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Research Article

Effect of Dietary Habit Modification on Ovulatory Features and Symptoms Experienced among Studied Infertile Overweight and Polycystic Ovary Syndrome

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Abstract:

Background: Miscarriage is one of the most upsetting consequences for a woman who is struggling to conceive, and sadly it appears that women with a diagnosis of PCOS are at an increased risk of miscarriage after conception. Aim: investigate the effect of dietary habit modification on ovulatory features and symptoms experienced among studied infertile overweight and polycystic ovary syndrome.

Subjects and Methods: A quasi-experimental design was utilized to fulfill the purpose of this study. A purposive sample of 116 women with infertility, overweight, and obese with polycystic ovary syndrome using Arabic structured interviewing questionnaire contains Data about Nutrition Habits

Results: 87.5% of poor nutrition habits of the study group women are duration of the menstrual cycle less than days (hypomenorrhea), before intervention, compared to 78% of good habitsafter intervention. 77.7% of poor nutrition habits of the study group women had long average menstrual cycle is more than 90 days (oligo amenorrhea) before intervention, compared to 83.3% of good habits, intervention.

Conclusion:

Dietary habit modification has positive effect on ovulatory features and symptoms experienced for infertile overweight and polycystic ovary syndrome.

Recommendations:

As an initial therapy for PCOS management, primary care clinicians should actively support lifestyle modification program as a way to improve the disease's clinical characteristics and avoid or treat metabolic problems.

Keywords: dietary habit modification; ovulatory features; polycystic ovary syndrome

Introduction

From a pathogenetic perspective, there are several factors that may contribute to the increased prevalence of pregnancy problems in women with PCOS, including PCOS characteristics, infertility therapies, multiple pregnancies, obesity, IR and metabolic abnormalities, inflammation, and placental changes [1-5].

Miscarriage is one of the most upsetting consequences for a woman who is struggling to conceive, and sadly it appears that women with a diagnosis of PCOS are at an increased risk of miscarriage after conception. Using data from the whole population of Western Australia, which has a highly static population, researchers found that a woman with a diagnosis of PCOS had a two times greater likelihood of being admitted to the hospital for miscarriage than a woman without such a diagnosis [6-7].

Therefore, researchers have looked into additional possible mechanisms for the connection between PCOS and miscarriage, such as the role of insulin resistance, hyperhomocysteinemia, hyperandrogenemia, the plasminogen activator inhibitor-1 vitamin D-binding protein, and obesity [8-10].

A range of mechanisms has been proposed as potentially underpinning the association between PCOS and hypertension in pregnancy. Some of these include insulin resistance and hyperhomocysteinemia [11].

Numerous studies have suggested that hyperinsulinemia, which is present in PCOS, is the primary pathogenic mechanism of hypertension in pregnancy. This is because hyperinsulinemia activates the insulin-sensitive vascular endothelial cells, which results in a reduction in prostaglandin production and an increase in peripheral vascular resistance, which raises blood pressure. Additionally, it was discovered that endothelial dysfunction and vascular lumen stenosis are also to blame for PIH in PCOS patients. This is mostly brought on by the higher levels of hyperlipidemia present in these women [12].

Obesity, multiple pregnancies, nulliparity, estrone levels, hyperinsulinemia, diabetes, and hypertension are potential mediators of preterm delivery and PCOS. Women with PCOS often require assisted reproductive technology, increasing the risk of multiple births and hypertension, both linked to preterm birth [13-16].

Aim of the study:

This study aims to study effect dietary habit modification on ovulatory features and symptoms experienced among studied infertile overweight and polycystic ovary syndrome

Subjects and Methods

A quasi-experimental design was utilized to fulfill the purpose of this study. The study was conducted at gynecological and infertility outpatient and inpatient clinics at Beni-Suef University Hospital. A purposive sample of 116 women with infertility, overweight, and obese with polycystic ovary syndrome who attended the previously mentioned sitting will be selected.

