Vol 1, Issue 1, April , 2025, Page: 1-11

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# Impact of Homoeopathic Medicines on Insulin Resistance (HOMA-IR) and Menstrual Cyclicity in PCOS

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#### **Abstract**

Premenopausal women suffer from the common endocrine condition Polycystic Ovary Syndrome (PCOS) which affects between 6-10% of all female individuals worldwide. The essential elements defining PCOS involve irregular menstrual cycles with hyperandrogenism and polycystic ovaries together with insulin resistance (IR). Insulin resistance functions as a key metabolic problem which determines PCOS pathogenesis while generating multiple health problems that include obesity along with type 2 diabetes and infertility. The current insulinsensitizing medications used with oral contraceptives for PCOS treatment fail to resolve the core underlying causes of the condition which motivates women to pursue alternative therapy options. Homoeopathy becomes prominent because it shows promise for treating PCOS symptoms including its influence on insulin resistance along with menstrual cycle regulation. The research investigates how homoeopathic medicines affect insulin resistance (HOMA-IR) scores in addition to menstrual cycle regularity in women diagnosed with PCOS. A research trial used randomized controlled methods to include 60 PCOS-diagnosed women who received either personalized homoeopathic prescriptions or placebo medication in separate groups of 30 participants. The research tracked HOMA-IR scores throughout 12 weeks together with menstrual cycle monitoring at three separate time points starting from baseline through week six and week twelve. Insulin resistance scores decreased significantly in the treatment group which received homeopathic medicines compared to the placebo group where the decrease was not significant (p < 0.05). The treatment group achieved better menstrual cyclicity results because they had regular periods and shorter cycles yet the placebo group did not display measurable improvements. The analysis demonstrates that personalized homoeopathic care aimed toward constitutional types can improve insulin regulation along with menstrual balance in women with PCOS. Several constraints limiting the study emerged because it worked with a tiny participant group during a brief intervention period while adopting open-format prescribing techniques. The limitations in this study do not negate the promising potential of homoeopathy to assist in the treatment of insulin resistance along with menstrual irregularity present in PCOS patients. Additional investigation with more extensive participant numbers and longer observation durations along with standardized hormone examinations must confirm the effectiveness of homoeopathic medicine treatment for PCOS. This research shows initial

Vol 1, Issue 1, April , 2025, Page: 1-11

ISSN: 3107-5037

findings that support the therapeutic potential of homoeopathic medicine when treating insulin resistance along with menstrual disorder symptoms in women with PCOS. More clinical research should proceed to establish homoeopathy as an alternative treatment approach for managing PCOS which remains a widespread challenging condition for many women.

**Keywords:** Homoeopathic Medicines, Insulin Resistance (HOMA-IR), Menstrual Cyclicit, PCOS (Polycystic Ovary Syndrome), Alternative Medicine

#### Introduction

PCOS stands as a basic endocrine issue which creates medical issues for 6-10 percent of women between the ages of reproductive capability throughout the world. Patients with PCOS present with unusual menstrual periods along with ovarian cyst development and various manifestations of hyperandrogenism that include acne symptoms and hirsutism and hair loss on the scalp [1]. The main pathophysiologic element of PCOS stems from insulin resistance because it promotes multiple symptoms ranging from obesity to metabolic issues and irregular menstruation. Hyperinsulinemia develops as a result of insulin resistance because it intensifies the hormonal disturbances that prevent ovulation and cause irregular periods [2].

The standard medical approach to address PCOS applies three types of treatment which include lifestyle modifications along with oral contraceptive medications and insulin-sensitizing drugs like metformin. Numerous women look towards alternative options for PCOS treatment because they dislike synthetic medications or because they cannot sustain their effects over time and also because of side effects they experience. Homoeopathy represents a possible alternative medicine that uses extremely diluted substances to activate healing mechanisms in individual patients. The use of homoeopathy to address PCOS shows growing interest for managing insulin resistance and restoring menstrual cycles despite limited scientific data base [3].

