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INCIDENCE OF DEPRESSIVE DISORDERS AMONG FEMALES WITH POLYCYSTIC OVARY SYNDROME (PCOS) IN FAISALABAD, PAKISTAN

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Article Info

Abstract

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder among young females, associated with physical, metabolic, and psychological comorbidities. This study investigates the incidence of depressive disorders among unmarried females aged 16-24 years with PCOS in Faisalabad, Pakistan. A cross-sectional design with convenience sampling was employed, involving 80 participants attending gynecological clinics. Data were collected using an interview schedule, and the Hamilton Depression Rating Scale (HDRS) was used to assess depression levels. Statistical analysis was conducted using SPSS, including chi-square and gamma tests for hypothesis testing. Findings revealed a high prevalence of depression, with 36.3% of participants experiencing severe depression and 31.3% very severe depression. Key contributing factors included older age (22-24 years), longer duration since diagnosis, and low socioeconomic status. The study also highlighted the role of education, timely diagnosis, and financial challenges in exacerbating the psychological and physical burden of PCOS. Surprisingly, more educated respondents reported higher depression levels, potentially due to greater awareness of the syndrome's long-term effects. Regular mental health screening, awareness campaigns promoting healthy lifestyles, and access to affordable treatment options are essential to mitigate the impact of PCOS on mental health..

Keywords: *PCOS, Depressive disorder, HDRS, Females, Pakistan.*

Introduction

Polycystic Ovary Syndrome (PCOS) is a hormonal disorder that affects females, leading to an increase in male hormone (androgen) levels (Goodarzi et al., 2011; Teede et al., 2023). The disorder disrupts the menstrual cycle, leading to irregular or missed periods, complicating pregnancy (Lizneva et al., 2016), causing excessive hair growth on the body and face (hirsutism), thinning hair or baldness, and increasing the risk of long-term conditions like diabetes and cardiovascular disease **(**Escobar-Morreale, 2018**).** Glintborg and Andersen (2010) called PCOS a multi-organ syndrome because it can affect hormones related to sex and the adrenal glands, as well as hormones in the pituitary gland, such as gonadotropins, adrenocorticotropic hormone (ACTH), and growth hormone. PCOS is considered a syndrome because it presents a cluster of symptoms, including ovarian cysts, elevated male hormone levels, and irregular periods (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). Recent studies have explored the interplay between PCOS and metabolic dysfunctions, particularly focusing on insulin resistance as a key factor (Moran et al., 2019). Furthermore, the metabolic complications associated with PCOS are obesity, insulin resistance, abnormal lipid profile, and a high risk of glucose intolerance, which may cause type 2 diabetes. (Tasoula & Tsilchorozidou, 2004). A study by Chachamovich et al. (2010) found that the females with PCOS are at high risk of menopause, infertility, and miscarriages. These complications, in addition to PCOS, negatively impact their quality of life (QOL). New treatments for PCOS are focusing on changing lifestyles, using medications, and personalized care methods to help with both the reproductive and metabolic aspects of the condition (Teede et al., 2020; Piltonen et al., 2021). However, the long-term bad effects of the condition lead to depressive disorder, which is a condition marked by issues with thoughts, mood, and physical health. A study by Trent et al. (2018) revealed that adolescent girls with PCOS are 2.4 times more likely to suffer from depression than their peers without the condition. There are many recognized experiences of the patients of PCOS having elevated ratios of anxiety and depression when compared with the normal people (Jedel et al., 2010). Another similar study showed that women facing infertility are more depressed than the others (Deeks**,** 2010). According to Weiss (2009), controlling and treating the symptoms of PCOS may lessen harmful psychosocial experiences, but without a proper cure, females diagnosed with PCOS may face a lifelong battle against psychosocial disturbances. Depression is also associated with inflammation and metabolic dysregulation, further exacerbating its impact on overall health (Malhi & Mann, 2018). The social implications of depression are profound, often affecting interpersonal relationships and economic productivity (World Health Organization, 2021). Another study indicates that depressive disorder compromises the immune system, making individuals more susceptible to other health issues, such as cardiovascular disease (Kiecolt-Glaser et al., 2018). Depression accounts for more than 50% of suicides among adolescents (Wang et al., 2024).

