



SLEEP QUALITY AND LIFESTYLE PRACTICES AMONG WOMEN WITH POLYCYSTIC OVARY SYNDROME: A HOSPITAL-BASED OBSERVATIONAL CASE-CONTROL STUDY

Psychiatry

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ABSTRACT

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age, with known associations to sleep disturbances. This study aims to investigate the relationship between PCOS, sleep quality, and lifestyle factors, including diet, physical activity, stress, alcohol consumption, and smoking. **Methods:** A hospital-based case-control study was conducted with 75 women with PCOS and 75 age-matched controls. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), and lifestyle factors were evaluated using The Simple Lifestyle Indicator Questionnaire. **Results:** Women with PCOS showed significantly poorer subjective sleep quality ($p < 0.001$) and habitual sleep efficiency was near significant ($p = 0.058$) compared to controls. Other PSQI components including sleep latency, duration, use of sleeping medication, and daytime dysfunction did not reach statistical significance. Lifestyle assessment revealed significantly lower physical activity ($p = 0.004$) and higher stress levels ($p = 0.001$) in the PCOS group. Diet quality was near significant ($p = 0.062$). Alcohol consumption and smoking prevalence were low in both groups. Socio demographic variables including age, education, occupation, marital status, religion, and socioeconomic status were comparable between groups. **Conclusion:** Women with PCOS experience compromised sleep quality, particularly in subjective measures, alongside lifestyle challenges such as reduced physical activity and elevated stress. Addressing sleep and lifestyle factors is essential in the comprehensive management of PCOS to improve health outcomes.

KEYWORDS

Polycystic Ovary Syndrome, Sleep Quality, Lifestyle Factors, Comprehensive management

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder among women of reproductive age, characterized by irregular menstrual cycles, anovulation, and metabolic dysfunction. A significant yet often overlooked aspect of PCOS is sleep disturbances. Sleep quality plays a crucial role in overall health, and poor sleep can exacerbate existing health problems, particularly in women with PCOS.

Women with PCOS frequently experience sleep disturbances. Studies have demonstrated that women with PCOS often report poor subjective sleep quality, leading to fatigue, mood disturbances, and cognitive impairment [1].

Lifestyle factors play a significant role in the management of PCOS both in causative role as well as alleviating role such as healthy diet, physical activity, managing the stress levels. [2].

While the importance of sleep and lifestyle in PCOS is well-established, further research is needed to elucidate their complex interactions. A deeper understanding of these relationships could transform the approach to PCOS management, emphasizing a holistic perspective that encompasses not only symptom control but also the promotion of overall health and well-being.

AIMS AND OBJECTIVES

The primary aim of this study was to investigate the relationship between sleep quality and lifestyle practices among women with Polycystic Ovary Syndrome (PCOS) compared to a control group of age-matched women without PCOS.

MATERIALS AND METHODS

This hospital-based case-control study included a total of 150 participants, comprising 75 women diagnosed with Polycystic Ovary Syndrome (PCOS) and 75 age-matched women without PCOS serving as controls. The study was conducted in The Oxford Medical College, Hospital and Research Centre. Participants were recruited from the gynecology outpatient department during their routine visits or consultations related to PCOS.

Inclusion criteria for the PCOS group consisted of women aged 18-45 years with a confirmed diagnosis of PCOS based on the Rotterdam criteria. The control group included women of the same age range who had no history or current diagnosis of PCOS or any other endocrine disorders that could affect sleep or lifestyle. Exclusion criteria for both groups encompassed pregnancy, severe psychiatric disorders, shift work, or any condition that might independently influence sleep quality or lifestyle habits, such as chronic insomnia or significant

physical disabilities.

Data collection involved the administration of two validated instruments: the Pittsburgh Sleep Quality Index (PSQI) and The Simple Lifestyle Indicator Questionnaire. The PSQI was employed to assess sleep quality over the past month. Each participant completed the PSQI, which consists of 19 self-rated items and 5 items rated by bedpartners or roommates, if available. This instrument evaluates various components of sleep, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. A global score was calculated, with scores exceeding 5 indicating poor sleep quality.(3)

The Simple Lifestyle Indicator Questionnaire was utilized to collect data on dietary habits, physical activity, alcohol consumption, smoking status, and perceived stress over the past year. This questionnaire included sections assessing the frequency of consumption of specific food types, such as lettuce or green leafy salad, fruits, and high-fiber cereals, as well as the frequency of participation in light, moderate, and vigorous physical activities. Alcohol consumption was quantified by the number of drinks consumed per week, categorized into wine, beer, and spirits. Smoking habits were recorded as current smoker, former smoker, or never smoker. Perceived stress was assessed on a scale from 1 (very stressful) to 6 (not at all stressful).(4)

Statistical analyses were performed using appropriate software to compare the PSQI scores and lifestyle indicator scores between the PCOS and control groups. Descriptive statistics were employed to summarize the data, while inferential statistics, including independent samples t-tests for continuous variables and chi-square tests for categorical variables, were used to determine significant differences. All analyses were performed with a significance level set at $p < 0.05$.

RESULTS

The study compared 75 women with PCOS and 75 controls on various socio-demographic, sleep quality, and lifestyle parameters. Key findings are summarized in the tables below.

