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Original Research Article

A STUDY ON DEPRESSION, HYPERANDROGENIC FEATURES AND LIFESTYLE PATTERNS AMONG WOMEN WITH PCOS- A HOSPITAL BASED CROSS SECTIONAL STUDY

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Abstract

Background: Polycystic ovarian syndrome, or PCOS, a medical malady, is causing increasing worry because of its long-term repercussions on women's mental and physical health. The objective is to study the lifestyle patterns and association between depression and hyperandrogenic features among women with PCOS attending gynaecology OPD at KGH. **Materials and Methods:** A facility based cross sectional study was conducted among women aged 18-26 years who presented to OPD at OBGY department for a period of 1 year i.e, from October 2022 to October 2023. All the subjects enrolled and included have been diagnosed with PCOS by Rotterdam criteria. Questionnaire was designed keeping in mind the ethnic and lifestyle aspects prevalent locally. A total of 100 individuals completed the questionnaire and the data was found to be complete for all these and therefore included for further analysis. Epi-info 7 was used for analysis. **Result:** The mean height(cm) and weight(kg) of the study group was 160.91 and 65.54 respectively. Of the 100 individuals that comprised the study, 74 % have reported to have irregular menstrual cycles, while 26 % have reported regular cycles. The duration of PCOS was reported to be less than 1 year in 20%, 1-5 years in 44%, >5 years in 19% and > 8 years in 17%. out of 100 individuals, 10% have no hirsutism, 26% have mild hirsutism, 54% have moderate hirsutism and 10% have severe hirsutism. Acne is reported to be the second most common feature in PCOS. It was found that 6% have no acne issues while 85% have mild acne and 9 % have moderate acne. Alopecia in PCOS is considered androgenic. According to Ludwig scale 91% fell into type 1 of Ludwig scale of alopecia and 9% have type 2 alopecia. Depression is found to be statistically significant with a p value of <0.001 among PCOS patients with hirsutism and hair loss. **Conclusion:** To conclude the study, the result, imply that there is a high prevalence of depression in PCOS women and it is significantly associated with hyper androgenic features.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women of reproductive age with increased incidence of emotional disturbances and other psychopathology.[1] The prevalence rate of PCOS is high among Indian women. The pooled prevalence of PCOS was close to 10% using Rotterdam's criteria.[2] The literature reports a range of prevalence in India, from 3.7% to 22.5%.[3,4] Menstrual irregularities, signs of hyperandrogenism, obesity, difficulties with conception, and psychological disorders are all symptoms of PCOS. Clinical manifestations are diverse including hyperandrogenism, anovulation, infertility and increased risk of metabolic diseases besides psychosocial dysfunction.[3]

The number of teenagers and young women receiving PCOS diagnoses is rising, in part because these individuals are more aware of the symptoms, are more inclined to seek medical attention, and are leading increasingly different lives and environments. The majority of young women and adolescents with PCOS are worried about how the condition may affect their physical appearance, such as hirsutism, acne, and central obesity, which can lead to low self-esteem and a negative body image in these patients. Hyperandrogenism, the hallmark

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feature of PCOS, is clinically manifested as hirsutism, acne, and alopecia. Excessive androgen production by ovaries as well as from adrenals contributes to hyperandrogenism.[5-7]

Due to the chronic conditions that are often associated with PCOS and metabolic syndrome, women may experience increased levels of anxiety and despair. It is well recognized that eating disorders, anxiety, and depression can result from long-term stress and a bad body image. PCOS has a severe negative impact on women's physical and emotional health because of its direct effect on health, attractiveness, and fertility, as well as other chronic conditions that are linked to it. Early detection of these mental health problems can improve these women's wellbeing by facilitating early referral to the right mental health professionals.[8,9]

The incidence of hirsutism in PCOS women ranges between 60 and 80%. Acne is the second most common sign of hyperandrogenism. Some studies have estimated the prevalence of acne in patients with PCOS at 9.8–34%.[9,10] Androgenic alopecia is another symptom of hyperandrogenic condition occurring in PCOS women. The incidence of alopecia in PCOS appears to be common, varying widely between 3.2–34.8% in various populations.[10]