Instruments of data collection

Instrument one: Arabic structured interviewing questionnaire divided into**:**

This part is concerned with women's menstrual history Included questions about the age of menarche, cycle regularity, and cycle length.

Instrument two: Data about Nutrition Habits: It includes data about food and soft drinks.

Statistical Analysis: -

Data were collected, tabulated, and statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 25 (SPSS, Inc, Chicago, Illinois, USA). A P value of ≤ 0.05 was considered statistically significant.

Results

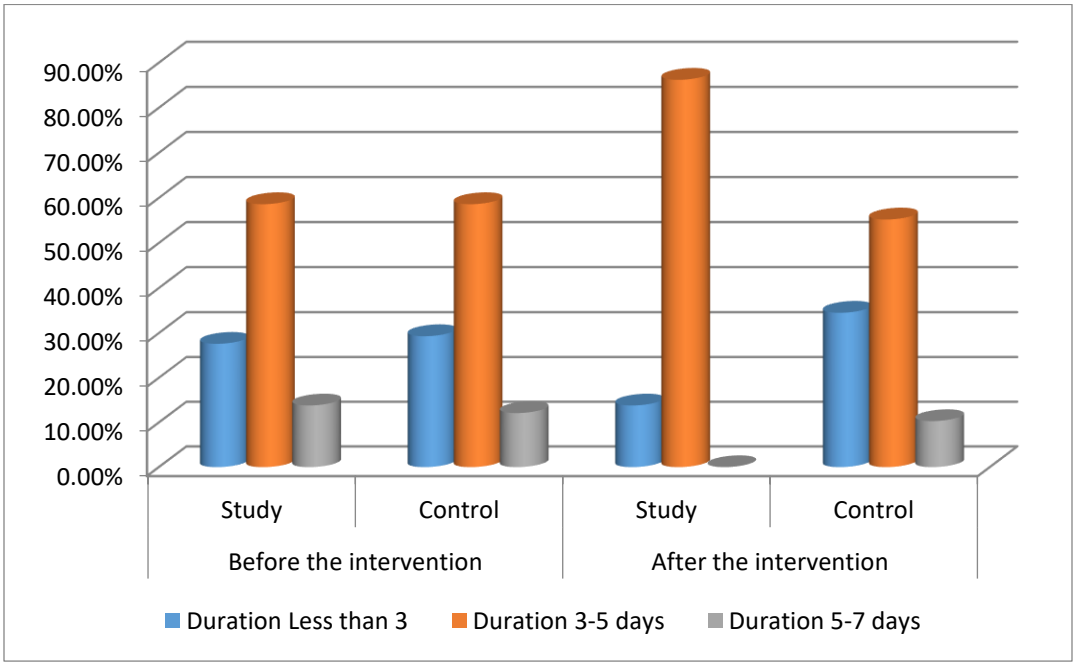

Figure 1: Duration of the menstrual cycle of the Studied Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 116)

Figure 1 shows that 58.6% of the study and control groups had a 3–5-day duration of the menstrual cycle before the intervention, compared to 86.2% and 55.2% after the intervention. Meanwhile, 81.1% and 77.6% of the study and control groups had irregular cycles before the intervention, compared to 31.0% and 67.2% after the intervention, respectively.