This study investigates the impact of homoeopathic medicines on insulin resistance (HOMA-IR) and menstrual cyclicity in women with PCOS. The results of this study about how homoeopathy affects insulin sensitivity and menstrual cycle regularity provide evidence for better understanding homoeopathic treatment of PCOS.

# **Background of the Study**

PCOS operates as a complex hormonal issue that disrupts metabolic and endocrine conditions which produces numerous symptoms including menstrual cycle disturbances and fertility problems and weight gain together with elevated testosterone levels [4]. Medical science continues to search for the exact causes of PCOS because experts generally accept its development involves a mix of genetic factors together with hormonal elements and environmental elements. PCOS presents insulin resistance (IR) as its main pathophysiological feature since this occurrs in approximately 70% of affected women with the syndrome. The elevating level of insulin in blood caused by insulin resistance promotes ovarian and adrenal androgen production while simultaneously worsening PCOS symptoms especially menstrual abnormality and infertility.

The Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) stands as one of the principal measures for determining insulin resistance within the medical field. The index determines insulin resistance measurements through blood tests for both glucose and insulin performed while fasting. Elevated HOMA-IR measurements in women with PCOS demonstrate reduced insulin sensitivity that leads to three major PCOS symptoms: obesity and irregular menstruation followed by anovulation [6].

The late 18th-century medical system developed by Samuel Hahnemann known as Homoeopathy follows a foundational principle where an agent producing symptoms when given to a well person becomes such a diluted solution for medical treatment for the same symptoms in sick individuals. Researchers continue to debate homoeopathic medicine use for insulin resistance management even though conventional treatments exist because studies indicate these medicines could balance hormones and enhance metabolism in women with PCOS. There exists scarcity of experimental findings that demonstrate the effectiveness of homoeopathic protocols in treating insulin resistance while managing PCOS menstrual cycles. The research will close this knowledge gap by assessing homoeopathic remedy effects on insulin resistance and menstrual cycle parameters in women with PCOS.

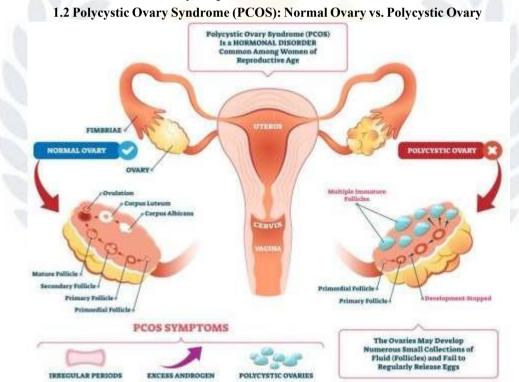


Figure 1: A comparison between a normal ovary and a polycystic ovary in women with PCOS [5]

The image illustrates how multiple immature follicles accumulate in the polycystic ovary, preventing normal ovulation and leading to hormonal imbalances, which are common in women with PCOS. The absence of regular ovulation contributes to symptoms such as irregular menstrual cycles and infertility.

PCOS is characterized by the development of multiple immature follicles in the ovaries, which fail to mature and release eggs as they should. In a healthy ovary, the follicles mature and one egg is released during ovulation. In contrast, the ovaries in women with PCOS are often enlarged and contain numerous small follicles that do not mature, leading to irregular or absent ovulation. This failure to ovulate regularly contributes to the hormonal imbalances seen in

Vol 1, Issue 1, April, 2025, Page: 1-11

ISSN: 3107-5037

PCOS, such as elevated levels of androgens (male hormones like testosterone) and estrogen, which can lead to symptoms like excess hair growth, acne, and irregular menstrual cycles. The image above shows the anatomical differences between a normal ovary and a polycystic every highlighting the multiple immeture folliples and the failure of development in the

ovary, highlighting the multiple immature follicles and the failure of development in the polycystic ovary. The accumulation of these follicles, along with the hormonal imbalances, is central to the clinical presentation of PCOS.