Justification of the Study

Patients with PCOS recognize the development of depression and anxiety as multifactorial. Despite this, there is a lack of research in Pakistan assessing the prevalence and contributing factors of depressive disorders in females with PCOS. This study aimed to address this gap by investigating the association between PCOS and depressive disorders in the Pakistani context. Furthermore, this study seeks to contribute to the global body of knowledge by exploring cultural and societal factors unique to this population that may influence mental health outcomes.

Objectives

1. To measure the depressive disorder among the target group using the Hamilton scale Hamilton Depression Rating Scale
2. To analyze the relationship between various factors of polycystic Cystic Ovary Syndrome and depressive disorders
3. To suggest some measures to minimize the effects of PCOS on depressive disorders among females

Review of Literature

Young females widely recognize Polycystic Ovary Syndrome (PCOS) as one of the most prevalent endocrine disorders. Lizneva et al. (2016) and Trent Gordon (2020) reviewed the global prevalence of PCOS, emphasizing variations due to diagnostic criteria and regional differences. Tehrani et al. (2011) conducted a study in Iran using clinical histories, ultrasonography, and hormone tests to determine the prevalence of PCOS. The findings revealed varying prevalence rates based on different diagnostic criteria: 11.7% under the AES criteria, 7.1% under the INH definition, and 14.6% according to the Rotterdam consensus. Radosh (2009) reported that PCOS adversely affects 5–10% of females of childbearing age, classifying it as a heterogeneous disorder with an unclear etiology. Azziz et al. (2009) and Joham et al. (2022) highlighted its status as a common condition associated with significant endocrine complications. Hormonal factors also play a significant role in the pathophysiology of PCOS. In 2009, Balen discovered that hormones like insulin, luteinizing hormone (LH), and dehydroepiandrosterone sulfate (DHEAS) make ovarian androgen secretion worse, which helps the syndrome get worse. Farrell & Antoni (2010) explored that although sixty percent of females with PCOS are fertile, the ovulatory infertility is thought to be one of the worst characteristics of PCOS. Recent studies have expanded on these findings, offering greater insight into the global impact and underlying mechanisms of PCOS. Escobar-Morreale (2018) explored the interplay between metabolic syndrome and PCOS, highlighting its long-term health consequences, including diabetes and cardiovascular disease. Bhattacharya & Jha (2010) investigated statistically and found a higher significant risk of depressive disorders in the females with PCOS using controls that consisted of those without PCOS, even when the BMI was controlled. A study by Teede et al. (2020) emphasized the need to focus on lifestyle modification, education, emotional safety, and the quality of life of the patients with PCOS. Furthermore, Piltonen et al. (2021) found that both the patients as well as the medical practitioners were not satisfied with the timeline of diagnosis and treatment of PCOS. The researchers suggested personalized treatment strategies for PCOS, emphasizing the need to address both reproductive and metabolic health concerns.

Methodology

This cross-sectional study employed a quantitative approach to investigate the prevalence of depressive disorders among young females with Polycystic Ovary Syndrome (PCOS) in Faisalabad, Pakistan. The study focused on 80 unmarried females, aged 16-24, diagnosed with PCOS and seeking treatment at gynecological clinics. Convenience sampling was used to recruit participants attending 10 private clinics of famous gynecologists. Data were collected through an interview schedule, which included questions on socio-economic status, family history, dietary habits, body mass index (BMI), and disease-related factors. The Hamilton Depression Rating Scale (HDRS) was used to assess the levels of depression among the participants. Statistical analyses were conducted using SPSS (version 22). Univariate analysis included the calculation of frequencies, percentages, and means to describe the sample characteristics. Bivariate analysis was performed using chi-square tests to examine categorical variables and gamma tests to explore associations between ordinal variables. Hypotheses were tested at a 0.05 significance level to identify significant relationships between

demographic, clinical, and social variables and depressive disorders. This methodological approach ensured a comprehensive examination of the factors contributing to depressive disorders in females with PCOS, providing insights into potential interventions.

