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ANTHROPOMETRIC AND LIFESTYLE CORRELATES OF POLYCYSTIC OVARY SYNDROME: A RETROSPECTIVE CROSS-SECTIONAL ANALYSIS

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Abstract

Background: Polycystic Ovary Syndrome (PCOS) is a multifactorial endocrine disorder commonly associated with obesity and unhealthy lifestyle behaviors. Modifiable factors such as fast food consumption and lack of physical activity may influence the severity and progression of PCOS.

Objective: To assess the anthropometric profile and evaluate the prevalence of fast food consumption and regular physical activity among women diagnosed with PCOS in a tertiary care setting.

Methods: This retrospective cross-sectional study analyzed the clinical records of 150 women diagnosed with PCOS at Department of Gynaecology & Obstetrics, Varun Arjun Medical College & Rohilkhand Hospital. Data on age, weight, height, BMI, fast food intake, and physical activity status were extracted. Descriptive statistics were applied, and Chi-square tests were used to examine associations between BMI categories and lifestyle behaviors.

Results:

The mean age of participants was 29.92 ± 5.28 years, and the mean BMI was 25.58 ± 4.24 kg/m². Fast food consumption was reported by 81 participants (54.0%), and 69 (46.0%) did not consume fast food. Regular physical activity was reported by only 8 participants (5.3%), while 142 (94.70%) were physically inactive. There was no significant association between BMI and fast food consumption ($p = 0.051$), but a statistically significant association was found between BMI and physical activity ($p = 0.041$), with higher BMI associated with lower levels of exercise.

Conclusion: The majority of women with PCOS exhibited elevated BMI and a sedentary lifestyle. Although fast food consumption was common across BMI groups, physical inactivity was significantly more prevalent among overweight and obese individuals. These findings highlight the need for targeted lifestyle interventions focusing on physical activity as part of routine PCOS management.

Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders affecting women of reproductive age, with an estimated global prevalence ranging between 6% and 20%, depending on the diagnostic criteria applied [1]. Characterized by hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology, PCOS is not only a gynecological concern but also a significant

metabolic and public health issue. It is frequently associated with obesity, insulin resistance, type 2 diabetes, cardiovascular risk, and impaired quality of life [2,3].

In recent years, there has been growing recognition of the role of modifiable lifestyle factors—particularly diet and physical activity—in the onset and progression of PCOS [4]. High intake of calorie-dense, processed foods and physical inactivity have been identified as key contributors to metabolic dysfunction in women with PCOS, independent of their weight status [5]. The Rotterdam consensus emphasizes lifestyle modification as the first-line treatment for PCOS-related metabolic and reproductive abnormalities [6]. However, despite this recognition, a large proportion of women with PCOS continue to exhibit unhealthy dietary habits and sedentary behavior, which may exacerbate their clinical symptoms [7].

While numerous studies have explored the biochemical and hormonal dimensions of PCOS, fewer have focused on the real-world lifestyle patterns of these women, particularly in the Indian subcontinent. There is limited literature from this region that objectively documents the anthropometric trends and everyday lifestyle choices—such as fast food consumption and physical activity levels—among women with PCOS in a clinical setting.

The idea for this study originated from routine clinical observations in a tertiary care hospital, where a consistent pattern of elevated BMI and self-reported sedentary lifestyle was noted among women diagnosed with PCOS. These patterns warranted systematic documentation and analysis, especially to aid early intervention planning in resource-limited settings.

The aim of this study is to evaluate the anthropometric characteristics and assess key lifestyle factors—namely fast food intake and regular physical exercise—among women diagnosed with PCOS in a retrospective hospital-based cohort. The findings are expected to provide baseline evidence to support lifestyle-based interventions tailored for this population.

Material and Methods

Study Design and Setting

This study employed a retrospective cross-sectional design and was conducted at Department of Gynaecology & Obstetrics, Varun Arjun Medical College & Rohilkhand Hospital. The aim was to assess the anthropometric profiles and lifestyle behaviors—specifically fast food consumption and physical activity—among women diagnosed with Polycystic Ovary Syndrome (PCOS). Data was collected over a one-year study duration, from January 2024 to December 2024, through a review of existing medical records.

Study Population

The study population consisted of 150 women with a documented diagnosis of PCOS based on the hospital's clinical criteria. These participants were selected from outpatient and inpatient departments where routine endocrine and gynecological assessments were conducted. The diagnosis was made by qualified clinicians and recorded in the case files.