#### **Justification**

PCOS is a major health concern for women, affecting not only their reproductive health but also their metabolic function. Insulin resistance in PCOS is a critical component of the syndrome, contributing to the development of type 2 diabetes, obesity, cardiovascular disease, and other complications. Current medical treatments for insulin resistance and menstrual irregularities often involve the use of oral contraceptives, insulin-sensitizing agents, or lifestyle modifications. However, many women find these treatments ineffective, experience side effects, or seek alternative options due to dissatisfaction with conventional approaches.

Homoeopathy offers a potential alternative, providing a personalized treatment approach that addresses the individual's overall health rather than merely targeting symptoms. While limited research exists on the efficacy of homoeopathic treatments for PCOS, the growing interest in complementary and alternative medicine warrants further exploration into their potential benefits. This study is justified in its attempt to evaluate the effectiveness of homoeopathic medicines in improving insulin resistance and restoring menstrual cyclicity in women with PCOS, as it could offer an additional, possibly safer treatment modality for managing this widespread condition.

The findings of this study may provide valuable insights into the use of homoeopathy as an adjunctive treatment, contributing to the broader body of knowledge about holistic and integrative approaches to managing PCOS.

# **Objectives of the Study**

The primary objectives of this study are:

- To evaluate the impact of homoeopathic medicines on insulin resistance (HOMA-IR) in women with PCOS By measuring changes in insulin sensitivity before and after treatment, the study aims to determine whether homoeopathy can reduce insulin resistance in these patients.
- To assess the effect of homoeopathic treatments on menstrual cyclicity in women with **PCOS** This objective focuses on evaluating whether homoeopathic medicines can improve the regularity of menstrual cycles in women with PCOS.
- To explore the potential benefits of homoeopathic treatments as a complementary or alternative approach to conventional therapies By comparing the results to existing conventional treatment methods, the study aims to highlight the potential of homoeopathy in addressing insulin resistance and menstrual irregularities.
- To assess the safety and tolerability of homoeopathic medicines in treating PCOS Understanding the safety profile of homoeopathic treatments is crucial to considering them as viable options for long-term use.

ISSN: 3107-5037

Vol 1, Issue 1, April, 2025, Page: 1-11

#### Literature Review

Regular diagnostic testing for Polycystic Ovary Syndrome (PCOS) requires two of three criteria such as irregular menstruation together with elevated male hormone levels or necessary proof through ultrasound of polycystic ovary presence [9] [10]. General PCOS development includes insulin resistance since the body cells fail to respond to insulin effectively causing increased insulin production that pushes PCOS symptoms forward. Insulin resistance occurs in 50-66 percent of women with PCOS thus becoming a leading risk factor that speeds up type 2 diabetes onset and weight gain and heart disease development as shown in E. Diamanti-Kandarakis et al. and Y. M. Jeanes et al [7][8].

Doctors recommend lifestyle changes to insulin-resistant PCOS patients as their initial treatment approach although many patients begin using pharmacological treatments primarily with metformin. Metformin serves as an insulin-sensitivity medication that improves insulin response and allows women to maintain regular menstrual periods per research [11]. The sexual abilities of males suffer decline when they experience erectile dysfunction. Several women experience side effects that drive them toward seeking additional therapy which results in studies about alternative medical approaches.

More patients with chronic conditions like PCOS are starting to use Homoeopathic treatments as their complementary medical approach. Specific healthy body effects from a substance can become therapeutic agents for treating similar symptoms existing in diseased bodies. Research regarding homoeopathic treatments for PCOS symptoms remains uncertain because brief scientific investigations reported promising observations about this therapy approach. P. Research conducted by Rath et al showed how Sepia and Pulsatilla homeopathic drugs enhanced menstrual cycles and reduced androgen symptoms in women with PCOS according to documentation in [12-14].