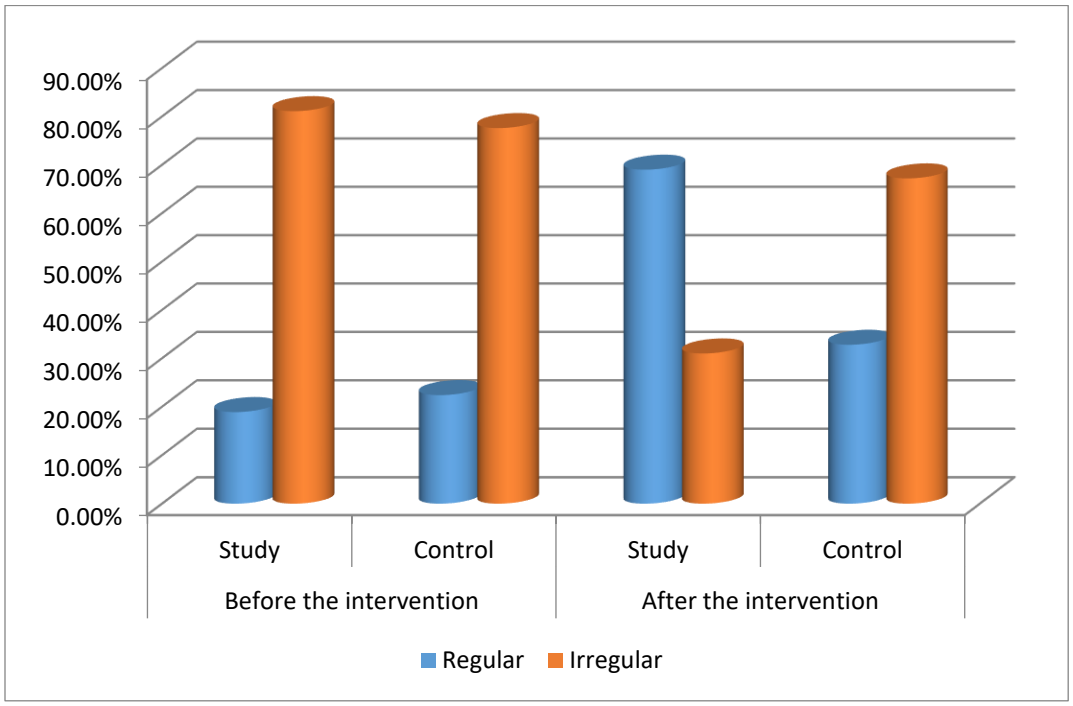

Figure 2: Regularity of the menstrual cycle of the Studied Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 116)

Figure 2 reveals 81.1% and 77.6% of the study and control groups had irregular cycles before the intervention, compared to 31.0% and 67.2% after the intervention, respectively.

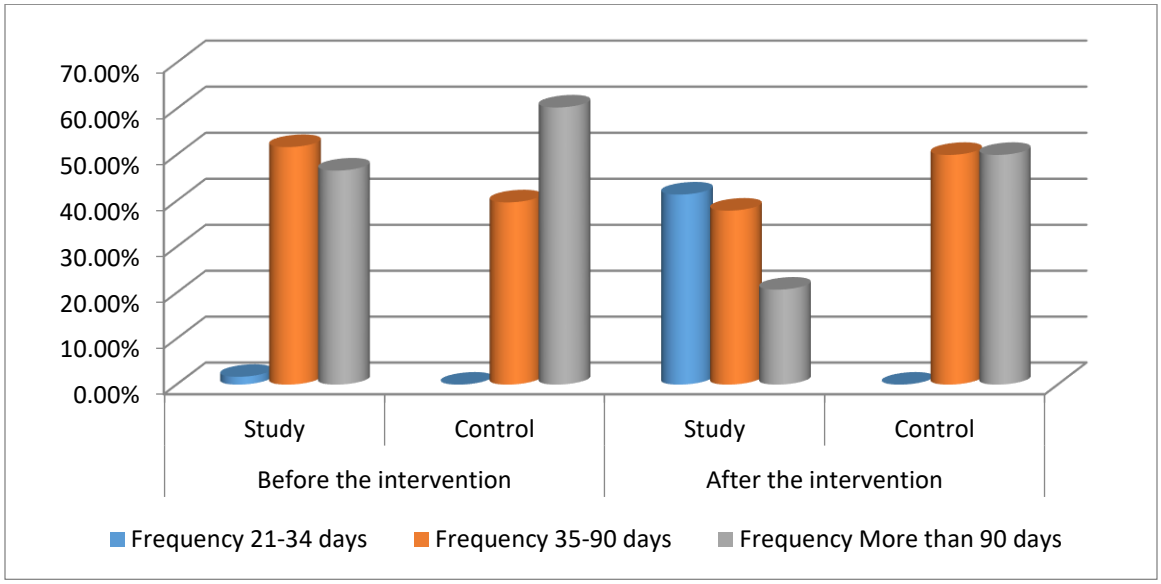

Figure 3: Frequency of the menstrual cycle of the Studied Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 116)

