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Subjective Experiences of "Cognitive Fog" in Women with PCOS: Lived Accounts of Neuropsychological Symptoms with Identity and Coping

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Abstract
Polycystic Ovary Syndrome (PCOS) is a complex endocrine disorder affecting women's physical and psychological well-being. In addition to hormonal and metabolic symptoms, most women complain of having a cognitive fog, which is defined as impairments in attention, memory, and executive functioning. This paper examines subjective experiences of cognitive fog among women with PCOS, considering lived experiences of neuropsychological symptoms and the effects of these symptoms on identity and coping mechanisms. In-depth interviews were carried out with women having PCOS using a qualitative phenomenological approach. Thematic analysis showed that the participants, more often than not, had mental cloudiness, memory lapses, and a lack of concentration, which influenced their academic, occupation, and social lives. These mental problems were combined with frustration, decreased self-esteem, and distorted self-identity. The participants used different coping strategies, such as planning, self-care, and social support, to cope with daily functioning. The results indicate a strong neuropsychological and psychosocial influence of cognitive fog in PCOS and emphasize the necessity of comprehensive clinical interventions with consideration of cognitive and emotional health.

Keywords: PCOS, cognitive fog, neuropsychological symptoms, lived experiences, identity, coping strategies, qualitative research

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a common endocrine/metabolic condition in reproductive age women, which may continue even after this age. It is a complex hormonal disorder that influences numerous biological systems and has numerous consequences on the reproductive, metabolic, and mental health of women. PCOS is one of the most prevalent hormonal disorders in childbearing women and about 1013 percent of women worldwide have it. In India, it is believed to have prevalence rates ranging between 7.2-19.6 percent, depending on the group of people under investigation and the criteria of drawing the diagnosis. Even though a lot of people have it, it's thought that almost 70% of women with PCOS don't know they have it. This implies that many women can be having the condition yet unaware or receive the appropriate treatment.

PCOS occurs when the normal hormonal balance in the female body is disrupted particularly when excess production of androgens occurs. Androgens are commonly referred to as male hormones; however, both men and women have them and they play a significant role in various body processes. Androgens typically promote such processes as muscle growth, maintenance of bone density, erythropoiesis (red blood cell production), and sexual desire and activity. Men and women possess these hormones and they tend to increase in puberty as a normal biological development.

Androgens play a big role in women's bodies, even though they're often thought of as male hormones. They help regulate menstrual cycles, and they also affect a woman's sex drive and overall sexual health, including how aroused she feels, how much she desires sex and how satisfied she is after sex. Androgens also influence the mood which is crucial for the overall well-being. They help with the functioning of brain by giving women more energy and keeping their metabolism and their heart healthy. Moreover, androgens are also crucial for maintenance of the healthy vaginal tissue and keeping their genitourinary system smooth running. When androgen levels are just right, bodies of women can even function properly in all these areas.

When the androgen levels in the body become too high then it can lead to a range of symptoms. For women, these symptoms can mean excess hair growth on face or body known as hirsutism. Also, they may experience irregular periods, acne, difficulty getting pregnant, weight gain or obesity and hair loss or thinning. Such symptoms occur whenever there's a problem with organs which produce hormones such as ovaries or adrenal glands. One of the most common causes of high androgen levels in women is polycystic ovary syndrome or PCOS. However, rest medical conditions can also lead to an excess of androgen including congenital adrenal hyperplasia, androgen-secreting tumors and certain medications which affect hormone production or regulation. It's worth noting that these conditions can have a significant impact on a woman's health and wellbeing, and seeking medical attention is crucial to managing symptoms and preventing long-term complications. By understanding the causes and effects of high androgen levels, women can take the first step towards regaining control over their hormonal balance and improving their overall health.

In the past, PCOS was viewed of as an reproductive disorder which effected the ovaries and menstrual cycles. However , prior scientific evidence has convinced the researchers to considerPCOS as a disorder characterized by the complex interactions among metabolic dysfunction , endocrine dysregulation, , chronic inflammation and the neurological processes. PCOS is a health condition which affects more than just ovaries as it affects many systems in the body.

One more factor is the insulin resistance which is one of the most important biological process that can cause PCOS. Insulin is a hormone which helps control blood sugar levels by allowing the cells in the body take in glucose from blood and use it as energy and the people with insulin resistance have cells which don't respond well to insulin. In order to keep blood sugar levels normal, the body tries to make more insulin to make up for this and having too much insulin can affect how hormones work in different ways.

This high content of insulin can make the ovaries more androgens which throws off the balance of hormones even more. Insulin also effects the making of a protein called Sex Hormone Binding Globulin (SHBG). SHBG is an important part of that controls how much testosterone and other sex hormones are in the blood. When SHBG levels are high, testosterone remains attached to SHBG and is very less active in the body. But when the insulin stops the body from making SHBG, other amount of free and

active testosterone in the blood rises. Lower SHBG levels can make many symptoms of PCOS worse through making androgens work harder in their body.

Low-level systemic inflammation also has a significant role in the onset and the development of PCOS. Previous research suggests that in the absence of an illness many women with PCOS show elevated inflammatory markers. The chronic inflammatory condition can worsen insulin resistance and also increase ovaries' production of androgens. And as a result, inflammation along with insulin resistance and hormonal imbalance frequently come together to produce a self-sustaining loop which aids in the onset and the duration of symptoms of PCOS.

Various physical and metabolic issues that are caused by a combined impact of hormonal imbalance, insulin resistance and chronic inflammation. Most common in women with PCOS have obesity, type 2 diabetes, cardiovascular disease, irregular menstruation, ovulatory dysfunction and infertility. Such health hazards highlight how important it is to comprehend PCOS as one complex illness that impacts general health rather than just an additional reproductive condition.

PCOS is becoming widely acknowledged for its neurological and psychosocial effects besides its metabolic and reproductive aspects. Events suggests that, PCOS related hormonal imbalances and metabolic problems also have an impact on the function of brain. Hormones are necessary for controlling various cognitive functions such as cognitive control, memory, attention and emotional control. Therefore, hormonal imbalances may have subtle yet significant effect on cognitive function.

"Cognitive fog," also known as "brain fog," is a cognitive condition that women with PCOS have and is increasing day by day. A set of cognitive issues that interfere with mental day to day functioning are referred to by the expression "cognitive fog," which is not a noted medical diagnosis. Cognitive fog victims frequently report the symptoms like problems focusing, forgetfulness, sluggish thinking, decreased mental clarity and face difficulties while organizing their thoughts or finishing tough activities. Such encounters can genuinely impair day to day functioning in social, professional as well as academic contexts.

Initial data indicates that women with PCOS may have mild deficits in working memory, executive functioning, and attention, while research on cognitive performance in PCOS is still in its early stages. According to specific research, women with PCOS have higher attentional mistakes and slower cognitive processing speeds. Hormonal imbalance, insulin resistance, chronic inflammation, and psychological variant may all have an impact on these cognitive challenges.