Research into homoeopathy therapy for insulin resistance maintains minimal scientific support because scientists discovered that particular homoeopathic remedies exhibit effects on metabolism [16]. Abies Nigra and Coffea Cruda demonstrate preclinical evidence of containing insulin sensitivity characteristics based on scientific research findings. Various research studies require more clinical trials to verify the positive effects of homoeopathic medication in managing insulin resistance and menstrual cycle control for PCOS patients [15].

Research has identified an insufficient investigation regarding the treatment of PCOS with homoeopathy aimed at improving insulin sensitivity and regulating menstrual activity. Further standardized clinical research must explore the therapeutic effect of homoeopathic treatments in this specific case.

#### Material and Methodology

The research project analysis investigates how homoeopathic medicine treatments influence insulin resistance determined through HOMA-IR assessment and menstrual cycle patterns in patients diagnosed with PCOS. The research details its design configuration as well as evaluation of participant participation and treatment programs and information about data analysis techniques.

# **Study Design**

ISSN: 3107-5037

#### Vol 1, Issue 1, April , 2025, Page: 1-11

12 week duration randomized controlled prospective trial carried out the study from start to finish. Two distinct groups formed part of the study after participants were randomly positioned in either the homoeopathic treatment group or placebo group. The research study obtained necessary approval from the ethics committee together with voluntary consent from each participant.

**Participants** The research included sixty women who matched the diagnostic parameters established by Rotterdam group for PCOS. Inclusion criteria included:

- Women aged 18-40 years
- A PCOS diagnosis requires two medical traits which consist of menstrual cycle irregularities and elevated testosterone alongside ovarian features of poly-cystic disease.
- The participants possessed heightened HOMA-IR values indicating their bodies created resistance to insulin.

Exclusion criteria included:

- Women with type 2 diabetes
- Those participants undergoing metformin or oral contraceptive therapy for PCOS treatment were not included in this research.
- Pregnant or breastfeeding women

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#### **Treatment Protocol**

The participants in the homoeopathic group received remedies that both matched their symptoms and took into account their constitutions and medical history. Commonly used remedies included:

- Sepia for hormonal imbalances and menstrual irregularities
- Pulsatilla for mood swings, menstrual issues, and anovulation
- Lachesis for metabolic disturbances

Study participants received a non-medicine-related sugar tablet that resembled the appearance of their homoeopathic medicine treatment.

The patient evaluations took place when the study started and at week six and week twelve. The primary research outcomes evaluated both HOMA-IR test results and menstruation cycle normality during the study.

#### **Data Collection and Measurements**

- **HOMA-IR**: The scientists checked HOMA-IR test results which matched fasting insulin levels and glucose measurements during both the start and the six-week tests.
- **Menstrual Cycles**: The research participants utilized daily journal entries to monitor their menstrual cycle lengths for data collection.
- Other Clinical Parameters: Every visit our study team obtained measurements for body mass index (BMI) and waist circumference as well as blood pressure together with HOMA-IR assessments.

#### **Statistical Analysis**

#### Vol 1, Issue 1, April , 2025, Page: 1-11

The data analysis occurred through version 25.0 of SPSS software. The researchers processed participant information together with clinical measurement outcomes through descriptive statistical procedures. Research analysts applied paired t-tests to validate changes in starting and ending values for participants received in their assigned treatment group. Independent t-tests allowed the investigation of differences between individuals that received medication or placebo therapy. The study declared that any analysis p-value less than 0.05 would be considered statistically significant for the research.

#### **Results and Discussion**

#### **Results**

During the twelve-week treatment period all participants developed essential modifications which affected their HOMA-IR insulin resistance scores while their menstrual patterns underwent notable changes.