MATERIALS AND METHODS

A facility based cross sectional study was conducted among women aged 18-26 years who presented to OPD at OBGY department. All the subjects enrolled and included have been diagnosed with PCOS by Rotterdam criteria which may be diagnosed if any two of the following are present:

- Clinical or biochemical hyperandrogenism
- Evidence of oligo-anovulation
- Polycystic appearing-ovarian morphology on ultrasound, with exclusion of other relevant disorders.

Inclusion Criteria
All women of age group 18-26 years diagnosed with PCOS.

Exclusion Criteria
Ruling out other causes for hyperandrogenism through relevant clinical history and any known psychiatric illness diagnosed earlier.

Methodology-
Data pertaining to the participating individuals was captured majorly under 4 components
Demographic (age, height weight, BMI, etc), Medical (status of menstrual cycle, hyperandrogenic features, mental status, etc), Physical activity related (brisk walk, yoga, jogging, etc), Nutritional details(consumption of processed food, carbonated drinks, etc).

Questionnaire was designed keeping in mind the ethnic and lifestyle aspects prevalent locally. A total of 100 individuals completed the questionnaire and the data was found to be complete for all these and therefore included for further analysis.

Statistical Analysis: Epi-info 7 was used for analysis. The means were used to express all descriptive data and (SD) as well as frequency (%). Fischer's exact test and the chi-square test were used to evaluate how the two groups' primary and secondary outcome measures differed from one another. In terms of statistics, a "p" value less than 0.05 was deemed significant.

RESULTS

The mean height(cm) and weight(kg) of the study group was 160.91 and 65.54 respectively.
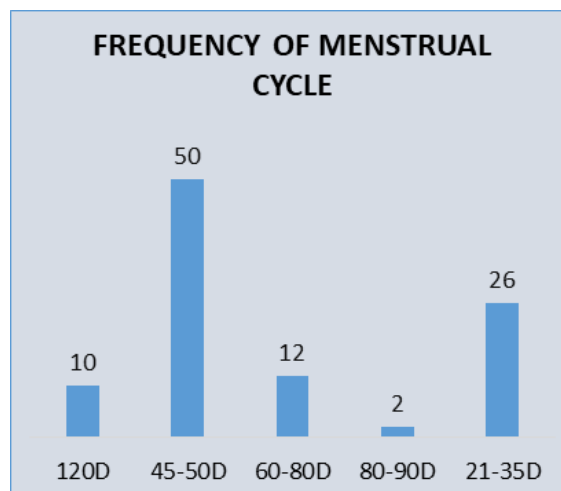

Figure 1: Frequency of Menstrual Cycle

As per [Figure 1] Of the 100 individuals that comprised the study, 74 % have reported to have irregular menstrual cycles, while 26 % have reported regular cycles. The duration of PCOS was reported to be less than 1 year in 20%, 1-5 years in 44%, >5 years in 19% and > 8 years in 17%.

As per [Figure 2] more than 50% of participants were diagnosed through Ultrasonography followed by clinical diagnosis and hormonal profile in the form of PCOS profile.

