Self-Regulation In Polycystic Ovarian Syndrome

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ABSTRACT:
The dynamic progress of choosing a desirable end state, acting to get there, and tracking one's progress along the route is known as self-regulation. Polycystic ovarian syndrome (PCOS) is a widespread illness that has substantial psychological and physiological effects. The psychological impacts of PCOS in women are depression, body dissatisfaction, eating disorders, sexual related problems, bipolar disorder, and other psychological symptoms like distress, anxiety, social fears, symptoms of obsessive-compulsive disorder, anger and aggression, and interpersonal adjustment issues. In physiological manner, it is linked to pregnancy issues such as gestational diabetes, preeclampsia, large gestational age newborns, and it affects women at all stages of their reproductive lives. The use of self-regulation in women with PCOS has proved to be effective in improving behavioral and psychological interventions such as goal setting, self-monitoring, cognitive restructuring, problem resolution, and relapse prevention. Therefore, it is essential to implement these strategies that focus on enhancing psychological health, social support, and motivation. The purpose of this narrative review is to emphasize the importance of self-regulation in multifaceted treatment approach that includes treating both physical and psychological symptoms in PCOS women.

KEYWORDS: Self-regulation, PCOS, emotional regulation, exercise regulation, treatment regulation, religious regulation, attention regulation.

1. INTRODUCTION:

To achieve a desired result, self-regulation involves the self-acting on oneself to change his or her own responses, whether conscious or unconscious *(Baumeister et al., 2004).* Self-regulation is the process of changing behavior, ideas, or emotions to overcome an innate, automatic, or learnt response *(Baumeister et al., 2004)*. The term 'self-regulation' suggests a more intentional, mindful process of self-modification *(Baumeister et al., 2004).* In recent years, self-regulation has drawn a lot of attention as a major predictor of many different outcomes such as obesity, school readiness, adolescent academic achievement, long-term health, and educational results *(McClelland et al., 2018)*. Throughout one's life, self-regulation has a significant impact on one's health and well-being *(McClelland et al., 2018)*. The study of self-regulation throughout life is not well integrated *(McClelland et al., 2018)*. Throughout life the elements of self-regulation are constantly being studied by researchers *(McClelland et al., 2018).* There are two major types of self-regulation: emotional regulation and behavioral regulation. (*Ashenafi Kassahun Edossa, 2018)* Emotional regulation is about monitoring, evaluating and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goal (*Ashenafi Kassahun Edossa, 2018)*. The ability to keep an eye on focus and restrain behavior in favor of achieving objectives is known as behavioral regulation. Behavioral regulation can be explained better through exercise self-regulation, treatment self-regulation, religious self-regulation and attention self-regulation (*Ashenafi Kassahun Edossa, 2018).*

Several studies have proved that self-regulation can reduce the symptoms of PCOS. Connecting sentence..... Importance of Self-regulation in Pcos....PCOS is an endocrine disorder that is commonly seen and has a wide range of phenotypes and symptoms. The psychological impacts of PCOS in women are depression, body dissatisfaction, eating disorders, sexual related problems, bipolar disorder, and other psychological symptoms including, distress, anxiety, social fears, symptoms of obsessive-compulsive disorder, anger, aggression, decreased quality of life and interpersonal adjustment issues *(Baumeister et al., 2004)*. A meta-analysis study proved that women with PCOS experience depression three times more than that of women without PCOS *(L.G. Cooney et al., 2017).* Several studies have proven that women with PCOS gave birth to children with psychiatric morbidities like Attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). Diabetes/insulin resistance, obesity, abnormal triglyceride, gestational diabetes, preeclampsia, other coronary-prone behaviors, and/or abnormal uterine bleeding are the physiological conditions that often cause screenings for women with PCOS, and these alignments also lead to psychological effects mentioned above *(Baumeister*

et al., 2004). Family social networks might affect PCOS-affected women's mental health in both positive and negative ways *(Wang et al., 2023).* PCOS women who practice different strategies have been reported to show improved positive coping strategies. Therefore, this review discusses the effect of different self-regulation strategies on the mental and well-being of women with PCOS.

2. METHODS:

For this narrative review, the GOOGLE SCHOLAR, SCIENCE DIRECT, and PUBMED database was searched with the following term: "Self-regulation and PCOS", "Emotional regulation and PCOS", "Exercise regulation and PCOS", "Treatment regulation and PCOS", "Religious regulation and PCOS" and "Attention regulation and PCOS". We included studies related to the topic of the review.