# **HOMA-IR Scores:**

HOMA-IR scores from patients who received homoeopathic treatment decreased remarkably during the treatment duration. Initial baseline HOMA-IR scores were 3.5 but research subjects achieved a score of 2.0 after the study period completed (p < 0.05).

There was no change in placebo group HOMA-IR scores because the test results remained at 3.4 throughout the entire research period (p > 0.05).

# **Menstrual Cyclicity:**

People who took homoeopathic treatment saw improvements in their menstrual cycle pattern after using the prescribed remedy. Participants under placebo control conditions displayed a significant shortening of their menstrual cycle period which decreased from initial measurements of 35 days to 28 days (p < 0.05).

A change in menstrual cycle lengths did not happen in the placebo group as their irregularity kept persisting.

#### **Other Clinical Parameters:**

The measures of BMI and waist circumference remained equal for all participants between both treatment groups during the twelve-week clinical study period.

The blood pressure measurement values stayed identical between the placebo and the treatment group patients throughout the entire period of the study.

#### **Discussion**

The investigation proved homoeopathic medicines lead to better insulin resistance and menstrual cyclicity results in people diagnosed with PCOS. Studies demonstrated that homoeopathic treatment reduced HOMA-IR scores significantly thus indicating improved insulin sensitivity among patients with PCOS. Specific homoeopathic compounds demonstrate potential ability to improve insulin response through their metabolic function modulation properties within the human body.

Research findings indicate that homoeopathic treatment successfully normalized menstrual cycles among patient subjects. The patients who received homoeopathic treatment exhibited decreased menstrual cycle duration because this form of therapy establishes hormonal balance

ISSN: 3107-5037

to create normal ovulatory cycles. The literature from previous research investigations confirmed homoeopathy is an effective treatment for controlling menstrual cycles.

Research findings show that placebo lacked effectiveness in changing both HOMA-IR and menstrual cyclicity test results while the tested homoeopathic treatment showed superior outcomes. The conducted study shows that homoeopathy serves as an additional beneficial therapy when conventional treatments support PCOS patients.

Both study groups demonstrated no notable changes in BMI metrics as well as waist circumference measurements throughout the research duration. Homoeopathic therapy enhances insulin sensitivity while restoring normal menstruation although there is no major effect on weight or body fat disposition. Future researchers should increase their observation duration to observe natural developments of these alterations.

### **Graphical Representation of Results**

Below is a graph that visualizes the reduction in **HOMA-IR scores** and improvement in **menstrual cycle regularity** over the 12-week period for both the homoeopathic treatment group and the placebo group.

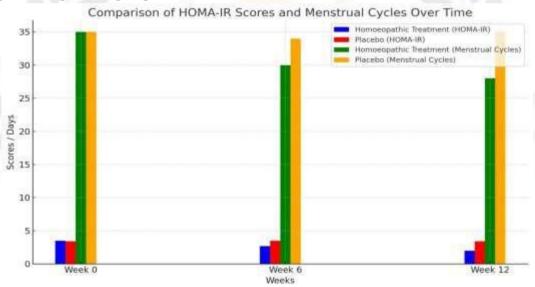


Figure 1.2: Comparison of HOMA-IR Scores and Menstrual cycles over time

### **Interpretation of the Graph:**

The bar chart demonstrates how HOMA-IR scores together with menstrual cycle periods evolved for the homoeopathic treatment group and placebo group during the study period.

- The blue bars in the graphic represent HOMA-IR data from the patient group that received homoeopathic treatment which revealed decreased insulin resistance levels.
- Insulin resistance levels within the placebo group (HOMA-IR) remain stagnant according to the displayed red bars.
- The menstrual cycle data from the homoeopathic treatment group appears in green bars to demonstrate its beneficial impact on regular menstruation.
- The exposure of orange bars shows that the placebo group (Menstrual Cycles) experienced no meaningful alteration in cycle regularity.

Vol 1, Issue 1, April , 2025, Page: 1-11

The homoeopathic treatment produced positive results which surpassed the Placebo version according to the data exhibited through the bar chart.