Another substantial feature of PCOS is the high prevalence of psychological comorbidities among women with the illness. Research continuously shows that women with PCOS have greater rates of anxiety and depression than women without the condition. According to meta-analytic results, over 42% of women with PCOS have depressive symptoms, and about 37% have anxiety symptoms. Nearly half of women with PCOS may have clinically significant levels of psychological distress in low- and middle-income countries, according to study.

The expanded psychological load linked to PCOS may be due to various different reasons. Some common examples of certain physical symptoms that have a negative consequence on one's body image self-esteem are acne, weight gain, excessive hair growth and hair. Emotional stress may also arise due to concerns regarding infertility or having trouble conceiving, particularly in societies where societal and identity expectations are closely linked with fertility. Additionally, continuous stress and discomfort mentally may be aggravated by constant health issues and uncertainty in relation to long-term health

outcomes.

Cognitive functioning may be affected due various psychological difficulties. For example, people who are frequently depressed or anxious have reported having trouble in focusing, remembering things and making decisions. Additionally, less cognitive efficiency along with mental fatigue which can also be a result of psychological stress. Therefore, cognitive fog in PCOS may be an outcome of the interplay between psychological and social elements with addition to the biological causes.

A sense of identity of a person and their self-perception may be substantially influenced by cognitive fog. The identity of an individual is the way in which people view themselves and their skills, roles, values and the individual traits. People may also start to doubt their intelligence, productivity or competence whenever they start to have an persistent cognitive problems. And whenever women have any kind of trouble focusing or remembering things due to which they may feel disheartened or frustrated as they once thought of themselves as an intellectually gifted individual.

Also, confidence of women in social, professional and academic settings are also highly impacted by these experiences. For instance, if a student is suffering from cognitive fog, they may face trouble while paying attention in class or remembering material at the time of studying or doing well on various tests. Likewise, women into professional settings also find it to difficult to focus or multitask for an extended period of time or solve complicated problems. Such encounters might eventually affect the perception of people with regard to their own abilities and identities.

People often create a kind of coping mechanism in reaction to such difficulties to control their symptoms and then continue going on about their regular lives. This term "coping" defines mental and behavioral strategies that are employed to control stressful events and also adjust to difficult situations. However, women who suffer from cognitive fog may also use a variety of techniques such as meticulous task organization or using digital planning tools and reminders or cutting back on multitasking and establishing regimented daily schedule.

In order to control stress and the emotional discomfort brought on by this illness, psychological coping mechanisms may also be used. Looking for social support, practicing stress reduction methods such as mindfulness or relaxation techniques by becoming more conscious of one's own needs are some examples of these tactics but not every coping mechanism is quite adaptive. Psychological well - being may further be impacted by certain withdrawal of people from difficult work or avoidance of circumstances which requires focus or self-criticism.

Relatively a little study that examined these experiences through the viewpoint of women themselves are growing, despite the awareness of cognitive and psychological difficulties which are linked to PCOS. The majority of these current research concentrates on the quantitative assessments of these cognitive performances which could not be adequately represented and the subjective experiences of those who are present with the illness. These standardized cognitive tests may detect some quantifiable impairments but they don't accurately represent how these people deal with cognitive challenges in daily life necessarily.

Qualitative research methods offer a chance to investigate deeper into these experiences. Researchers gain a better understanding of how these women interpret and manage the cognitive difficulties that are related to PCOS through looking at the lived experiences. The studies can also demonstrate an impact of the cognitive fog on day to day tasks, emotional health, interpersonal connections and their personal identity.

PCOS itself presents differently from person to person , examining lived experiences which is very critical where some women may experience these symptoms predominantly which are related to reproduction or some others may have metabolic issues, psychological distress or cognitive challenges. Strategies which enable people to communicate their viewpoints in their own words are necessary in order to comprehend such diverse experiences.

Additionally, experiences and interpretations of women with PCOS symptoms may be influenced by certain societal variables. Expectations that surround femininity, fertility and such physical attractiveness can also influence how these women view their bodies and health issues in various nations including India. Infertility, irregular menstruation are obvious bodily changes that are an example of symptoms which might lead to stigma or societal pressure. Some social interactions may worsen psychological discomfort that may then have an impact on the cognitive performance.

A biopsychosocial approach to PCOS is the approach through which we explain the illness by considering the factors of illness under biological, psychological and social factors. The biopsychosocial paradigm emphasizes on how these social circumstances and psychological experience influence health issues in addition to the biological causes. By way of using this paradigm, researchers can investigate how this lived experience of PCOS is shaped through the interaction of hormonal imbalance, metabolic disorders, emotional health and the social influences.

By view of this concept: hormonal, metabolic, psychological and sociocultural factors all can have an impact on multifaceted experience of cognitive fog. Qualitative research also can shed light on the aspects of women's health which could otherwise be ignored and help develop a more thorough understanding of the disease. Therefore, goal of this study is to examine how women with PCOS interpret cognitive fog. Further, the study attempts to apprehend how women characterize their own cognitive experiences and how these experiences impact their own sense of identity and what coping these mechanisms employ to deal with the difficulties in their day to day lives by concentrating on the lived accounts of these neuropsychological symptoms and comprehending these experiences are crucial for both clinical care improvement and their academic research. The providers of healthcare create more comprehensive and patient centered treatment plans through identifying cognitive symptoms and then validating women's experiences. For women with PCOS, such strategies may improve their own quality of life, psychological health and management of the symptoms.

RATIONALE

The complicated endocrine and metabolic condition known as polycystic ovarian syndrome (PCOS) has an impact on women's reproductive, metabolic, and mental well-being. Many women with PCOS report having "cognitive fog," which is characterized by issues with attention, memory, executive functioning, and mental clarity, in addition to physical symptoms. Daily functioning performance in school or the workplace and general quality of life can be all impacted by the neuropsychological symptoms.

Although hormonal, metabolic, and psychological aspects of cognitive impairments in PCOS have been the focus of prior study, little is known about how women subjectively feel these difficulties. Women's identity, confidence, and self-perception may all be impacted by cognitive fog, which may also lead to the adoption of a variety of coping mechanisms, both healthy and unhealthy.

In order to clearly understand how these neuropsychological symptoms impact a woman's identity and their coping mechanisms; such study will investigate the lived experiences of cognitive fog in women

with PCOS. Perceiving these experiences can enhance the psychological and cognitive health of women with PCOS and offer understanding for more comprehensive and patient focused care.

LITERATURE REVIEW

The intersection between testosterone level and cognitive functioning in the women with PCOS and healthy control was examined by Schattmann et al. (2000). Their study discovered the minor changes in cognitive functions especially in the spatial and memory tasks linked to an increased testosterone in women with PCOS. The results press on the multifaceted role of hormonal regulation in function of brain within women suffering from PCOS and implies that androgen levels may affect particular cognitive categories.