Table 1: Socio Demographic Characteristics Of Cases And Controls

Characteristic	Cases (n=75)	Controls (n=75)
Age (years), Mean $\pm$ SD	28.5 $\pm$ 4.2	28.2 $\pm$ 4.1
Education Level, n (%)		
- High School	13 (17.3%)	13 (17.3%)
- Graduate	31 (41.0%)	46 (61.7%)

- Postgraduate	18 (24.0%)	16 (21.0%)
Occupation Category, n (%)		
- Nurse	10 (13.33%)	20 (26.67%)
- Student	20 (26.67%)	20 (26.67%)
- Skilled Workers	10 (13.33%)	5 (6.66%)
- Homemaker	12 (16.67%)	10 (13.33%)
Marital Status, n (%)		
- Unmarried	35 (46.67%)	37 (50.0%)
- Married	40 (53.33%)	38 (50.0%)
Religion, n (%)		
- Hindu	61 (81.00%)	63 (83.33%)
- Muslim	11 (14.67%)	10 (13.34%)
- Christian	3 (4.33%)	2 (3.33%)
Background, n (%)		
- Rural	65 (86.67%)	60 (80.00%)
- Urban	10 (13.33%)	15 (20.00%)
Socio-economic Status, n (%)		
- Lower	30 (40.00%)	35 (46.67%)
- Middle	40 (53.33%)	37 (50.00%)
- Upper	5 (6.67%)	3 (3.33%)

Table 2: Sleep Quality Comparison Between PCOS And Control Groups

PSQI Component	PCOS Group (n=75)	Control Group (n=75)	p-value
Global Score	7.8 ± 3.1	5.2 ± 2.5	
Subjective Sleep Quality	1.9 ± 0.8	1.3 ± 0.6	<0.001 (Significant)
Sleep Latency	1.7 ± 0.9	1.2 ± 0.7	0.07
Sleep Duration	1.5 ± 0.7	1.1 ± 0.6	0.09
Habitual Sleep Efficiency	1.4 ± 0.8	1.0 ± 0.5	0.06 (Near Significant)
Sleep Disturbances	1.6 ± 0.7	1.3 ± 0.6	0.10
Use of Sleeping Medication	0.8 ± 0.6	0.3 ± 0.5	0.12
Daytime Dysfunction	1.3 ± 0.7	0.9 ± 0.6	0.08

Table 3: Simple Lifestyle Indicator Comparison

Lifestyle Indicator Category	PCOS Group (n=75)	Control Group (n=75)	p-value
Diet	2.3 ± 1.1	2.9 ± 1.0	0.06 (Near Significant)
Activity	1.8 ± 0.9	2.5 ± 0.8	0.02 (Significant)
Stress	3.7 ± 1.2	4.2 ± 1.1	0.01 (Significant)
Alcohol (drinks/week)	3 (4%)	2 (3%)	0.65
Smoking (% current smokers)	4 (5%)	3 (4%)	0.70

DISCUSSION

The relationship between Polycystic Ovary Syndrome (PCOS) and sleep disturbances has gained increasing recognition as a significant area of concern, with recent studies highlighting the prevalence and impact of poor sleep quality in women with PCOS. Our findings align with several studies that have explored this intersection, providing a broader context to understand the implications and potential management strategies.

A meta-analysis by Zhang et al. [5] demonstrated a high prevalence of sleep disturbances in women with PCOS, reporting an odds ratio (OR) of 6.22 (95% CI: 2.77, 13.97; $p < 0.001$) for sleep disturbance among this population. This study also found higher Pittsburgh Sleep Quality Index (PSQI) scores (MD = 2.10; 95% CI: 0.29, 3.90; $p = 0.02$) and shorter sleep duration (MD = -15.65 min; 95% CI: -27.18, -4.13; $p = 0.008$) in women with PCOS compared to those without. These findings underscore the significant burden of sleep issues in PCOS patients, consistent with our results, which also indicated compromised sleep quality. Regarding cardiovascular risk, the meta-analysis by Zhang et al. also highlighted that women with PCOS and sleep disturbances had significantly higher cardiovascular risk factors compared to those without sleep issues. This finding is critical, as it suggests that sleep management might be a key component in reducing cardiovascular risks associated with PCOS, aligning with our emphasis on the need for comprehensive lifestyle changes, including sleep hygiene.

in a community-based sample and found that women with PCOS reported greater adverse sleep symptoms, including severe tiredness ($P = 0.001$), difficulty sleeping ($P < 0.001$), and restless sleep ($P < 0.001$). While our study did not specifically assess these symptoms, the alignment with increased PSQI scores in the meta-analysis suggests a common thread of sleep quality issues across different populations of women with PCOS.

Furthermore, the association between sleep disturbances and lifestyle behaviors was explored by Bennett et al. [7], who found that sleep disturbances might influence lifestyle behaviours in women with self-reported PCOS. This is particularly relevant as lifestyle modifications, including sleep hygiene, are pivotal in managing PCOS symptoms. Our study supports this notion by suggesting that improving sleep could potentially enhance lifestyle management, although we did not directly quantify the impact on behaviours.

However, not all studies are in complete agreement. For instance, the study by Fogel et al. [8] focused on the prevalence of obstructive sleep apnea (OSA) in obese women with PCOS, finding a higher incidence in this subgroup. While our study did not specifically address OSA, this highlights the spectrum of sleep disorders that might be more prevalent in certain demographics within the PCOS population, suggesting the need for **tailored** approaches in sleep management strategies.

In summary, the evidence from various studies, including our own, indicates a clear link between PCOS and disturbed sleep patterns, with implications for both lifestyle management and cardiovascular health. The consistency in findings across different studies reinforces the necessity of incorporating sleep hygiene into the standard care for women with PCOS.

CONCLUSION

In conclusion, our study, along with corroborative research, confirms that women with PCOS experience a significantly higher prevalence of sleep disturbances compared to the general population. The statistics from various studies demonstrate an increased risk and impact on sleep quality, with implications for lifestyle and cardiovascular health.

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In contrast, a study by Moran et al. [6] investigated sleep disturbances