Figure 3 shows that, 51.7% of the study group had an average menstrual cycle of 35–90 days, and 60.3% of the control group had more than 90 days before the intervention, compared to 41.4% of the study group having 21–34 days and 50.0% of the control group having more than 90 days after the intervention.

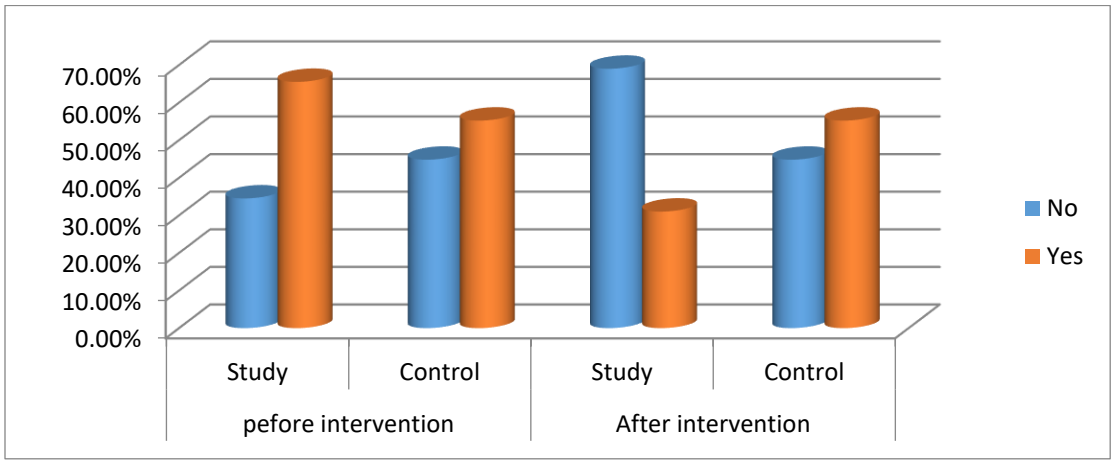

Figure 4: Absence of the menstrual cycle among the studied infertile overweight and obese women with polycystic ovary syndrome (n = 116)

Figure 4 shows that 53.4% and 51.7% of the study and control groups had an absence of the menstrual cycle before the intervention, compared to 84.5% of the study group having no absence of the menstrual cycle and 43% of the control group having an absence of the menstrual cycle after the intervention, respectively.