Inclusion and Exclusion Criteria

Women of reproductive age (18–45 years) with a confirmed diagnosis of PCOS and complete documentation of anthropometric and lifestyle parameters were included in the study. Records lacking critical data such as age, weight, height, BMI, or lifestyle history (fast food consumption and physical activity) were excluded. Additionally, any record without an explicit diagnosis of PCOS was not considered for analysis.

Data Collection Procedure

Data were extracted manually from hospital case files and entered into Microsoft Excel for analysis. The variables collected included:

- **Anthropometric data**: Age (in years), weight (in kilograms), height (in centimeters), and body mass index (BMI in kg/m²).

- **Lifestyle data**: Self-reported fast food consumption (Yes/No) and participation in regular physical activity (Yes/No), as documented by the attending physician or noted in the patient's lifestyle history. BMI was calculated using the formula weight (kg)/height² (m²) and categorized based on World Health Organization (WHO) classification as underweight (<18.5), normal (18.5–24.9), overweight (25.0–29.9), and obese (≥30.0).

Statistical Analysis

Descriptive statistics, including mean, standard deviation, minimum, and maximum values, were computed for continuous variables (age, weight, height, BMI). Frequencies and percentages were calculated for categorical variables (fast food consumption, physical activity, BMI categories). The association between BMI category and lifestyle factors was assessed using the Chi-square test. A p-value less than 0.05 was considered statistically significant. All statistical analyses were performed using IBM SPSS Statistics software, version 26.0.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethics Committee of Varun Arjun Medical College & Rohilkhand Hospital, prior to the commencement of data collection. Since the study was retrospective in nature and involved no direct contact with patients, individual consent was waived. All data were anonymized to protect patient confidentiality, and the study was conducted in compliance with the Declaration of Helsinki and institutional research ethics guidelines.

Results

A total of 150 women diagnosed with Polycystic Ovary Syndrome (PCOS) were included in the study. The mean age of participants was 29.92 years, and the mean BMI was 25.58 kg/m² (Table & Figure 1). Descriptive statistics for anthropometric parameters are presented below (Table 1).

Table 1: Anthropometric Characteristics of PCOS Patients

Variable	Mean ± SD	Minimum	Maximum
Age (years)	29.92 ± 5.28	21.0	47.0
Weight (kg)	63.25 ± 11.91	31.0	104.0
Height (cm)	157.02 ± 6.16	144.0	180.0
BMI (kg/m²)	25.58 ± 4.24	12.4	38.5

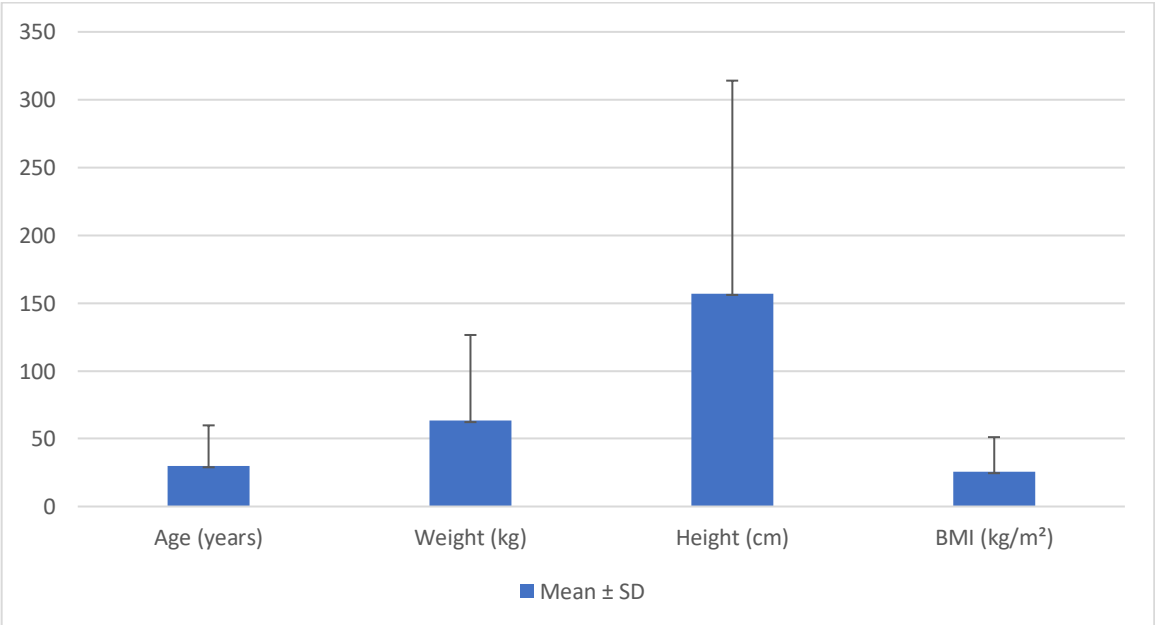

Figure 1: Anthropometric Characteristics of PCOS Patients

Fast food consumption was reported by 54.0% of participants. Only 5.3% engaged in regular physical exercise (Table & Figure 2).