As per [Figure 3] it shows nearly 45% had processed food per week, 25% per 3 days, 17% rarely take processed food but it was not significant (p>0.05).
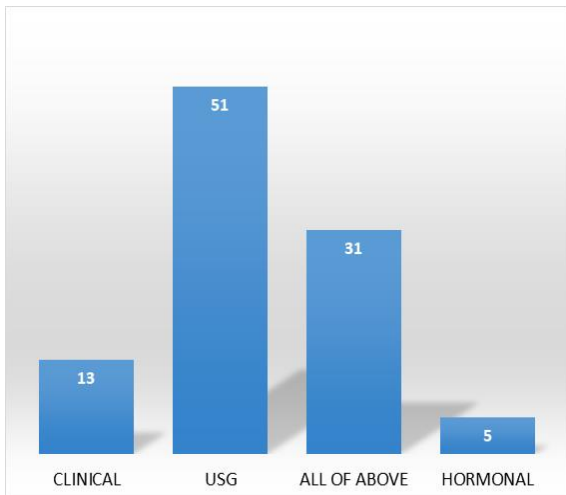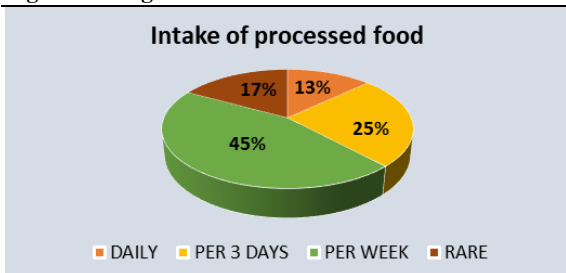
Figure 2: Diagnostic criteria for PCOS

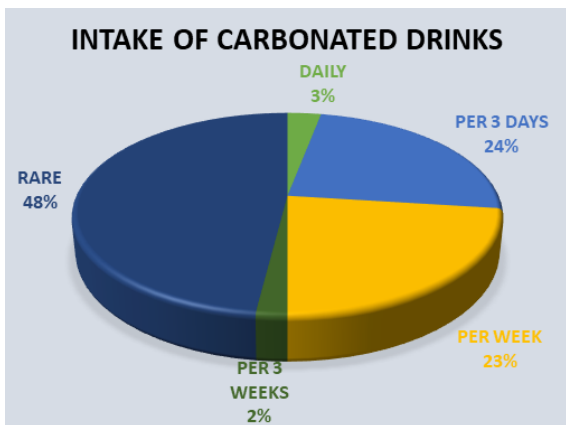**Figure 3: Nutritional related intake of Processed food**

Figure 4: Association of Hyperandrogenism with intake of Carbonated drinks

As per [Figure 4] there was no significant association between hyperandrogenism and intake of carbonated drinks(p>0.05) as 48% rarely take carbonated drinks, while 23% take the drinks per week.
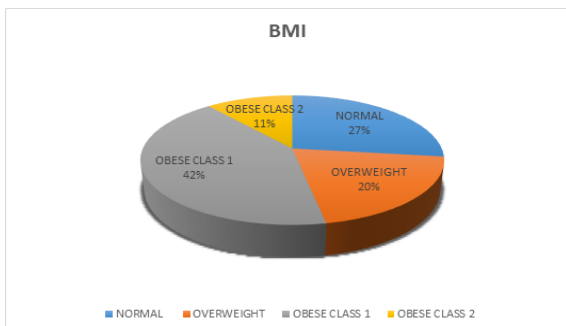

Figure 5: Classification and Association as per BMI

As per [Figure 5] weight was the significant factor as around 53% of study participants belonged to obese class (42% obese class-I and 11% obese class-II) around 20% were overweight which clearly showed weight has a significant role (p<0.05).

Figure 6: Distribution as per physical activity
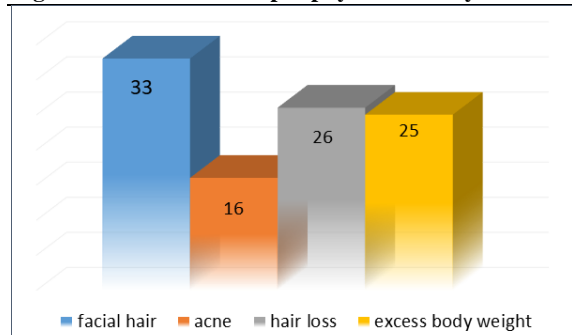

Figure 7: Hyperandrogenic features among study participants

Figure 8:

Figure 9:

