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A CROSS - SECTIONAL STUDY ON CORRELATION OF POSTPARTUM WEIGHT GAIN AND METABOLIC SYNDROME WITH OVULATORY DYSFUNCTION IN SECONDARY INFERTILITY

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ABSTRACT

Background: Secondary infertility is a significant reproductive health problem affecting women of child bearing age. Ovulatory dysfunction is one of the leading causes of secondary infertility and is frequently associated with metabolic abnormalities. Postpartum weight gain and metabolic syndrome, characterized by obesity, hypertension, diabetes mellitus, and insulin resistance, may adversely affect ovarian function through hormonal and metabolic disturbances. Early identification of these modifiable risk factors may improve fertility outcomes. This study was undertaken to evaluate the correlation of postpartum weight gain and metabolic syndrome with ovulatory dysfunction among women presenting with secondary infertility.

KEYWORDS: Secondary infertility, postpartum weight gain, metabolic syndrome, ovulatory dysfunction, obesity, hypertension, diabetes mellitus, cross - sectional study.

INTRODUCTION

Secondary infertility is a growing concern among women of reproductive age, especially in the modern era where lifestyle, dietary habits and metabolic health are undergoing major shifts.

Secondary infertility refers to the inability to conceive or carry a pregnancy to term after having previously given birth.

Several physiological and lifestyle-related factors contribute to secondary infertility, among which postpartum weight gain and metabolic syndrome play a crucial role.

Postpartum weight gain is one of the significant contributors that predisposes women to metabolic syndrome, characterized by insulin resistance, hyperglycemia, dyslipidemia, central obesity. These metabolic alterations lead to ovulatory dysfunction, which is a major cause of infertility. Ovarian dysfunction often results from altered activity of the HPO axis due to metabolic disturbances.

REVIEW OF LITERATURE

Secondary infertility contributes significantly to infertility burden worldwide.
Studies have shown that postpartum weight retention increases the risk of obesity and insulin resistance.

Metabolic syndrome is associated with hyperinsulinemia, altered lipid metabolism, hypertension, and impaired ovarian function.

Previous research suggests that obesity and metabolic syndrome increase the incidence of anovulation, but limited studies have specifically evaluated their relationship in women with secondary infertility.

METHODOLOGY

- **Study Design**: Cross-sectional study.
- **Study Setting**: Department of Prasuti Tantra Evum Street Roga of Shri Baba Mastnath Ayurvedic College
- **Study Population**: Women aged 20-40 years with secondary infertility (failure to conceive after 12 months of unprotected Intercourse following at least one prior live birth)

- **Sample Size**: 100 participants
- **Inclusion criteria**:

1. Age group (women aged 20-40 years).
2. Documented previous pregnancy (live birth, miscarriage or ectopic pregnancy), regardless of outcome.
3. Current infertility: Inability to conceive after 12 months (or 6 months if age >35) of regular, unprotected sexual intercourse.
4. Willing participants

- **Exclusion criteria**

1. Primary Infertility (no prior conception ever)
2. Known irreversible infertility(e.g., hysterectomy, bilateral tubal ligation, azoospermia with no sperm retrieval option).
3. Severe systemic illness preventing conception or pregnancy.
4. Unwillingness to participate or provide consent.

- **Data Collection**

1. Patient information
2. Anthropometric Data
3. Dincharya (Daily Routine)
4. Ahar(Dietary Habits)
5. Nidra (Sleep Pattern)
6. Mansika Bhava(Mental and Emotional Health)
7. Lifestyle and Habits
8. Reproductive and Obstetrics History
9. Postpartum weight gain data
10. Assessment for metabolic syndrome - Fasting plasma glucose, Lipid profile, Serum TSH , Blood pressure
11. Assessment for ovulatory dysfunction - Clinical hyperandrogenism , Hormonal test , Ultrasound findings
12. Current Medication history - Hypothyroidism/ Diabetes mellitus/Hypertension/Dyslipidemia

- **Statistical Analysis**

1. Data was analysed using SPSS

2. Correlation between postpartum weight gain, metabolic syndrome and ovulatory dysfunction was evaluated using Pearson's or Spearman's correlation coefficient.