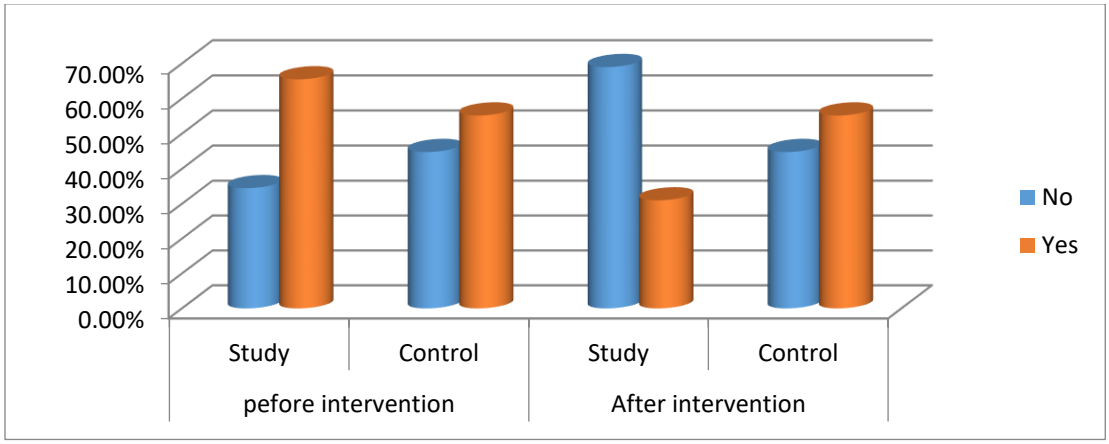

Figure 5: Painful menstrual cycle among the studied infertile overweight and obese women with polycystic ovary syndrome (n = 116)

Figure 5 shows that 65.5% and 55.2% of the study and control groups had painful menstrual cycles before the intervention, compared to 31% and 55.2% of them after the intervention.

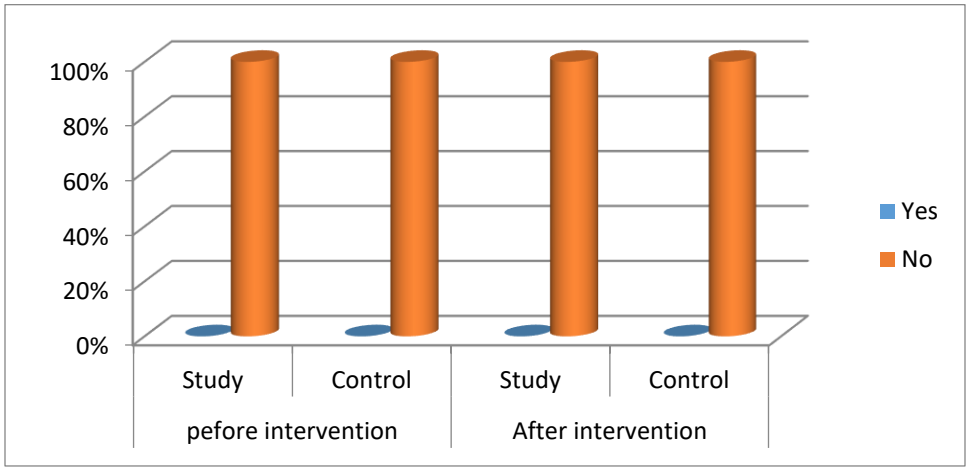

Figure 6: Bleeding during the menstrual cycle among the studied infertile overweight and obese women with polycystic ovary syndrome (n = 116)

Figure 6 shows that 100.0% of the study and control groups do not suffer from bleeding between the menstrual cycles before and after the intervention.

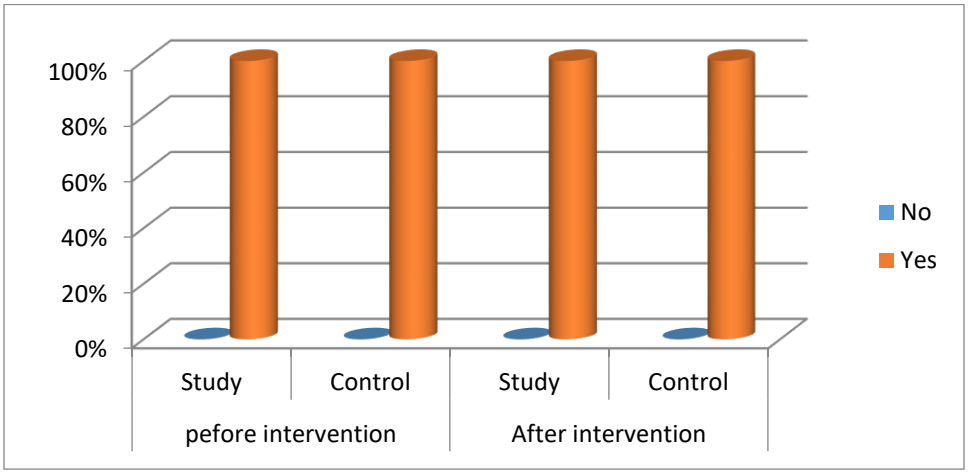

Figure 7: Ovarian cysts diagnosed with sonar (ultrasound among the studied infertile overweight and obese women with polycystic ovary syndrome (n = 116)

Figure 7 shows 100.0% of the study and control groups had no ovarian cysts that were diagnosed with sonar before and after the intervention.