Table 2: Distribution of Lifestyle Factors Among PCOS Patients

Lifestyle Factor	Response	Frequency (Percentage)
Fast Food Consumption	Yes	81 (54.0%)
	No	69 (46.0%)
Total	150 (100.0%)	
Regular Physical Exercise	Yes	8 (5.3%)
	No	142 (94.7%)
Total	150 (100.0%)	

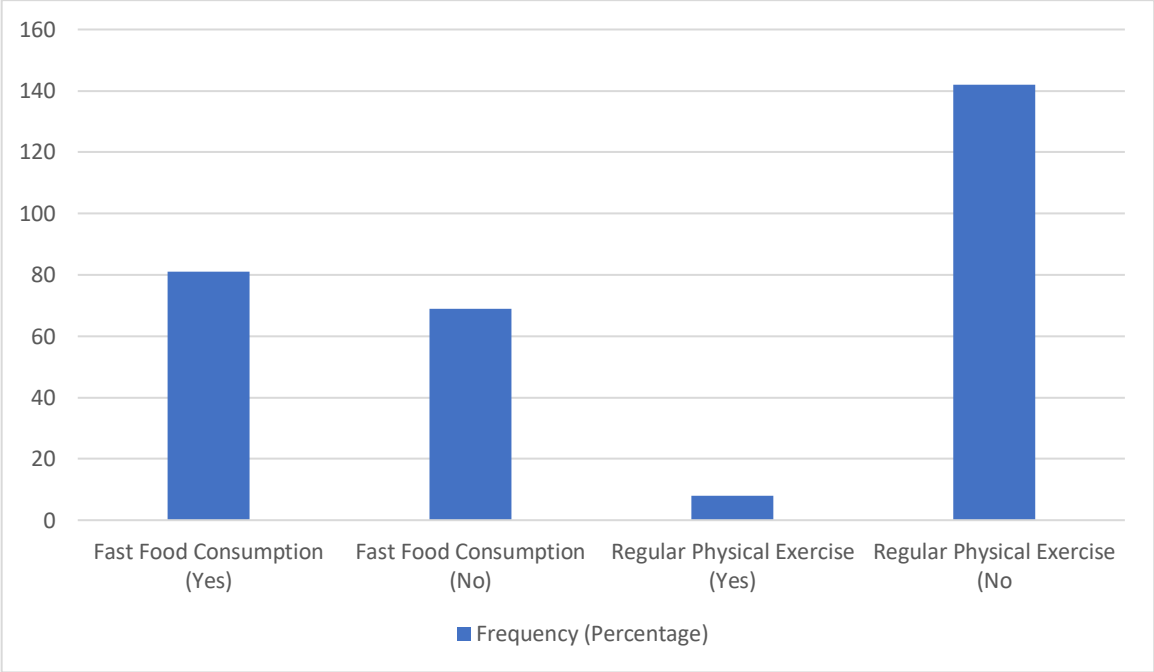

Figure 2: Distribution of Lifestyle Factors Among PCOS Patients

The highest proportion of fast food consumption was reported among obese participants (94.7%), followed by overweight (87.7%), normal (81.0%), and underweight (62.5%) (Table & Figure 3). The association between BMI and fast food consumption was not statistically significant (Table 3).