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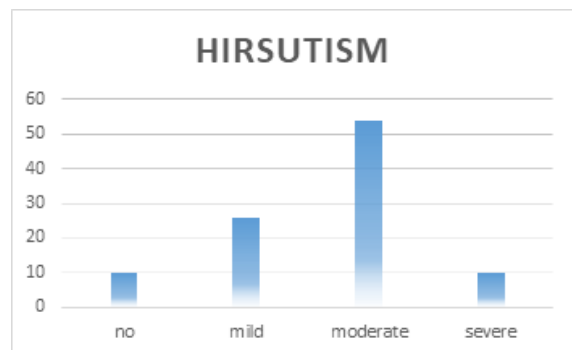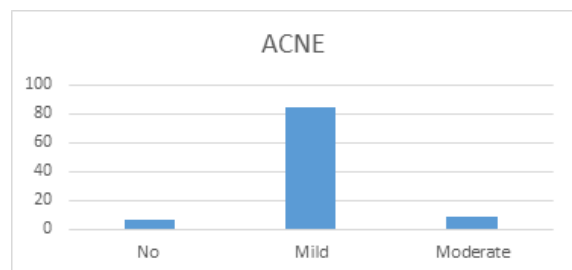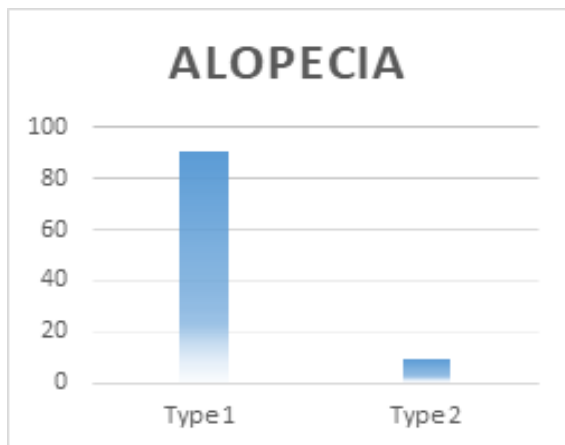ISSN (O): 2687-5365; ISSN (P): 2753-6556

ALOPECIA

Figure 10:

As per [Figure 6] it was seen 53% of study participants have no physical activities on daily basis in the form of walking, jogging etc which resulted in Overweight and obesity. Around 12% showed to be doing aerobic exercises. And 30% use to walk daily.
As per [Figure 7], 33% of study participants are depressed about excessive facial hair while 26% due

to hair loss, 25% due to overweight and 16% due to acne.

Hirsutism is one of the most predominant hyperandrogenic feature in PCOS which is scored by modified ferriman- gallwey scoring system. Pertaining to this study, figure 8 shows that out of 100 individuals, 10% have no hirsutism, 26% have mild hirsutism, 54% have moderate hirsutism and 10% have severe hirsutism.

Acne is reported to be the second most common feature in PCOS. [Figure 9] shows that 6% have no acne issues while 85% have mild acne and 9 % have moderate acne.

Alopecia in PCOS is considered androgenic. According to Ludwig scale figure 10 depicts that 91% fall into type 1 of Ludwig scale of alopecia and 9% have type 2 alopecia.

Hamilton depression scale which is a commonly used worldwide depression scale has been used here and it comprises 17 questionnaires. In this study, out of 100 individuals it was found that 9% have no depression, 29% have mild depression, 36% have moderate depression and 26% have severe depression.

Table 1: Association between Hyperandrogenic features and Depression

Variable		Scale Hamilton	
		Moderate n (%)	Severe n(%)
Ferriman score	Mild	22 (57.9)	14 (22.6)
	Moderate and severe	16 (42.1)	48(77.4)

Using the chi square test to test the variables and finding association (hyperandrogenic features and depression), it was found that the p value was significant with p value of 0.006 for ferriman score and 0.02 for Ludwig scale.