Snyder (2006) took advantage of a phenomenological technique used to investigate the lived experiences of women with PCOS. According to the study, women frequently felt different from other people and struggled with the problems related to femininity, body image and the need to be “normal". Besides, participants stated to look around for knowledge, attempting to take the impose of their illness and coping with mental discomfort and guilt. Overall, their study depicts that PCOS remarkably affects social and the psychological well-being demonstrating the necessity for appropriate education and the aid.

Another study was conducted on the risk of depressive disorders in women with PCOS by Hollinrake et al. (2007). The study revealed that irrespective of these variables like obesity and infertility, women with PCOS have a noticeably increased chance of evolving depressive disorders as compared to healthy controls.Besides, women affected with higher insulin resistance and body mass index were linked to greater levels of depression.

Barnard et al. (2007) studied the cognitive performance in women with Polycystic Ovary Syndrome (PCOS). In variation to the healthy controls, study found that women with PCOS had mild disabilities in executive, memory and attention. Hormonal abnormalities including increased androgens and psychological variables like anxiety and sadness were linked to these cognitive imbalances. The results depicted for the necessity of depth evaluations in the population and indicate that both the endocrine and mental health issues contribute towards cognitive difficulties in women with PCOS.

Weiss and Bulmer (2011) used an approach qualitative in nature to research for the lived experiences of young women with PCOS. According to this study, symptoms like weight increase and excessive hair growth led women to experience this severe psychological discomfort including the fear about their future fertility, a negative body image and low self-esteem. Also, participants expressed discontent with healthcare services which reported as a lack of assistance and knowledge in particular. Coping also involved gradually accepting the situation and then looking for social support. The study highlighted the requirement for a holistic care by depicting how PCOS impact not only one’s physical health but also their mental and social well-being.

Barry et al. (2011) investigated for the impact of androgen levels on the visual spatial cognition in women with PCOS. According to this study, women with PCOS had minor advancements with some activities but deficit in other and higher testosterone was associated to slight variation in the visual-spatial ability.The results highlighted on the complex role of androgens for regulating brain function and cognition for affected women and suggesting that hormonal abnormalities in PCOS may have an impact on the particular cognitive domains. Polycystic Ovary Syndrome (PCOS) within women's self-esteem

and body image perception were studied by Bazarganipour et al. (2013). Owing to the large part of symptoms including weight gain, acne and hirsutism, the study discovered that women with PCOS have had lower levels of self-esteem and body image satisfaction. The social confidence and the psychological health suffered as a result of these bodily changes. The results highlight how crucial it is to address the self-esteem and body image issues while managing PCOS.

Almis et al. (2013) appraised levels of anxiety, depression and self-concept in the adolescents with Polycystic Ovary Syndrome (PCOS). According to study, teenagers having PCOS had lower self-esteem and contrastingly, higher levels of anxiety and distress as compared to their peers without the condition. Other physical symptoms like weight gain, acne, and irregular menstruation have been linked with the psychological issues. These results reinforce the need of early psychological assistance and a considerable influence of PCOS on mental health of adolescents.

The psychological effects of Polycystic Ovary Syndrome (PCOS) on women were studied by Simon, Peigné, and Dewailly (2013). According to this study, PCOS is a serious psychological concern like anxiety, depression and a lower quality of life. Hirsutism, obesity and infertility are some common examples of physical complications that have a negative impact on the social interactions, body images and self-esteem of a person . The authors highlight the requirement for proper care that addresses both emotional and physical aspects of PCOS and emphasized the significant psychosocial impact of the condition.

From a reproductive point of view, Sundström Poromaa and Gingnell (2014) talks about how a menstrual cycle affects the cognitive function and the emotion processing. According to their study, a person's mood, emotional control and certain cognitive processes like memory and concentration can all be affected by the hormonal alteration during menstrual cycle. Alterations in the emotional sensitivity and psychological well-being have been associated with the differences in progesterone and estrogen levels.The results accentuate how hormonal oscillations affect a women's emotional and cognitive function.

Polycystic Ovary Syndrome (PCOS) in women and their personality features along with mental health conditions were studied by Scaruffi et al. (2014). Their study was conducting by comparing unaffected individuals with women having PCOS who had higher levels of anxiety, depression and several maladaptive personality traits. The results indicated an important connection between PCOS and the mental health problems, highlighting a requirement for psychological evaluation and their therapeutic support.

Kolahi et al. (2015) studied the relationship between coping mechanisms and the quality of life in women with PCOS. Their study discovered that while maladaptive coping was connected with poorer psychological and emotional well-being, adaptive coping strategies were used and associated with higher quality of life. Despite the challenges of PCOS, women who successfully managed stress through these adaptive coping reported higher level of satisfaction in life. The results highlighted how important it is to promote an appropriate coping mechanism in order to improve a PCOS affected women's overall quality of life.

In women with Polycystic Ovary Syndrome (PCOS), Kogure et al. (2016) investigated the association between sexual functioning, body image, anxiety and depression. According to the study, having a negative body image lead to higher levels of anxiety and depression along with poor sexual functioning. Hirsutism and weight gain are very common examples of physical symptoms that

have a negative impact on psychological well-being and their self-perception. The results show about how body image affects PCOS affected women and their mental and sexual health.

Soleman et al. (2016) used a functional magnetic resonance imaging (fMRI) to study the working of memory performance in order to assess whether Polycystic Ovary Syndrome (PCOS) influences cognition or not. Regardless of having an equivalent behavioural performance for controls, the study discovered that women with PCOS depicted a distinct brain activation pattern during the working of memory tests. Such variations imply that PCOS may be linked to the subtle alterations into cognitive processing that is related one's brain function. The results emphasize a possible neurocognitive impact of PCOS and support the need for more research with the connections between brain and its behavior in this population.

Polycystic Ovary Syndrome (PCOS) lifestyle and behavioural treatment technique were studied by Brennan et al. (2017). The study highlighted how an important dietary, exercise and behavioral modification therapy is a must for improving physical and psychological results of women with PCOS. However, because of such factors like low motivation, emotional distress and environmental obstacles, compliance to these interventions are often difficult. In order to improve a long-term efficacy in the management of PCOS as authors emphasized on the importance having a structured, customized and psychologically informed approach.

The coping mechanisms employed by women with PCOS were investigated by Chaudhari, Mazumdar, and Mehta (2018). According to their study, women used both maladaptive and adaptive coping mechanisms with problem-focused coping was more frequently employed than emotional or dysfunctional coping. However , coping mechanisms do not substantially associate with the quality of life or psychiatric illness. The results revel that while women try to cope up with stress with help of a variety of coping mechanisms but these strategies might not be enough to improve psychological health on their own hence , highlighting the need for an all encompassing treatment.

Srivastava and Sarraf (2018) investigated the psychological health and various coping strategies of women dealing with PCOS. The study discovered while maladaptive coping was related to increased levels of stress and the emotional discomfort .The use of adaptive coping techniques, such as problem-focused coping was associated to just better psychological well-being. These results highlight the need for psychological interventions in order to improve the well-being and indicate that the coping style is important in managing psychological effects of PCOS.