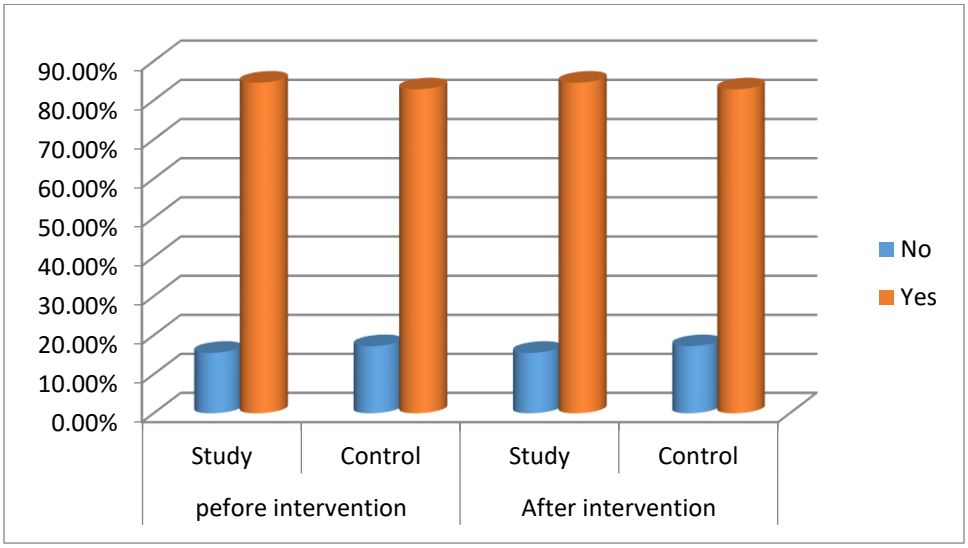

Figure 8: Hormonal disorder detected by blood test experienced among the studied infertile overweight and obese women with polycystic ovary syndrome (n = 116)

Figure 8 shows 84.5% and 82.8% of the study and control groups had a hormonal disorder detected by a blood test before and after the intervention, respectively.

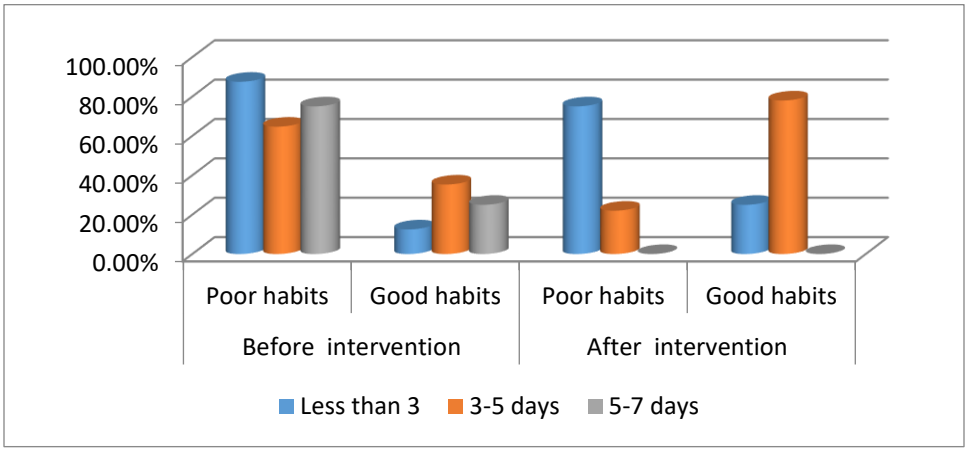

Figure 9: Relationship between duration of menstruation and lifestyle dietary habits in the Study group of Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 58)

Figure 9 showed that 87.5% of poor nutrition habits of the study group women are duration of the menstrual cycle less than days (hypomenorrhea), before intervention, compared to 78% of good habitsafter intervention.