3. P-value <0.05 was considered statistically significant.

RESULT

The present cross-sectional study was conducted to evaluate the correlation of postpartum weight gain and metabolic syndrome with ovulatory dysfunction among women with secondary infertility. A total of 100 women fulfilling the inclusion criteria were enrolled in the study. The collected data were analyzed and are presented below in the form of tables and figures.

Table 1: Distribution of Study Participants Based on Clinical Characteristics.

S.No.	Postpartum weight gain	Hypertension	Diabetes Mellitus	Obesity (BMI≥30kg/m2)	Ovulatory dysfunction	Number of patient
1.	✔□	✔□	✔□	✔□	✔□	21
2.	✔□	✔□	✔□	□	✔□	15
3.	✔□	✔□	□	✔□	✔□	10
4.	✔□	□	✔□	✔□	□	13
5.	✔□	□	✔□	✔□	✔□	7
6.	□	✔□	✔□	□	□	3
7.	✔□	□	□	□	✔□	2
8.	✔□	□	□	□	□	2
9.	✔□	✔□	✔□	□	□	6
10.	□	✔□	✔□	□	✔□	5
11.	✔□	□	✔□	□	□	4
12.	✔□	□	□	✔□	✔□	8
13.	✔□	□	✔□	□	✔□	4
					TOTAL	**100**

✔□ = Present, □ = Absent

Table 1: Distribution of Study Participants According to Clinical Profile of Postpartum Weight Gain, Metabolic Syndrome Components, and Ovulatory Dysfunction (n = 100)

FIGURE 1

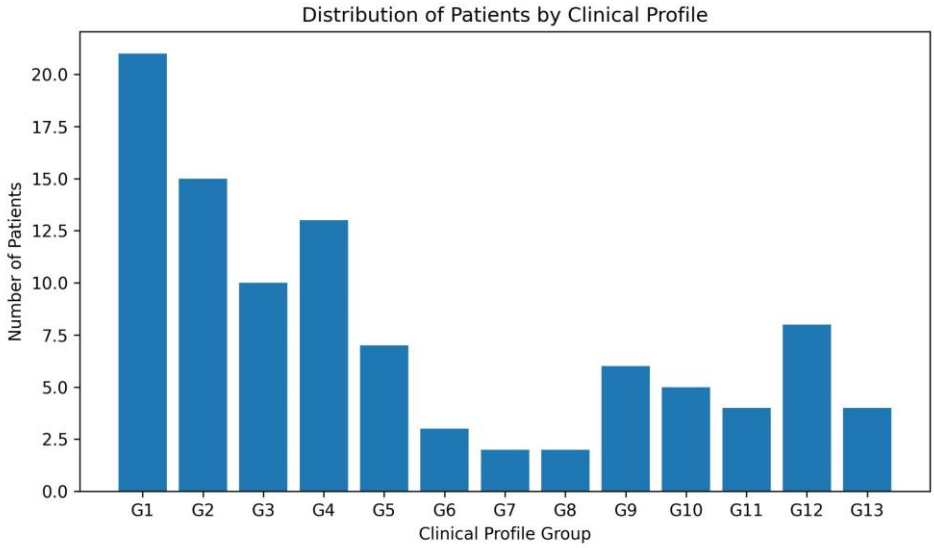


Figure 1: Distribution of patients according to different clinical profiles of postpartum weight gain, metabolic syndrome components, and ovulatory dysfunction (n = 100).