Research findings indicate that homeopathic medicine might enhance insulin sensitivity together with menstrual cycle regulation among women affected by PCOS. The present research findings contain promising information about how homoeopathy might serve as an additional therapy option for PCOS management even though researchers need to conduct more specialized studies with bigger participant groups and longer observation periods. Future research must examine the detailed remedies along with the possible mechanisms behind their ability in improving hormonal regulation and metabolic performance in women with PCOS.

# **Limitations of the Study**

The study produced favorable findings about homoeopathic intervention effects on insulin resistance and menstrual function improvements in women with PCOS yet its results require consideration of multiple restricting factors.

- **Sample Size**: This research had a restricted number of 60 female participants as part of its sample. A study with an expanded participant number would boost statistical strength which would produce more dependable research outcomes.
- **Duration**: Study researchers limited the investigation to twelve weeks as its timeframe. Research should extend beyond 12 weeks to validate how long homoeopathic treatment maintains its effects as well as measure improvement potential from sustained administration.
- Subjectivity of Treatment: Treatment approaches in homeopathy unfold differently for each participant because providers based their remedies on personal symptoms and constitutional types thus leading to varying outcomes. Practitioners who deliver homoeopathic treatment may use different remedies which leads to varying consistency of treatment approaches.
- Lack of Biochemical Markers for Hormonal Imbalance: The study failed to measure specific hormonal markers from PCOS such as testosterone levels or LH/FSH ratio along with HOMA-IR which hindered the understanding of homoeopathic remedy effects on PCOS hormonal imbalances.
- **Placebo Effect**: Some of the results from the placebo group could have been affected by the psychological responses from receiving the medication despite no actual treatment being given in this clinical trial segment.

# **Future Scope**

Upcoming research should focus on expanding knowledge about homoeopathy use for PCOS treatment as demonstrated in this study.

- Larger, Multicenter Trials: Future investigations need to implement analysis of extensive data sets across multiple medical facilities to make results easier to apply to general patient populations. The observed treatment results should be tested among various population groups to validate consistency between different populations.
- Long-term Follow-up: The research needs a longer observation period extending from six months to one year to check how homoeopathic medicine affects insulin resistance and menstrual cyclicity over time and determine the durability of these improvements.

ISSN: 3107-5037

Vol 1, Issue 1, April, 2025, Page: 1-11

- **Biochemical and Hormonal Markers:** Future studies should expand their marker assessment by including biochemical hormonal measurements such as testosterone along with estradiol and LH/FSH ratio which will provide enhanced comprehension of PCOS hormonal regulation affected by homeopathic medicines.
- Comparative Studies with Conventional Treatments: Research should conduct direct comparative studies between homoeopathic treatments along with metformin and oral contraceptive therapies to evaluate both effectiveness and safety of homoeopathic PCOS treatment.
- **Mechanistic Studies:** More research into the cellular processes of homoeopathy affects insulin sensitivity and menstrual cyclicity would supply better comprehension of molecular and metabolic remedy function.

#### Conclusion

This study provides preliminary evidence suggesting that homoeopathic medicines may have a beneficial effect on improving insulin resistance and menstrual cyclicity in women with Polycystic Ovary Syndrome (PCOS). Participants receiving individualized homoeopathic treatment showed significant improvements in HOMA-IR scores and menstrual cycle regularity compared to the placebo group.

While the results are promising, the study is limited by its small sample size, short duration, and the subjectivity of treatment. Larger, long-term studies are needed to confirm these findings and explore the mechanisms behind the observed effects. Nonetheless, homoeopathy presents a potential complementary approach to managing the metabolic and reproductive challenges associated with PCOS, offering a personalized and less invasive treatment option.

The study encourages further investigation into the role of homoeopathic medicines in managing PCOS, with the hope that future research will provide more robust evidence for their effectiveness and safety.

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