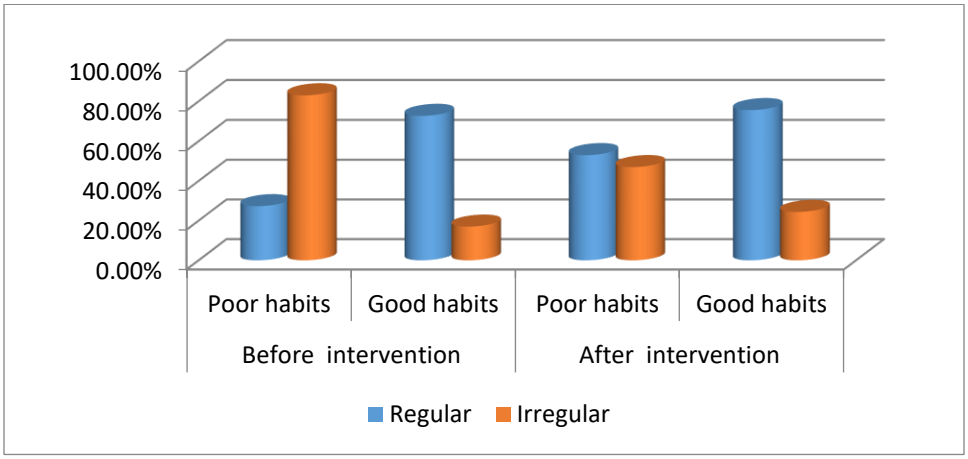

Figure 10: Relationship between regularity of menstruation and lifestyle dietary habits in the Study group of Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 58)

Figure 10 showed that 83% of poor nutrition habits of the study group women are irregular cycle before intervention, compared to 75.6% of good habits after intervention.

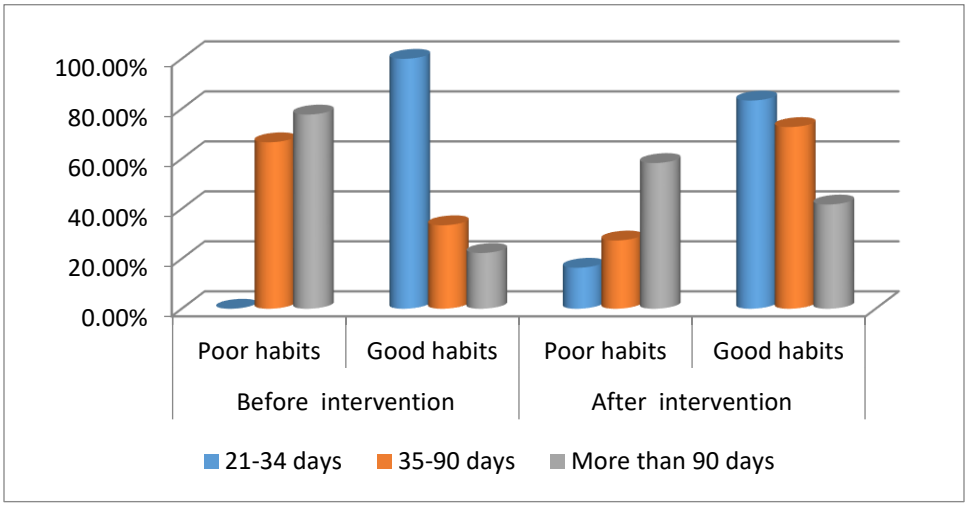

Figure 11: Relationship between frequency of menstruation and lifestyle dietary habits in the Study group of Infertile Overweight and Obese Women with Polycystic Ovary Syndrome (n = 58)

Figure 11 showed that 77.7% of poor nutrition habits of the study group women had long average menstrual cycle is more than 90 days (oligo amenorrhea) before intervention, compared to 83.3% of good habits, intervention.