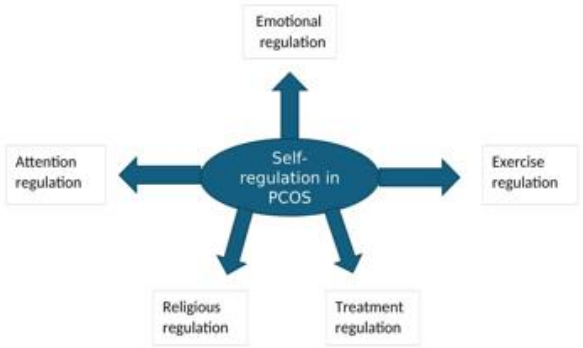

Figure: 1 Types of self -regulation among PCOS women

REVIEW OF LITERATURE:

3.1 IMPLICATION OF EMOTIONAL REGULATION ON PCOS:

Emotional self-regulation is the process that adolescents and children engaging themselves to adjust to their psychological environment, organize themselves towards the accomplishment of their natural goals, and favor their mental health. It involves understanding, accepting and modulating emotional responses *(Alarcon-Espinoza et al., 2022).* There are two different strategies of emotional regulation namely, expressive suppressiveness and cognitive reappraisal. *(Javed. F et al., 2022).* Women with high level of emotional self-regulation efficacy was reported to express positive coping strategies such as emotional expression, making them better to manage to their physical distress. On the other hand, it was seen that women with suppressed emotion showed exacerbate psychological discomfort *(Wang et al., 2023).* A cross-sectional study among PCOS women in UK who practiced emotional self-regulation have been reported that it reduced sadness and psychological distress proving that distress of PCOS can be self-managed syndrome. *(Rebecca S. Light et al., 2021).* Research conducted at Lahore among PCOS women, have been shown that practicing emotional regulation has a positive correlation in marital satisfaction and resilience *(Javed. F et al., 2022).* A study conducted among 671 self-reported PCOS women have been reported that emotional suppression exacerbated depressive symptoms, it also demonstrated that suppression of anger contributed to the development of depression. And so, low emotional control generates a positive impact on mental health and high emotional control generates a negative impact on the mental health. Therefore, the direct expression of feelings can manage the emotional problems in women with PCOS *(Karolina Pokara et al., 2022).* The eight studies included in the systematic review and five in meta-analysis to examine the effect of different types of interventions and its effects on depression scores in women with PCOS have been proved that depression can be effectively lowered by psychological interventions like Cognitive-Behavioral Therapy (CBT) in women with PCOS *(Geranne Jiskoot et al., 2022).* The cross-sectional study conducted among 477 women diagnosed with PCOS to identify latent mental health and examine differences in emotion regulation and social support have proved that cognitive reappraisal and social support are important protective factors for the mental health of women with PCOS, whereas expressive suppression is a negative factor for their mental health *(Guangpeng Wang et al., 2023).*

3.2 IMPLICATION OF EXERCISE REGULATION ON PCOS:

Physical Activity is one of the primary treatments of Polycystic Ovary Syndrome (PCOS) *(Lauren K. Banting et al., 2014)*. Exercise can enhance the potential to check one's attention, emotions, and impulses to achieve a goal or complete a task. The implication of exercise on the QoL (Quality of Life) and mental health outcomes

among PCOS women has been understudied. However, a systematic review among PCOS women reported that exercise alone or in combination with other lifestyle activities lowered depression and anxiety among half of the fifteen studies included (*R.K. Patten et al., 2020*). Another study conducted among women with and without PCOS aged 18-50 years across Europe, Asia, U.S and Africa have proved that exercise managed health distress among PCOS women. (*Lauren K. Banting et al., 2014).* In another meta-analysis study, it has been proved that exercise not only reduced mental distress among PCOS women but also their physiological symptoms such as body composition and insulin resistance *(Rhiannon K. Patten et al., 2020).* Also, in another study conducted it has been proved that a three-component lifestyle programme intervention including diet, exercise and Cognitive-Behavioral Therapy (CBT) increased emotional well-being among PCOS women. *(Geranne Jiskoot et al., 2020).* Further study conducted among 671 self-reported PCOS women have been found that regular exercise decreased depressive symptoms among PCOS women. (*Karolina Pokara et al., 2022).*