Table 3: Association Between BMI Category and Fast Food Consumption

BMI Category	Fast Food: No	Fast Food: Yes	Total (n = 150)	**p-Value**
Underweight	3 (37.5%)	5 (62.5%)	8 (100.0%)	0.051
Normal	20 (34.5%)	38 (65.5%)	58 (100.0%)	
Overweight	33 (50.8%)	32 (49.2%)	65 (100.0%)	
Obese	13 (68.4%)	6 (31.6%)	19 (100.0%)	
Total	69 (46.0%)	81 (54.0%)	150 (100.0%)	

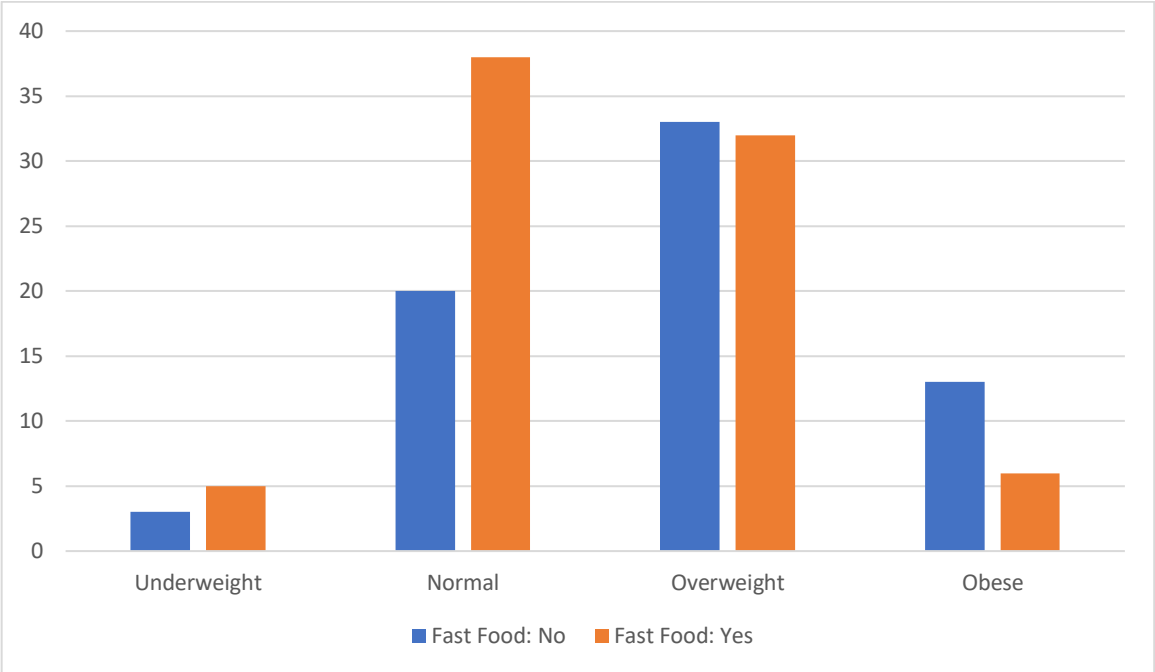

Figure 3: Association Between BMI Category and Fast Food Consumption

Normal BMI individuals had the highest rate of regular physical activity (41.4%), while obese participants had the lowest (15.8%) (Table & Figure 4). A significant association was found between BMI category and regular physical exercise (Table 4).

Table 4: Association Between BMI Category and Regular Physical Exercise

BMI Category	Exercise: No	Exercise: Yes	Total (n = 150)	p-Value
Underweight	6 (75.0%)	2 (25.0%)	8 (100.0%)	**0.041**
Normal	54 (93.1%)	4 (6.9%)	58 (100.0%)	
Overweight	64 (98.5%)	1 (1.5%)	65 (100.0%)	
Obese	18 (94.7%)	1 (5.3%)	19 (100.0%)	
Total	142 (94.7%)	8 (5.3%)	150 (100.0%)	