DISCUSSION

A prevalent ailment that affects reproduction as well as other aspects of health is ovarian syndrome. When two of the three criteria—polycystic ovarian morphology, hyperandrogenism characteristics, and oligo-anovulation—are met, women are diagnosed with PCOS (Rotterdam's criteria).4It is linked to psychological disorders, obesity, metabolic syndrome, type 2 diabetes development, and problems with conception. As a result, it has the potential to significantly lower health-related quality of life and is currently rising to the status of a non-communicable disease of concern.

The Rotterdam criteria for PCOS diagnosis caused some controversy when they were first introduced. These were later revised as part of the NIH 2012 extension of ESHRE/ASRM 2003, which suggested broader Rotterdam/ESHRE/ASRM criteria with additional PCOS phenotype classification.[4]

The most significant contributing element to the pathophysiology of PCOS and metabolic syndrome is thought to be insulin resistance. There is proof that among PCOS patients, insulin resistance is a significant and independent risk factor for

depression.[8,9] It is thought that in addition to environmental influences, genetic diversity in the regulation of insulin metabolism in various populations affects the development of the disease. When it comes to insulin resistance, South Asian women with PCOS have higher levels than do anovulatory white Caucasian women.[11,12]

Additional explanations for these women's higher risk of mood and anxiety disorders include higher levels of androgens, anomalies in the hypothalamic-pituitary-adrenal axis, and enhanced inflammatory markers.[13] The psychosocial effects of physical changes including hirsutism, acne, acanthosis nigricans, and central obesity in teens and young women can cause low self-esteem in women and contribute to depressive diseases. In women, hirsutism prevalence has been reported to range from 50% to 89%.[13] In our study, 82.19% of PCOS-affected women exhibited hirsutism.According to published reports, 20–40% of women with PCOS have acne.[14] Long-term effects of PCOS include cancers (such as pancreatic, breast, colorectal, and endometrial), anxiety, depression, Type 2 diabetes, sleep apnea, and metabolic syndrome, which raises the risk of cardiovascular disease.

Anxiety was shown to be highly prevalent in an Australian study on PCOS, with 47% of patients receiving an anxiety diagnosis (21% for mild anxiety and 36% for moderate to severe anxiety).[15] According to Upadhyay et al., 28% of women had higher anxiety levels.[16] Women with PCOS have been found to exhibit increased HPA axis and heart

rate responsiveness to stress, making them more anxious.[17] In our study, the prevalence of moderate depression in cases of depression was similar in both groups. The PCOS group had a higher prevalence of moderate to severe depression (17.8%) compared to the control group (5.13%), a statistically significant difference. In a study of 478 women with PCOS, Damone et al. found that the prevalence of depression was 27.3% (compared to 18.8% in the control group).[18]

A further study conducted by Jha et al,[19] found that the PCOS group had greater odds (increasing 4.18 times) of moderate to severe anxiety in 11 studies and higher odds (OR 6.55) of moderate to severe depression in a meta-analysis of 9 studies on depression. In this investigation, the PCOS group had an overall reported incidence of anxiety that was five times greater and depression that was three times higher. The interquartile range for the median prevalence of anxiety was 13.6% to 52%, and the median prevalence of depression was 36.6% with an interquartile range of 22.3% to 50%.

In a study of young women and adolescents, Karacan et al,[20] observed no differences in eating habits and body dissatisfaction between the PCOS and non-PCOS groups.20 According to Lee et al., women with PCOS had considerably higher mean scores on the eating disorder questionnaire than women without PCOS. Women with PCOS and eating disorders scored lower on the quality of life scale, indicating that their conditions have a detrimental effect on these women's lives.[21] While women with PCOS are thought to be more susceptible to eating disorders, our study's sample did not exhibit similar outcomes when compared to the control group.

CONCLUSION

To conclude the study, the result, imply that there is a high prevalence of depression in PCOS women and it is significantly associated with hyperandrogenic features. PCOS is an emerging medical malady and is highly prevalent in young women affected by lifestyle patterns and depression due to hyperandrogenic features plays a pivot role. Minor variations in lifestyle and regular counselling sessions helps tackle depression to an overall better physical and mental health.

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