbohydrate and mean fat intake of women with and without polycystic ovary syndrome. While statistically no significant difference was observed between pregnancy outcomes and mean protein intake of women with and without polycystic ovary syndrome.

5.5 RECOMMENDATIONS

In the present study following recommendations are suggested considering the results and observations obtained about polycystic ovary syndrome and its effect on pregnancy outcomes.

The recommendations if found to be worthy and are implemented shall certainly improve health status of pregnant women and reduce the risk of adverse pregnancy outcome.

1. Counseling of adolescent girl to educate them about reproductive health.
2. More and more awareness must be spread among females via articles, research paper and workshop regarding polycystic ovary syndrome & how they can reduce the risk of getting affected by PCOS.
3. A treatment guideline including referral instruction is to be prepared and available to the health professional so that they can identify gestational diabetes mellitus, pregnancy induced hypertension as well as make a proper diet plan for pregnant women with PCOS.
4. Investigator should continue to consider women with PCOS to be at high risk and monitor them closely. Particular attention needs to be given to the women who are diagnosed early to develop gestational diabetes mellitus, pregnancy induced hypertension and preeclampsia.

5.6 LIMITATIONS OF THE STUDY

1. Sample size was limited.
2. Area of study was restricted to Indore city.
3. Multiple pregnancies were not part of the study.
4. Researcher could not find association between neonatal complication and polycystic ovary syndrome, because number in each group was small.

5.7 SUGGESTIONS FOR FUTURE STUDY

1. Such type of study should be conducted on the large number of subjects.
2. Weight reducing therapies such as exercise and dietary interventions study should be carried out among women with PCOS to determine what will be the effect of weight loss on their infertility.
3. Similar study should be conducted in singleton ongoing pregnancy.
4. A study may be conducted on pregnancy associated complications of polycystic ovary syndrome in line of type of treatment.
5. An additional study needs to be taken up to measure the association of all neonatal complication with polycystic ovary syndrome.