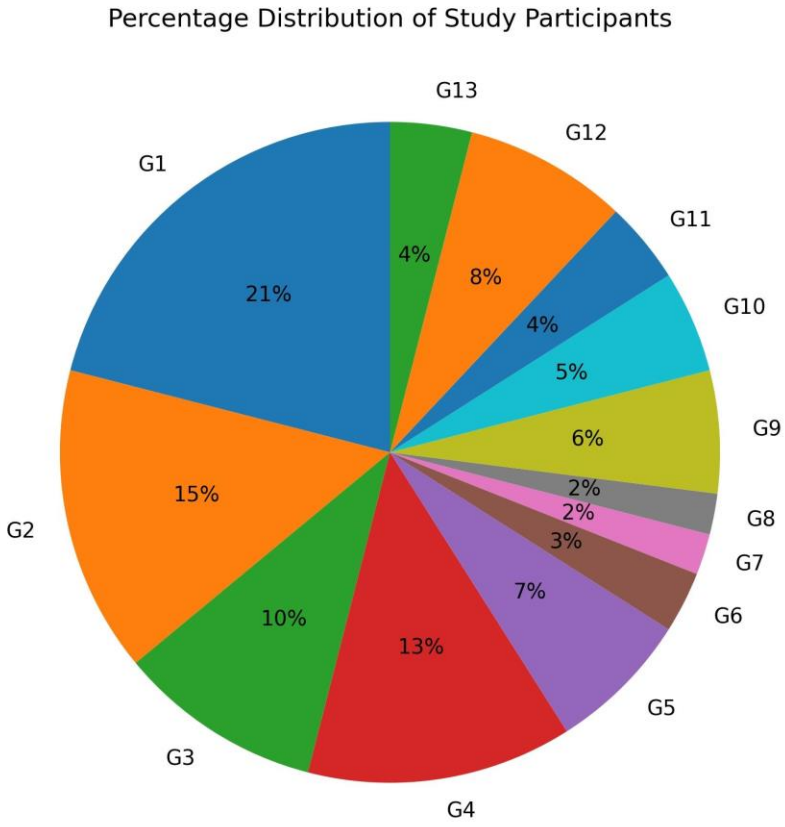


Figure 2: Percentage distribution of study participants according to different clinical profiles (n = 100).

Table 2: Association Between Postpartum Weight Gain and Ovulatory Dysfunction.

Variable	Number
Weight gain + Ovulatory dysfunction	67
Weight gain + No ovulatory dysfunction	25
No weight gain + Ovulatory dysfunction	5
No weight gain + No ovulatory dysfunction	3

Interpretation: Ovulatory dysfunction was more common among women with postpartum weight gain than among those without postpartum weight gain.

Table 3: Association Between Metabolic Syndrome Components and Ovulatory Dysfunction.

Variable	Ovulatory Dysfunction	No Ovulatory Dysfunction
Hypertension	51	9
Diabetes Mellitus	52	26
Obesity	46	13

Interpretation: Ovulatory dysfunction was more frequently observed in women with hypertension, diabetes mellitus, and obesity.

Table 4: Summary of Major Findings.

Finding	Result
Sample size	100
Postpartum weight gain	92%
Hypertension	60%
Diabetes mellitus	78%
Obesity	59%
Ovulatory dysfunction	72%

DISCUSSION

The present study demonstrates that postpartum weight gain and metabolic syndrome are significantly associated with ovulatory dysfunction among women with secondary infertility.

Increased body weight after childbirth contributes to insulin resistance, hormonal imbalance, and chronic inflammation, leading to impaired ovulation.

These findings are consistent with previous studies reporting obesity and metabolic syndrome as important modifiable risk factors for infertility.

Early screening and lifestyle modification may improve reproductive outcomes.

CONCLUSION

This study concludes that postpartum weight gain and metabolic syndrome show a significant positive correlation with ovulatory dysfunction in women with secondary infertility.

Identification of these modifiable risk factors enables early intervention through weight reduction, dietary modification, regular physical activity, and metabolic control, thereby improving ovulatory function and fertility outcomes.

Scope for Future Work

- Conduct multicentric studies with a larger sample size.
- Perform prospective cohort studies to establish causal relationships.
- Evaluate the effect of weight reduction and lifestyle interventions on restoration of ovulation.
- Assess long-term reproductive outcomes after management of metabolic syndrome.

Outcomes of the Project & Significance

Outcomes

- Determined the prevalence of postpartum weight gain among women with secondary infertility.
- Assessed the prevalence of metabolic syndrome in the study population.
- Evaluated the frequency of ovulatory dysfunction.
- Established the correlation between postpartum weight gain and ovulatory dysfunction.
- Determined the association between metabolic syndrome and ovulatory dysfunction.

Significance

- Highlights postpartum weight gain and metabolic syndrome as important modifiable risk factors for secondary infertility.
- Supports routine metabolic screening in women presenting with secondary infertility.
- Promotes early lifestyle modification, weight management, and metabolic control to improve fertility outcomes.
- Provides evidence that may assist clinicians in planning preventive and therapeutic strategies.
- Serves as a reference for future research on metabolic factors affecting female infertility.