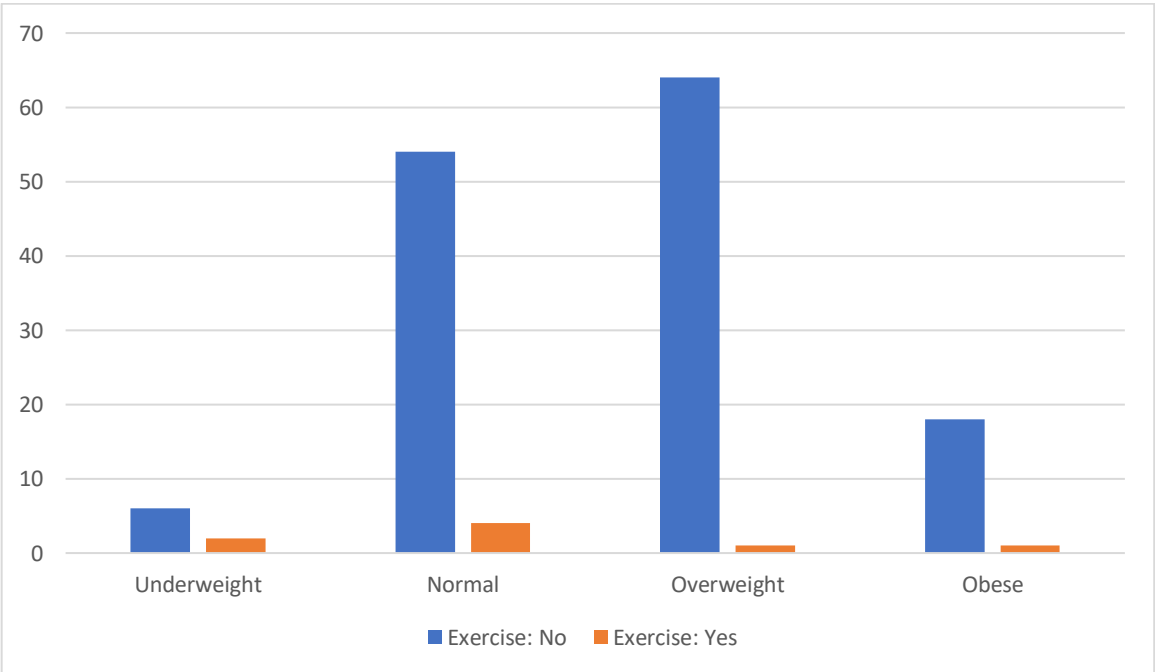

Figure 4: Association Between BMI Category and Regular Physical Exercise

Discussion

This study analyzed the anthropometric characteristics and lifestyle behaviors of women diagnosed with Polycystic Ovary Syndrome (PCOS) in a tertiary care setting. The findings reinforce the growing understanding of PCOS as a condition heavily influenced by modifiable factors such as body weight and lifestyle habits.

The majority of participants were either overweight or obese, with a mean BMI of 25.58 kg/m². This supports previous studies, including those by Barber et al. and Lim et al., who reported high rates of obesity in women with PCOS and emphasized its contribution to metabolic and reproductive complications associated with the syndrome [8,9]. Excess adiposity is known to aggravate insulin resistance, hyperandrogenism, and menstrual irregularities in PCOS patients [10].

Although fast food consumption was prevalent in more than half of the participants (54.0%), no statistically significant association was found between BMI category and fast food intake. These results are partially consistent with the work of Eleftheriadou et al., who reported high rates of fast food consumption in adolescent girls with PCOS but also emphasized that dietary impact may extend beyond BMI to influence hormonal and metabolic markers [11]. Hassanzadeh et al. similarly noted a link between frequent intake of energy-dense foods and menstrual abnormalities, suggesting dietary patterns contribute to symptom severity irrespective of body weight alone [12].

A key finding of this study was the inverse association between BMI and physical activity, with the lowest rates of exercise reported among overweight and obese women. This trend mirrors earlier work by Amiri et al. and Moran et al., who documented low physical activity levels and high sedentary behavior in women with PCOS [13,14]. Reduced physical activity has been linked not only to worsened metabolic profiles but also to mood disturbances and poor quality of life in PCOS patients [15].

While the study adds value by highlighting real-world lifestyle trends in women with PCOS, certain limitations must be acknowledged. The retrospective design limits causal inference and may introduce documentation bias. Self-reported lifestyle data, although recorded by clinicians, may not reflect accurate frequency, intensity, or duration of behaviors. The absence of biochemical, hormonal, and psychological data further limits the depth of analysis and precludes exploration of interrelated PCOS phenotypes.

Despite these limitations, the study provides baseline data that can inform targeted public health strategies and clinical interventions. Emphasizing physical activity—especially in overweight and obese PCOS patients—could improve both metabolic and reproductive outcomes. In clinical practice, a structured lifestyle intervention approach, incorporating dietary counseling, behavioral motivation, and personalized activity plans, may yield better adherence and outcomes.

Conclusion

In conclusion, this study demonstrates that women with PCOS commonly present with elevated BMI and poor physical activity patterns. Although fast food consumption was widespread, it did not correlate significantly with BMI. These findings support the implementation of lifestyle-focused interventions that prioritize increased physical activity. Future research should consider prospective, multicentric studies with broader clinical assessments to guide more individualized care pathways in PCOS management.

Conflicts of Interest

The authors declare no conflicts of interest in relation to this study.

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