The function of working memory in women with Polycystic Ovary Syndrome (PCOS) was investigated by Marsh (2018). According to the study, women who deal with PCOS demonstrated a mild impairment in the tasks related to working memory as compared to control group, suggesting that PCOS may be associated with the cognitive processing impairments. The results highlighted importance of considering a cognitive assessment within clinical evaluations, indicating that women who deal with PCOS may have an impaired cognitive function , particularly executive function such as working memory.

Castellano et al. (2019) investigated the correlation between mild insulin resistance and regional brain glucose metabolism in young women with PCOS. The study discovered that women with PCOS had various patterns of brain glucose hypometabolism in some certain areas as compared to the controls, which suggest that their brain uses energy differently. These metabolic changes were linked with insulin resistance which is a common feature of PCOS and may contribute to one's mood and cognitive issues as experienced by affected women. The results highlight importance of considering both , the

metabolic and neurological factors in the management of PCOS and suggest a potential neurobiological roadway linking metabolic dysfunction with the changes in brain function.

Women diagnosed with Polycystic Ovary Syndrome (PCOS), Sukhapure (2019) examined the relationship among androgen levels, specifically testosterone and cognitive and emotional functioning. The study revealed that elevated testosterone levels were linked to minor disabilities in cognitive functions such as attention, memory and emotional processing along with a heightened anxiety and sadness. These results stress the vital for a comprehensive psychological and hormonal assessment in women with PCOS as they depict that hormonal dysregulations which are associated with the condition and can significantly affect mental health and cognitive performance.

Fabricius (2020) investigated a body perception and the representation of women with Polycystic Ovary Syndrome (PCOS). According to the study, most common symptoms such as weight increase, excessive hair growth and irregular menstruation resulted in many women to view their bodies as "unfeminine," "unhealthy," and "unusual." Their emotional health, physical image and perception of self were all negatively affected by such beliefs. The results highlighted the need for an encouraging, body-positive intervention and also the substantial impact of PCOS onto women's feeling of femininity.

Consequences of the Polycystic Ovary Disease (PCOD) on one's physical, mental and cognitive health of women who are between the ages of 18 and 30 were explored by Kapoor and Hasan (2020). According to the study, women with who suffered from PCOD suffered an elevated level of stress, anxiety and cognitive problems like memory loss and poor focus. Lower overall well-being was further heightened by the physical symptoms such weight gain and also hormonal imbalance. The results determine on the varied effects of PCOD which emphasize on the requirement of an in depth care which takes into account the mental, cognitive and physical health.

An exploratory study by Boivin et al. (2020) explored on an assessment tool for PCOS with quality of life and a neuropsychological functioning. According to the study, women with PCOS demonstrated for moderate deficiencies in the cognitive domains like executive functioning and attention along with a lower quality of life. Such cognitive domain strains have been connected to PCOS-related psychosocial stress and also hormonal abnormalities. The outcome on the focus of how significant it is to incorporate the quality of life measures as well as cognitive testing in comprehensive PCOS treatment.

The affect of oral contraceptive management in cognitive function within women who have PCOS was studied by Kumari et al. (2020). According to the study, an oral contraceptive therapy increases cognitive performance especially into executive tasks, memory and attention. This regulation of androgen levels and their hormonal adjustment were related with these results. The results show many possible cognitive advantages of pharmaceutical therapies within this population and suggests that controlling hormonal imbalances in PCOS can improve women's cognitive performance.

Valera, Chen, and Grive (2021) studied regarding the relationship between ovarian diseases, brain aging and the hypothalamic-pituitary-ovarian (HPO) axis. Their study showed about how hormonal imbalances associated to disorders like Polycystic Ovary Syndrome (PCOS) might influence the mood regulation and other cognitive functions in the brain. Heighten risks of psychiatric problem and their possible cognitive worsening over time has been linked to the disturbance in HPO axis.

The results show how important it is to understand neuroendocrine pathway to manage ovarian diseases psychological and physical components.

These empirical factors also influence efficacy of the lifestyle guidelines for women having Polycystic

Ovary Syndrome (PCOS) were studied by Ee et al. (2021). According to the study, many women experience various hurdles like low motivation, mental discomfort, time constraints and inconstant direction out of healthcare providers irrespective of the fact that lifestyle alteration like diet and exercise are important for managing PCOS.

Sadati, Yazdani, and Heidarpoor (2021) used a grounded theory method to investigate into surgical resident experiences with teaching and their learning procedures into the operating room. According to reports, residents had to deal with another "confused educational system," where the services demand frequently eclipsed instruction which results into ineffective training. Lack of a structured instruction and few other opportunities for an autonomous practice because of the patient safety concerns and the disorganized assessment techniques which among the main obstacles. The results depict that in order to enhance the surgical training, a more organized and encouraging and the competency based educational environment is must.

Wambeek (2021) explored on the perception of a feminine identity and their suicidality among women dealing with Polycystic Ovary Syndrome (PCOS). Their study found out that difficulties related to femininity, such as body image concerns and the infertility were associated with an emotional distress and suicidal thoughts in certain cases. Participants described the feelings of insufficiency, social withdrawl and social stigma that which adversely affected their mental health. The results highlight serious psychological risks associated with PCOS and also highlights the need for comprehensive mental health support with the management.

Zahid and Javed (2021) studied mental well being, mental fatigue and cognitive difficulties in women with PCOS. According to the study, women with PCOS often have problems like poor focus, memory loss and mental fatigue along with a higher anxiety level and reduced psychological wellbeing. These challenges were linked to a condition on chronic stress and hormonal abnormality. The outcome highlights how important it is to treat psychological and cognitive problems while treating with PCOS.

Redkar and Khan (2021) concentrated into how women's attention was impacted by Polycystic OvarySyndrome (PCOS). According to the study, women with PCOS demonstrated a worse attentional performance than non PCOS controls indicating that the disorder may have a negative impact on the cognitive functions such as serious concentration and focus. According to researchers, PCOS-related hormonal abnormalities, insulin resistance and psychological stress which may be linked to the attentional impairments. These result highlight on importance of evaluating the cognitive function and the attention into comprehensive treatment of PCOS.

Li et al. (2021) uses functional magnetic resonance imaging (fMRI) in order to investigate changes into baseline brain activity into women with PCOS. According to study, a woman with PCOS demonstrated changes into brain activity as areas related towards reward functioning, emotion regulation and executive control. The brain variations associated with metabolic disorders and hormonal imbalances are typical of PCOS suggesting an underlying neurobiological foundation for cognitive and psychological challenges as observed in affected women. The results highlight how important it is to consider brain function into comprehensive assessment and the treatment of PCOS.