Results and Discussions: Univariate analysis (Socio-economic)

Variable	Category	Frequency	Percent
Age Group	16 to 18	20	25.0%
	19 to 21	29	36.3%
	22 to 24	31	38.8%
Education/Occupation	Student	35	43.8%
	Private Sector Employee	18	22.5%
	Government Employee	15	18.8%
	Doing Own Business	8	10.0%
	Unemployed	4	5.0%
Monthly Household Income	Up to Rs. 50,000	26	32.5%
	Rs. 50,001 to Rs. 100,000	29	36.3%
	Rs. 100,001 to Rs. 150,000	16	20.0%
	Rs. 150,001 and above	9	11.3%
Duration of Diagnosis	Less than 1 Year	16	20.0%
	1 to 2 Years	34	42.5%
	More than 2 Years	30	37.5%
Ease of Bearing Disease Costs	Very Difficult	6	7.5%
	Difficult	13	16.3%
	No Opinion	9	11.3%
	Easy	40	50.0%
	Very Easy	12	15.0%
Depression Level (HDRS17)	Normal (0-7)	3	3.8%
	Mild Depression (8-13)	8	10.0%
	Moderate Depression (14-18)	15	18.8%

Severe Depression (19-22)	29	36.3%
Very Severe Depression (≥23)	25	31.3%

Respondents' socio-economic data provides significant insights into the PCOS-affected sample population. The majority (38.8%) of respondents belonged to the age group of 22–24 years, reflecting the inclusion of older adolescents and young adults who are more likely to seek medical treatment. The least represented age group was 16-18 years (25.0%), potentially due to younger individuals being less likely to disclose or seek treatment for PCOS-related issues. These trends align with findings from studies that highlight a delay in seeking medical attention for PCOS-related symptoms among adolescents (Teede et al., 2018). A substantial proportion (43.8%) of respondents were students, which aligns with the study's age criterion and parallels findings from Kumarapeli et al. (2011), who noted a high prevalence of PCOS symptoms among university-age women. The employment trends revealed that 22.5% of respondents worked in the private sector, 18.8% in the government, and 10.0% in business. Unemployment was minimal (5.0%), suggesting that most respondents were actively pursuing education or employment. The largest group (36.3%) reported a household income between Rs. 50,001 and Rs. 100,000, followed closely by 32.5% earning up to Rs. 50,000. Income disparities likely influenced access to healthcare, highlighting the financial challenges faced by lower-income groups in managing PCOS treatment. These findings are consistent with Escobar-Morreale (2018), who emphasized the financial strain associated with PCOS management in low- and middle-income populations. 42.5 percent of the population had a PCOS diagnosis for 1-2 years, while 37.5% had a diagnosis for more than 2 years. The longer duration of diagnosis may contribute to increased financial and emotional challenges, as observed in studies like Jones et al. (2012), which noted that the chronic nature of PCOS amplifies the burden on affected individuals over time. Half (50.0%) of the respondents found it easy to bear the costs of treatment, but 16.3% found it difficult and 7.5% very difficult. This reflects the economic strain experienced by certain individuals, potentially exacerbating the mental health impact of PCOS. Findings from Deeks et al. (2010) also highlight the financial barriers to treatment faced by women with PCOS, further compounding their stress and mental health challenges. Deeks et al. (2010) observed a concerning prevalence of depression, with 36.3% of respondents experiencing severe depression and 31.3% experiencing very severe depression. Moderate depression affected 18.8%, while only 3.8% reported no depressive symptoms. This data underscores the psychological burden associated with PCOS, consistent with findings from Naqvi et al. (2015), which reported high rates of depression among women with PCOS. Studies like Dokras et al. (2012) have widely documented the association between PCOS and mental health challenges, linking PCOS to increased risks of anxiety and depression. The

analysis highlights the intertwined socio-economic and psychological challenges faced by young women with PCOS. Key factors such as income level, employment status, and the duration of illness significantly affect their access to healthcare and overall well-being. Interventions addressing financial and mental health support are essential to mitigate the multifaceted impact of PCOS, as suggested by Escobar-Morreale (2018) and Teede et al. (2018), so there is a dire need to address the issue accordingly.