3.3 IMPLICATION OF TREATMENT REGULATION ON PCOS:

Regulating the physical or mental health problem through treatment is known as treatment regulation. Treatment regulation can be through Medication-Assisted treatment (MAT), general treatment regulations like through food, exercise, and meditation, emotional regulation skills and environmental health *(Samhsa.gov) (UCSF Department of Psychiatry).*Systematic literature research which aims to provide an overview concerning the effects of non-hormonal pharmacological treatment options on menstrual irregularities in adolescents suffering from PCOS, which conveys that the Metformin (MET) seems to be an effective treatment option in overweight adolescent girls with PCOS *(Elisabeth Reiser et al., 2022).* A meta-analysis conducted among four different countries such as India, Australia, United Kingdom, and United States by involving 723 participants across different age groups have been reported that Meditation and Mindfulness Interventions (MMIs) could be a useful complement to routine PCOS care *(Rao. V et al., 2024).* A prospective cohort study conducted among 40 normal- weight women with PCOS in an academic research environment have been proved that melatonin improved menstrual irregularities and biochemical hyper androgenism in women with PCOS through a direct, insulin-independent effect on the ovary and also melatonin could be considered as a potential future therapeutic agent for women affected by PCOS *(Valeria Tagliaferri et al., 2018).* The study conducted among 33 women with PCOS which proved that metformin treatment has a Thyroid Stimulating Hormone - lowering effect in hypothyroid patients with PCOS *(Mario Rotondi et al., 2011).* Also, a study conducted among 40 PCOS patients have been proved that applying acupuncture treatment can effectively relieve anxiety and depression and the mechanism may be attributed to the regulation on the levels of serum β-endorphin and androgen *(Zhang HL et al., 2020).*

3.4 IMPLICATION OF RELIGIOUS REGULATION ON PCOS:

Religion can play a significant role in fostering self-regulation and self-control. Religious people tend to score higher on measures of self-control. Religion might facilitate emotional regulation *(McCullough et al., 2013).* A study conducted among PCOS women of Singapore have been proved that practicing religion in daily life increased their coping strategies in general (*Q.L. Ting et al., 2018).* Another study conducted among 40 patients diagnosed with PCOS, aged from 20-40 years, in Iran, showed that fasting during Ramadan reduced stress hormones in women. (*Farideh Zangeneh et al., 2014).* Another cross-sectional study among ethnic Indian PCOS women of reproductive age have been proved that yoga had helped in regulating mental distress as well as reducing physical symptoms of PCOS. *(Vibhuti Samarth Rao et al., 2023). A* descriptive cross-sectional survey among hundred women with PCOS in Sri Lanka which proved have improved that socio-cultural factors resulted in high Health Related Quality of Life (HRQOL) in comparison with PCOS women who did not practice. (*S.J. Weerawanni et al., 2019).*

3.5 IMPLICATION OF ATTENTION REGULATION ON PCOS:

According to Ruff and Rothbart (1996), the capacity to adjust behavior in response to the social, emotional, and cognitive demands of a given circumstance is a component of the broader concept of self-regulation *(M.R. Rueda et al., 2004).* Attention is a part of the mechanisms of self-regulation *(M.R. Rueda et al., 2004).* The major advantage of viewing attention in relation to self-regulation is that it allows one to relate the development of a specific neural network to the ability of children and adults to regulate their thoughts and feelings *(M.R. Rueda et al., 2004).* A study conducted at Athens University Medical School have been reported that application of mindfulness reduced depression, anxiety, stress as well as salivary cortisol concentration improving their satisfaction and Quality of Life *(Stefanaki et al, 2014).* Integral application of nutrition, medical adherence, physical activity and sleep among PCOS women practicing mindfulness were found to have decreased psychological and physiological distress with PCOS *(Cara.C.Young et al., 2022).* Also, another study proved that implementing mindful practice among PCOS women in Kerman, Iran reduced mental

complications like interpersonal problems, depression, anxiety, worries and concerns associated with non-pregnancy physical complication, religious issues and sexual complications (*Zahra et al., 2023).*

4. CONCLUSION AND FUTURE DIRECTIONS:

Women in all age groups experiencing PCOS undergo a lot of mental and physical distress. The physical distress also adds on to mental agony. The psycho-social burden along with mental agony experienced by the PCOS women is reflected in their social, emotional and cognitive demands of a circumstance. Several studies have reported that practicing self-regulation can be a major predictor benefitting psychological and physical symptoms in PCOS. Therefore, implementing therapies that include both physiological and psychological aspects can improve the mental health in PCOS women. Further studies should be aimed at carrying out studies in various self-regulation methods on various disorders.

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The authors declared no competing interest.

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