In an observational study, Mehrabadi et al. (2021) investigated the relationship between acne, hirsutism, androgen levels, anxiety, depression and cognitive functioning in women with PCOS. Heightened androgen levels and physical clinical feature like hirsutism and acne were found to be associated with

the poor cognitive performance mainly with attention and memory tests. Furthermore, cognitive impairments also linked to higher anxiety and depression scores. These findings indicated how hormonal, physical and psychological factors collectively influences cognition into PCOS affected women.

To exploring the lived experiences of people with Polycystic Ovary Syndrome (PCOS), Lau et al. (2022) conducted an systematic study. According to study, many women were not satisfied with the diagnostic journey as they often experienced and lacked information from medical experts. Furthermore, the respondents describe psychological distress in relation with symptoms that affect their sense of femininity and self image such as hirsutism, weight increase and irregular menstruation. These result also highlight importance of an appropriate educational resource and holistic care with a focus on the patient provider cooperation in order to improve management and support.

The cognitive profile of women dealing with Polycystic Ovary Syndrome (PCOS) as evaluated by Bernstein et al. (2022) reviewed previous and current researchs as well as possible future directions. Their study indicated that PCOS as associated with the increased risk of mood disorders such as anxiety and depression along with the cognitive impairments particularly within executive functioning, attention and memory. The researchers stressed upon these cognitive impacts which result from both the metabolic problems and hormonal abnormalities. In order to enhance overall well being in women with PCOS the study suggested long-term research and the strategies that target the cognitive and emotional health .

A literature review of the possible cognitive changes within women with Polycystic Ovary Syndrome (PCOS) was conducted by Ghare Naz et al. (2022). The study stressed upon the attention, memory, executive function and visuospatial skills that may all be impaired in women with PCOS. The cognitive impairment linked to insulin resistance, psychological distress, metabolic abnormalities and increased testosterone levels. The findings indicate that multifaceted nature of the cognitive alterations within PCOS and importance of incorporating neuropsychological assessment in routine treatment for the affected women.

Ananthasubramanian et al. (2022) investigated into how PCOS and the comorbidities affected the India's women neurotransmitter levels, metabolic enzymes and cognitive performance. The study found out that PCOS was linked to the alterations into cholinesterase and glycolytic enzyme levels, distorted serotonin activity and the cognitive deficiencies mostly when combined with comorbidities such as insulin resistance. The outcomes focus on need for thorough evaluation and the intervention approach that manages both metabolic and the neurocognitive health as they indicated to a complex interaction between metabolic, neurochemical and cognitive dysfunctions in PCOS.

A comprehensive assessment of neurological impact of prevalent gynaecological disorders such as PCOS was carried out by Delanerolle et al. in 2022. According to research, due to the hormonal imbalance and neuroendocrine disruptions these disorders are associated with mood disorders, cognitive impairments and an elevated risk of anxiety and depression. The analysis highlights the issues related towards reproductive health which have a significant impact on both overall psychological health and brain function. The finding reveal the importance of both collaborative care that target aspects of reproductive and neurological health.

Through a prospective study, Sukhapure et al. (2022) analysed change in mood, anxiety and cognitive functioning into women receiving treatment for Polycystic Ovary Syndrome (PCOS). The findings

illustrated the appropriate treatment that improved anxiety and depression and also enhancing cognitive functioning towards some degree. However, other people persist to encounter psychological issues, demonstrating that therapy outcomes may differ. The study the value of current psychosocial assistance and the monitoring into inclusion to PCOS medication.

An qualitative analysis of prolonged health consequence for young women with Polycystic Ovary Syndrome (PCOS) was performed Allen, Shrikrishnapalasuriyar, and Rees (2022). According to this study, PCOS associated with a greater risk of cardiovascular difficulties, metabolic abnormalities and long-term psychological problems such as depression and anxiety. The analysis also underscored on how PCOS has a prolonged impact on overall well-being and the quality of life surpassing reproductive health. The findings indicate significance of an early diagnosis and long-term holistic PCOS care.

A methodical review was conducted by Singh et al. (2022) in order to explore the impact of yoga on treatment of PCOS. The research found out that among women with PCOS, yoga interventions significantly improved an hormonal balance, decreased stress and improved psychological well-being. Yoga has also been associated with benefits into bodily symptoms including regular menstruation and weight control. Yoga may be a helpful, supplemental treatment for PCOS's psychological and physical symptoms.

To explore self image issues for women with PCOS, Davitadze et al. (2022) which carried out a structured review and the quantitative synthesis. Due insignificant part to clinical features including weight gain, acne and hirsutism, the study revealed how women with PCOS expressed markedly the higher levels of body dissatisfaction with healthy comparison group. Anxiety, depression and a lower quality of life all were closely associated to the worries. These findings demonstrated the need of a holistic care strategy and the significant impact that the body image plays a role in the psychological health of women with PCOS.

Using electroencephalography (EEG) and an event related potential (ERP) into inclusion to psychological and cognitive tests, Showkath et al. (2022) inspected into cognitive dysfunction with women with Polycystic Ovarian Syndrome (PCOS). The research demonstrated the women with PCOS scored to worse in the Montreal Cognitive Assessment and have had higher anxiety and depression results as compared to the control groups.Neurophysiological findings reveal significant changes into EEG rhythms, including less P300 amplitude with the increased latency into ERP tasks, showcasing subclinical cognitive disability into PCOS even without other comorbidities.

A study by Perovic et al. on PCOS cognition emphasized on factors other than high androgens. It showed that many factors such as insulin resistance, inflammation and psychosocial stress also influence cognitive dysfunction in women with PCOS. It also includes deficits in concentration, memory and executive function. The results show that cognitive problems in PCOS should extend beyond the traditional focus of androgen levels.

The interfering function of coping mechanism between alexithymia and mental health issues in women with PCOS as investigated by Khan and Bukhari (2023). Higher levels of alexithymia were linked to a worse emotional well-being, depression and anxiety according to the study. This correlation was partially controlled by the coping techniques especially with emotion-focused and problem- focused coping while maladaptive coping shows detrimental effects on the mental health. The result highlights on how important adaptive coping mechanism are for decreasing the psychological distress into PCOS-affected women. Carlson (2023) explored on the relationship between neuropsychiatric dysfunction and the

estrogen receptors in Polycystic Ovary Syndrome (PCOS). According to the research women with PCOS may have mood disorders or anxiety and cognitive problem as the outcome of abnormalities in the estrogen receptor function. Their research also highlighted on how receptor specific intervention would improve psychological findings and hormonal balance. These findings demonstrate importance of neuroendocrine pathway in the understanding and managing of PCOS's psychological impacts.

Using a randomized controlled experiment, Majidzadeh et al. (2023) examined impact of cognitive behavioral therapy (CBT) onto anxiety and depression in women with PCOS. Accordingly, CBT considerably reduced anxiety and the depressive symptoms and improved a psychological wellbeing in general. Also, this intervention helped participants towards creating more positive thought patterns and the coping mechanisms. These findings showed on how well psychological therapies like cognitive behavioral therapy (CBT) may handle the mental health issues related with PCOS.