Discussion

The current study findings revealed that most patients in both the study and control groups had ages of menarche before 15 years. Also, in line with the present findings; from the researcher's point of view, many studies have pointed to verified that a slightly later onset age (15 to 18 years) at menarche could reduce the risk of PCOS. These findings came in agreement with Ma, et al., (2023), who studied "Age at menarche and polycystic ovary syndrome" and Zafar, et al., (2023). They revealed that the age of menarche is between 10-18 years. Menarche is one of the major causes of PCOD/PCOS due to poor diagnosis of normal pubertal ovaries and polycystic ovaries [17-18].

The current results were not in the same line with Desai, et al., (2018), and Thathapudi, et al., (2014), (Indian study) who showed that the mean ages of menarche were over 14 years in PCOS girls, respectively. From the researcher's point of view, this incongruence between the current and previous studies may be related to different cultural conditions such as climate [19-20].

In addition, the current study findings revealed that more than three-quarters of the study and control group had irregular cycles before the intervention, while more than two-thirds of the study group had regular cycles after the intervention. These findings came in agreement with many researches that revealed that the dietary weight loss in adolescent women with PCOS resulted in significant improvement in menstrual regularity. From the researcher's point of view, lifestyle interventions have been shown to have positive effects in terms of improved ovulation function [21-30].

Another investigation was carried out in Stockholm, Sweden's Karolinska University Hospital [31]. It was determined that dietary control and exercise, either alone or in combination, are equally beneficial in enhancing ovarian function in women with PCOS. This study compared the effects of three months of food management and/or physical exercise (three interventions) on ovarian function in women with PCOS.

Furthermore, these findings were supported by Roya et al. (2021), who studied "study of prevalence, phenotypic features, and lifestyle

modifications of polycystic ovarian syndrome patients". They revealed that Hyperandrogenism symptoms and the severity of PCOS can be improved through lifestyle modification (LSM) [32]. According to the researcher's point of view, this may be justified as Lifestyle modifications in terms of an active lifestyle and healthy dietary habits are the first line of management and can significantly reduce the symptoms and morbidity related to the disorder. In which a healthy diet reduces weight and leads to reduced insulin resistance and free testosterone which reduce hair loss.

Regarding pregnancy rate, the current study findings revealed that there were significant improvements in fertility and ovulation after the lifestyle modification intervention; about one-third of the study had positive pregnancy tests after intervention. These findings came in agreement with Rothberg, et al. (2016), who studied the Feasibility of a brief, intensive weight loss intervention to improve reproductive outcomes in obese, sub-fertile women" [33]. Also, current results supported by Alwahab, et al., (2018) who studied "A ketogenic diet may restore fertility in women with polycystic ovary syndrome", and revealed that half of the study group had a positive pregnancy test after intervention [34]. According to the researcher's point of view, this may be justified as the weight losses of 5-10% after PCOS diagnosis were associated with an increased chance of pregnancy.

On the contrary, these findings were incongruous with those of Hamadi, C. (2018), who studied "Public Health Nutrition Intervention to enhance healthy eating and lifestyle modification among Lebanese Women with Polycystic Ovarian Syndrome", who showed that nearly three-quarters of the study group had a positive pregnancy test after lifestyle intervention. From the researchers' point of view, these differences might be because of the different population cultures and lifestyles between Egyptian and Lebanese women [35].

Conclusion:

Dietary habit modification has positive effect on ovulatory features and symptoms experienced for infertile overweight and polycystic ovary syndrome.

Recommendations:

As an initial therapy for PCOS management, primary care clinicians should actively support lifestyle modification program as a way to improve the disease's clinical characteristics and avoid or treat metabolic problems.

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