Bivariate Analysis (Hypotheses testing)

Hypothesis	Chi-Square Value	Significance Level	Gamma Value	Significance Level	Conclusion
H1: The more aged respondents are more depressed.	43.243	0.00	0.495	0.00	Positive relationship: Older respondents (22–24 years) exhibited higher levels of depression compared to younger respondents (16–18 years).
H2: Respondents with less education level are more depressed.	37.728	0.00	0.357	0.009	Weak positive association: Higher education levels led to increased depression, possibly due to greater awareness of the disease's severity and consequences.
H3: Respondents with higher monthly income have less depressive disorder.	36.946	0.00	-0.390	0.005	Negative relationship: Lower-income respondents (up to Rs. 50,000/month) were more severely depressed compared to higher-income respondents (above Rs. 150,000/month).
H4: Longer duration since PCOS diagnosis causes more depression.	21.489	0.01	0.410	0.004	Positive relationship: Respondents diagnosed for more than two years reported higher depression levels than those recently diagnosed (less than one year).
H5: Disease treatment expenses cause depressive disorder.	20.827	0.042	0.193	0.011	General trend: Respondents facing difficulty in affording treatment showed higher depression levels.

The bivariate analysis results show the many factors that affect depressive disorders in women with Polycystic Ovary Syndrome (PCOS), with a focus on health, education, and socioeconomic status. Previous research by Moran et al. (2015) emphasized the limited focus on the mental health of females with PCOS. This syndrome is common during the reproductive years and is associated with various comorbidities, such as excessive hair growth, acne, irregular menstruation, skin darkening, and weight gain. These symptoms underscore the importance of investigating depressive disorders among females with PCOS. Univariate analysis revealed that most respondents were students, reflecting the age range of 18 to 24 years. The Hamilton Depression Rating Scale indicated a high incidence of depressive disorders, with 36.3% of respondents experiencing severe depression and 31.3% experiencing very severe depression. A similar study by Hussain et al. (2015) found that 23% of women with PCOS in India had major depressive disorders. Additionally, Dokras et al. (2018) documented a strong association between PCOS and depression, emphasizing the need for integrated care addressing both physical and mental health. Bivariate analysis revealed that older respondents had higher depression levels, likely due to fears related to infertility and other reproductive health concerns, as noted in research by Bazarganipour (2019). More educated respondents also exhibited higher depression levels, possibly because increased awareness of PCOS's long-term effects heightened their psychological burden. Income level was negatively associated with depression, as those with higher incomes could afford better treatment options, consistent with Escobar-Morreale (2018), who noted the financial burden of PCOS management. Longer durations since diagnosis also correlated with increased depressive symptoms, as this factor exacerbates the physical and psychological burden of PCOS. Studies like Jones et al. (2012) have similarly highlighted that the chronic nature of PCOS amplifies its mental health impact over time. This study confirms the high incidence of depressive disorders among females with PCOS, especially those with longer periods since diagnosis and greater age. It is crucial to screen females with PCOS for depression, particularly those with chronic illness, low income, and advanced age.

Conclusion

This study highlights the multifaceted contributors to depressive disorders among young females with PCOS, emphasizing socioeconomic, educational, and chronic illness factors. The high prevalence of severe depression (36.3%) and very severe depression (31.3%) was identified, with older age, low household income, and longer duration since diagnosis of PCOS being significant contributors. These factors exacerbated the physical and psychological burden, consistent with previous research. Educated respondents showed greater depressive symptoms, likely due to increased awareness of PCOS's long-term effects, while higher-income participants experienced less depression due to access to better healthcare. This study underscores the need for mental health screening in females with PCOS. The findings align with global research, affirming the need for integrated approaches addressing both the physical and psychological aspects of PCOS for improved quality of life.

Recommendations

- Females with PCOS should be regularly screened for depressive disorders. If depression is diagnosed, treatment should be initiated at the earliest.
- Awareness campaigns through print and electronic media should be launched about preventive measures, the benefits of healthy diets, and appropriate treatment options.

Conflict of Interest

Author declared there is no conflict of interest.

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