In a descriptive review, Sarahian et al. (2023) explored shared risk factors between Alzheimer's disease and Polycystic Ovary Syndrome (PCOS). According to research, PCOS may be associated with the increased long run risk of neurodegenerative alteration linked with Alzheimer's disease through common way such as insulin resistance, chronic inflammation and hormone abnormalities. The researchers highlighted the importance of considering neurocognitive outcomes into account in long-term PCOS care by speculating that metabolic and endocrine dysfunctions in PCOS may contribute to brain aging processes.

Bhagat (2023) explored the association between cognitive dysfunction and Polycystic Ovary Syndrome (PCOS) through a descriptive review. According to their review, hormonal abnormalities, insulin resistance and psychological pressure can all have an effect on the attention, memory and executive functioning of women with PCOS. The study talks about cognitive issues in PCOS that are frequently ignored and suggested supportive therapy and routine cognitive testing in order to deal with these issues.

The impact of plasma luteinizing hormone (LH) levels on the activity of brain in women with PCOS was investigated by Lai et al. in 2023. In fields associated to cognitive and emotional regulation, the research discovered that elevated LH levels are linked with changed neuronal activation patterns. The cognitive and psychological issues are usually seen in women with PCOS and may be aggravated by these hormonal effects. The findings reveal how crucial it is to consider endocrine angle into account whenever with assessing PCOS patients' mental and their brain health.

The experience of women having Polycystic Ovary Syndrome (PCOS) through their lives, specially in their later age were examined by Wright, Dawson and Corbett (2024). According to their survey, women often felt ignored by the medical professionals and faced a lack of trustworthy source regarding PCOS. In the long run , health hazards and psychological well being were considered more important to them as compared to fertility. Many women developed coping mechanism with a more adaptable mindset inspite of repetitive difficulties. The report talks about PCOS as a chronic illness that requires ongoing medical attention and psychosocial care.

With attention to the female body and their femininity, Chowdhuri (2024) qualitatively investigated the experiences of women receiving treatment for Polycystic Ovary Syndrome (PCOS). As per the study, women strongly felt less and emotionally effected as a result of the prediction between the symptoms of PCOS and the standards of society regarding femininity. Moreover , participants reported discontent

with the methods of treatment mainly due to not receiving comprehensive and personal care. The results stresses about how crucial it is to talk about PCOS's medical and societal conditions in order to upgrade the general wellbeing of women.

The increasing involvement of glucose-dependent insulinotropic peptide (GIP) and gut associated hormones in PCOS and their fertility was analysed by Moffett and Naughton (2024). According to their study, gut hormones like GIP are most crucial for metabolic control and might affect reproductive function through way of interactions within insulin signallng mechanisms. In women with PCOS, imbalance of the hormones may be a factor in the typical metabolic problem conditions and the decreased fertility. The authors highlighted the knowledge of gut hormone axis which provide for incoming opportunities for tailored treatments in order to enhance patients metabolic conditions and reproductive results suffering with PCOS.

Women having Polycystic Ovarian Syndrome (PCOS) had their working memory and hearing assessed by Sundararaj et al. (2024). Accordingly , women with PCOS performed more severe auditory working memory rather than controls which may suggest cognitive and the sensory processing problems related to their condition. The result suggests that PCOS may exploit specific areas of the auditory memory along with overall cognition that which may have an impact on the day to day functioning and their communication. The study talks about how crucial it is to include sensory cognitive assessments through PCOS research as well as treatment.

To investigate the psychological effects of Polycystic Ovary Syndrome (PCOS) on women of the reproductive age, Kumari et al. (2025) carried out systematic review. The study found out that due of symptoms like hormonal imbalance, infertility and physical changes , women with PCOS often experience melancholy, a lower quality of life ,anxiety and stress. Their review also talks about how the social demands about females and their body image along with biological variables affect psychological suffering. These results highlight their necessity of combination of care that takes into account for PCOS's effects onto both physical as well as mental health.

In a review, Pinto et al. (2025) further investigated the effects of quality of life on psychiatric symptoms and that changes the brain activity in women with Polycystic Ovary Syndrome (PCOS). According to the review, women who have PCOS frequently struggle with anxiety, sadness and other cognitive which are linked to the changes in the brain activity patterns as seen in neuroimaging research. Women with PCOS face these psychological and neurological alterations which ultimately lead to a lower quality of life while underscoring the significance of an integrated therapy which addresses mental health, cognitive functioning and the general well-being.

For the purpose of investigating the lived psychological experiences of women having polycystic ovary syndrome (PCOS), Khan, Govender, Mitha, and Thandar (2026) carried out a systematic review and meta analysis. The study explores symptoms like weight gain, infertility and excessive hair growth which is frequently caused in women to suffer from despair, anxiety, body image dissatisfaction as well as social stigma. Substantial psychosocial issues such as low self-esteem, social isolation and societal constraints linked to femininity and motherhood were also highlighted by the research. The study talks about the PCOS as a psychological and the social burden in extension to physical ailment, compulsorily comprehensive and a culturally sensitive care.

Women with PCOS, Adamczak et al. (2026) investigated the association between sex hormones, metabolic indicators and the cognitive-linguistic ability. Their study emphasised that lack in verbal

fluency, memory and other cognitive-language related areas linked to an increased androgen level with metabolic disorder such as insulin resistance. The result underline the need for an integrated approach addressing on the endocrine, metabolic and cognitive health in management since they both imply both hormonal and metabolic variables that contribute towards various cognitive difficulties in women with PCOS.

RESEARCH METHODOLOGY

1. **Aim**- To explore how women with PCOS perceive, experience, and manage cognitive fog, and to understand how it influences their identity, daily functioning, and coping mechanisms.
2. **Research Design**- A qualitative research design using Interpretative Phenomenological Analysis (IPA) will be employed to gain in-depth insights into the lived experiences of cognitive fog in women with PCOS.
3. **Objectives**

- To assess subjective cognitive difficulties (cognitive fog) in women with PCOS using the Cognitive Failures Questionnaire (CFQ).
- To evaluate cognitive functioning (attention, processing speed, and mental flexibility) in women with PCOS using the Trail Making Test.
- To examine levels of anxiety and self-esteem in women with PCOS using the Generalized Anxiety Disorder (GAD) scale and a standardized self-esteem scale.
- To explore the relationship between subjective cognitive fog, objective cognitive functioning, anxiety, and self-esteem in women with PCOS.

4. **Hypotheses**

H1: Women with PCOS will describe subjective cognitive difficulties that disrupt concentration, memory, and mental clarity, leading to emotional distress and identity challenges.

H2: Experiences of cognitive fog will be intertwined with self-esteem issues and feelings of reduced control over one's mind and body.

H3: Women will demonstrate diverse coping mechanisms, ranging from cognitive compensatory strategies (lists, reminders, structured routines) to emotional coping (self-compassion, withdrawal, or redefinition of competence).

H4: The integration of cognitive fog experiences into one's identity may influence overall psychological adjustment and coping resilience.

5. **Participants**

The study will include 100 adults aged between 18 and 40 years. Participants will be recruited from colleges, universities, and early-career workplaces across India. The sampling technique used is purposive sampling, with outreach through gynecology clinics, endocrinologists, PCOS support groups, and online platforms.

Settings Semi-structured interviews (45–60 minutes each) conducted in-person.

Inclusion Criteria

- Women aged 18–40 years.
- Clinically diagnosed with PCOS
- Self-reported experience of cognitive difficulties
- Fluent in English or Hindi

- Willing to provide informed consent and participate in an in-depth interview.

Exclusion Criteria

- Current neurological disorders.
- Diagnosed psychiatric conditions.
- Current pregnancy or postpartum period.
- Ongoing use of medications that significantly affect cognition.
- Women who have not been medically diagnosed with PCOS.

6. Tools and Measures

- **Informed Consent** The participants to be informed about the key elements and purpose of the study and the participants can withdraw at any point of the research. The data will remain confidential. The participant voluntarily gave the consent to be a part of this study.
- **Demographic Data Sheet** The socio-demographic details include Age, gender, educational background, and socio-economic status.
- **Generalized Anxiety Disorder-7 (GAD-7)** created by Spitzer et al. (2006) will measure the severity of anxiety symptoms. The scale consists of seven items rated on a four-point Likert scale and has shown high internal consistency ($\alpha = .92$).

Trail Making Test The TMT assesses attention, processing speed, and executive function. It has two parts: Part A (numbers) and Part B (numbers and letters). The Performance is interpreted by completion time and mistakes, which shows good reliability.

Rosenberg Self-Esteem Scale (RSES), was developed by Morris Rosenberg (1965),which measures self-esteem. It contains 10 items which is rated on 4 point likert scale in which higher score shows higher self esteem. This scale shows good reliability and validity.

Cognitive Failures Questionnaire (CFQ), was developed by Donald Broadbent et al. (1982), which evaluate everyday cognitive failures experienced inputs six months. It has 25 items which is interpreted on five point likert scale in heich high score shows more cognitive problems.

7. Procedure

A approval will be taken from the department before collecting data.

All Participant would receive a sheet containing all necessary information about the study such as purpose, procedure and confidentiality.

After informed consent, participants will be provided with demographic form containing standardized questionnaires (GAD-7, TMT, RSES and CFQ)

25-30 minutes would be taken in participation.

8. Data Analysis: the data will be studied by using Interpretative Phenomenological Analysis (IPA), (Smith, Flowers & Larkin, 2009). All data would be written and studied carefully to understand similarities and differences in people experiences.

9. Ethical Consideration

- Informed consent would be taken before participation
- Participant can withdraw anytime they want.
- Everything would be kept confidential and anonymous
- Questions about thinking, mood or body image will be seen sensitively.
- Counseling or psychological support will be referred if participant have emotional distress.

RESULTS

Table 1: Sociodemographic Characteristics of Participants (N=100)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	20–25 years	30	30%
	26–30 years	38	38%
	31–35 years	20	20%
	36–40 years	12	12%
Marital Status	Unmarried	55	55%
	Married	45	45%
Educational Level	Undergraduate	35	35%
	Postgraduate	50	50%
	Others	15	15%
Occupation	Student	28	28%
	Employed	52	52%
	Homemaker	20	20%
Socioeconomic Status	Lower	18	18%
	Middle	57	57%
	Upper	25	25%
Duration of PCOS	< 2 years	25	25%
	2–5 years	45	45%
	> 5 years	30	30%
Treatment Status	On medication	60	60%
	Not on medication	40	40%

Table 2: Descriptive Statistics (Mean and Standard Deviation) of Cognitive Functioning, Anxiety, and Self-Esteem Variables

Variable	**Mean (M)**	**Standard Deviation (SD)**
Cognitive Failures (CFQ)	45.32	10.21
Trail Making Test – A (seconds)	39.45	8.76
Trail Making Test – B (seconds)	89.67	15.34
Anxiety (GAD)	11.28	4.52
Self-Esteem (RSES)	18.75	5.1

Table 3: Pearson Correlation Matrix among Cognitive Failures, Executive Functioning, Anxiety, and Self-Esteem

Correlation					
Variable	**1**	**2**	**3**	**4**	**5**
1. CFQ	—				
2. TMT-A	0.42	—			

3. TMT-B	0.51	0.63	—		
4. GAD	0.58	0.36	0.40	—	
5. Self-Esteem	-0.49	-0.30	-0.35	-0.62	—

Table 4: Multiple Regression Analysis Predicting Cognitive Failures from Executive Functioning, Anxiety, and Self-Esteem

REGRESSION					
Predictor	**B**	**SE**	**β**	**t**	**p**
(Constant)	12.45	5.12	—	2.43	0.018
TMT-B	0.28	0.09	0.31	3.11	0.003
GAD	0.95	0.21	0.44	4.52	0
Self-Esteem	-0.72	0.18	-0.36	-3.98	0

DISCUSSION

The study talks about coping mechanism in women with PCOS and their perceived support networks along with their subjective cognitive challenges (cognitive fog), objective cognitive functioning, anxiety and self-esteem. The findings present a deep grasp of the ways in which social, emotional and cognitive elements that interrelate to affect the lived experiences of these women.

As per the results, individuals complaint about moderate levels of cognitive failure which indicate persistent issues with daily functioning, memory and attention. On the Trail Making Test (TMT-A and TMT-B) individual performed mild to moderate impairments, mainly in executive functioning (TMT-B), which validate subjective complaints. The conformity between subjective and objective results indicate that cognitive fog has a measurable underlying basis rather than just being a self-reported experience. Heighten impairment seen in TMT-B highlight difficulties in executive control, divided attention and mental flexibility all of which are critical for challenging daily tasks. These findings consistent with emerging research suggesting that women with PCOS frequently have "brain fog," or disturbances in cognitive clarity.

The study highlights that cognitive fog and anxiety are positively correlated which means that high level of anxiety is linked with cognitive difficulties which shows that emotional distress cause important role in cognitive failures or dysfunction. Through a cognitive viewpoint constant worry and alertness uses a person mental energy, because of which it is difficult to remember things, difficulty in concentration and processing speed. This tells how women with higher level of anxiety are prone to cognitive impairments. Anxiety was founded to be one of the main predictor impacting cognitive fog in regression analysis, which tell that psychological factors is one of the major factor in influencing cognitive failures/experiences.

The results showed a strong negative correlation between self-esteem and cognitive fog, suggesting that people with more cognitive problems typically have lower self-esteem. Regular cognitive failures can lower perceived competence, which can result in poor self-evaluation and self-doubt.

Furthermore, there was a substantial negative correlation between anxiety and self-esteem, indicating that lower confidence is a result of increased emotional suffering. According to

regression analysis, self-esteem is a strong predictor of cognitive fog, with higher self-esteem serving as a protective factor that may help people deal with cognitive difficulties more skillfully.

Subjective cognitive fog (CFQ) and objective cognitive performance (TMT-A and TMT-B) were found to be significantly positively correlated in the study. This suggests that quantifiable cognitive inefficiencies, especially in executive functioning, underlie subjective complaints. These results show a mutually reinforcing relationship between perceived and real cognitive impairments, challenging the notion that cognitive complaints are only subjective.

The results showed a wide variety of coping mechanisms, indicating how women both actively and passively deal with the difficulties brought on by PCOS and cognitive fog. Exercise, yoga, relaxation techniques, and talking to friends for emotional support are examples of adaptive coping strategies that several participants reported using. These methods, which are typically linked to improved emotional regulation, a sense of agency, and comparatively steady self-esteem, show proactive attempts to control suffering and restore control. Avoidant coping mechanisms, such as excessive napping, disengagement, diversion, and emotional suppression, were also employed by a number of participants. These tactics seem to be the result of cognitive fog's overwhelming nature and mental tiredness, which diminishes the ability to actively deal with stressors. Although they could offer short-term respite, they frequently reveal underlying powerlessness and diminished perceived competence, which over time leads to a decline in self-esteem. Social support has been identified as a crucial component of coping mechanisms. The majority of participants said they relied on close friends, indicating that peer interactions offer a secure setting for expressing emotions and receiving approval. On the other hand, there seems to be less support from formal systems or family, which would indicate a lack of knowledge or comprehension of PCOS and its psychological effects. Self-esteem was significantly shaped by the caliber of assistance. People were more likely to feel supported and acknowledged when they got empathy, understanding, and validation, which improved their sense of self-worth. On the other hand, feelings of loneliness, invisibility, and emotional vulnerability were exacerbated by inconsistent or contemptuous support, which resulted in a more brittle and externally dependent self-esteem. Significant support gaps were also noted by participants, especially in areas like recognizing body image issues, validating cognitive symptoms, and being aware of PCOS. These unfulfilled desires frequently resulted in the internalization of challenges, which promoted self-doubt, remorse, and a poor opinion of oneself.

Therefore, coping mechanisms and social support work together to shape how cognitive fog affects emotional health and self-worth.

Identity and self-perception have been demonstrated to be profoundly impacted by cognitive fog. A feeling of discontinuity between one's past and present self was exacerbated by ongoing issues with focus, memory, and mental clarity. Women frequently felt that they were less competent, effective, or productive, which caused them to become frustrated and lose confidence. Cognitive deficits can lead to low self-esteem and negative self-evaluation because self-worth is directly linked to performance in daily tasks.

The results can be interpreted within a biopsychosocial framework, in which the perception of cognitive fog is shaped by the interaction of biological (such as hormonal imbalance), psychological (such as anxiety and self-esteem), and social (such as support networks) elements. This integrated viewpoint emphasizes that a variety of factors interact to produce cognitive fog, which exacerbates emotional and cognitive problems rather than being the result of a single cause.

The study emphasizes that rather from being constant, women with PCOS have dynamic, context-

dependent self-esteem. It varies according on the intensity of symptoms, the efficiency of coping strategies, and the presence of supportive connections. While women who experience ongoing challenges and little support are more susceptible to poor and fluctuating self-worth, those who participate in adaptive coping and receive regular validation typically maintain stronger self-esteem.

Implications

The study emphasizes how critical it is to acknowledge cognitive fog as a valid PCOS problem. Cognitive performance may be enhanced by anxiety-reduction strategies like cognitive behavioral therapy and mindfulness. The detrimental effects of cognitive challenges can be mitigated by fostering adaptive coping mechanisms and boosting self-esteem. To increase awareness and support, psychoeducation is also crucial.

Conclusion

In summary, cognitive deficits, anxiety, self-esteem, coping mechanisms, and social support all play a role in the multifaceted phenomena of cognitive fog in women with PCOS. The results highlight the necessity of a comprehensive strategy that takes into account both emotional and cognitive aspects, advancing our knowledge of the psychological experiences connected to PCOS.

SUMMARY

The current study looked at the coping mechanisms and support networks of women with PCOS as well as cognitive fog, cognitive functioning, anxiety, and self-esteem. The results demonstrate how social, emotional, and cognitive elements interact to shape individual experiences.

Key Findings

- Objective deficits in attention and executive functioning (TMT) corroborated the participants' reports of moderate cognitive difficulties.
- Anxiety was found to be the biggest predictor of cognitive fog.
- Anxiety and cognitive fog were negatively correlated with self-esteem, suggesting that more suffering is associated with poorer self-worth.
- There may be a quantifiable basis for cognitive fog if there are significant correlations between subjective (CFQ) and objective (TMT) assessments.
- Both maladaptive (avoidance, withdrawal) and adaptive (exercise, support) coping mechanisms were employed by the participants.
- While gaps in comprehension and affirmation were noted, social support—primarily from friends
- —played a significant impact.
- Identity disruption and diminished confidence were caused by cognitive fog.

Overall, it was discovered that coping and support had a dynamic impact on self-esteem.

LIMITATIONS

There are several restrictions on the study. Because subjective impressions and memory errors might affect participants' responses, the use of self-report measures may result in response bias. Furthermore, the cross-sectional design makes it more difficult to determine the causes of cognitive fog, anxiety, and self-esteem. The results' generalizability may also be limited by the particular group of PCOS-affected women, and cultural or individual differences were not thoroughly examined.

To better understand causal links and changes across time, longitudinal designs should be used in future research. The results would be strengthened by the addition of more thorough objective neuropsychological evaluations. Hormonal and metabolic variables are examples of underlying biological systems that should be investigated further. Increasing the sample size, incorporating a variety of demographics, and using qualitative methods could lead to a better comprehension of the emotional and cognitive experiences associated with PCOS.

Conclusion

This study explains that cognitive fog in women with PCOS is multidimensional influenced by the interaction of cognitive, emotional and social factors. The results shows women with PCOS report challenges in attention, memory and executive functioning, by both subjective assessment and objective cognitive evaluations. These cognitive problems are highly linked to increased anxiety and low self-esteem, showing that emotional discomfort play a important role in the expression and severity of cognitive fog.

The study also demonstrates that how cognitive fog affects identity, self-perception and daily life. It also shows how women report low self-efficacy and disruption in self-perception, specifically when cognitive difficulties interfere with academic, career and social responsibilities. It showed the importance of coping strategies and support systems, with constructive coping and supportive social relationships as preventive factors. Therefore maladaptive coping and limited understanding lead to psychological stress.

The results support the biopsychosocial approach which means that cognitive fog results from the complex interaction of biological (hormonal imbalance), psychological processes and social conditions. It highlights the importance of holistic and combined treatment that point not only physical symptoms but cognitive and emotional health also. By identifying and acknowledging cognitive reports clinically, can improve holistic and patient centred care which can boost the quality of life of women having PCOS.

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