Life Style-Driven Comparative Assessment of PCOS Risk in Day Scholars and Hostellers

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Abstract: *Polycystic Ovary Syndrome (PCOS) is a complex endocrine syndrome which is widespread among young females. The habits of lifestyle, especially the time spent sleeping, eating habits, and physical exercise are very important in its development. These risks can also be determined by environmental and social issues, including the residence set up. A comparative cross-sectional study was carried out in a population of 150 female college students (18 years 25 years) in May 2025. Respondents were also split in equal proportion of day scholars (n=75) and hostellers (n=75). An integrated model was used to evaluate the PCOS risk and the parameters incorporated in the study included Body Mass Index (BMI), menstrual irregularity, acne severity, hirsutism (Ferriman Gallwey score), waist-hip ratio, blood pressure, sleep quality, and physical activity (MET score). Hostellers showed a great deal more mean PCOS risk score (mean = 3.28 ± 1.20) than day scholars (mean = 2.56 ± 1.39; p=0.001). Hostellers had a significantly higher poor sleep (<6 h or disturbed), and low physical activity (MET < 600) (p=0.006 and p=0.028, respectively). Among day scholars, female BMI, irregular menstrual cycle, acne, lack of physical activity, poor sleep and high waist-hip ratio were found to be related to high level of PCOS risk (p<0.05).*

Keywords: PCOS, Lifestyle, Day scholars, Hostellers, Sleep, Physical activity, BMI, Women's health

1. Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders affecting reproductive-aged women, with an estimated global prevalence of 5–20%.[1] It is characterized by hormonal imbalance, menstrual irregularities, and metabolic disturbances.[2,3]

Lifestyle factors- particularly diet, physical inactivity, sleep deprivation, and stress- play an important role in the manifestation of PCOS. In India, the burden of PCOS is increasing among young female students due to irregular schedules, unhealthy eating habits, and sedentary lifestyles.[4,5]

In recent studies the global prevalence of PCOS ranges between 5- 26%, with rising incidence among young Indian women, particularly in urban and college populations.[8]PCOS is not only a reproductive disorder but also a cardiometabolic condition linked to insulin resistance, hypertension, and lipid abnormalities.[9]

Even women with normal BMI, termed "lean PCOS," can experience hormonal imbalances, menstrual irregularities, and ovarian dysfunction, indicating that body weight alone is not a protective factor.[10]

Living arrangements influence lifestyle behaviors. When compared to day scholars, hostellers can have altered sleep distribution, dietary disequilibrium and lack of physical exercises. All these may lead to a higher level of metabolic stress and a change in hormonal activity, which make people vulnerable to PCOS.

The aim of the study was to compare the PCOS risk in day scholar and hostellers based on the integrated lifestyle-based risk assessment model

2. Material & Methods

Study Design: Comparative cross-sectional study.

Setting: At Dasmesh College of Physiotherapy, Faridkot, Punjab, in May 2025.

Participants
A total of 150 female students aged 18–25 years were included, divided into:
Day scholars (n = 75)
Hostellers (n = 75)

Inclusion Criteria
- Female college students aged 18–25 years
- Regularly attending college (either hosteller or day scholar)
- Willing to provide informed consent

Exclusion Criteria
- Known cases of diagnosed PCOS under treatment
- Use of hormonal contraceptives or metabolic medication
- Chronic illnesses influencing hormonal or metabolic status

Assessment Tool
- An Integrated Lifestyle-Based Risk Assessment Model was used, incorporating:
- BMI (≥25)
- Menstrual irregularity
- Acne (moderate to severe)

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- Hirsutism (Ferriman–Gallwey score >8)
- Waist–Hip Ratio (>0.85)
- Blood Pressure (>130/85 mm Hg)
- Sleep duration (<6 h or disturbed)
- Physical activity (MET <600)
- Each risk parameter was scored, and participants were categorized into:
- Low risk (0–2) Moderate risk (3–5) High risk (6–8)

Statistical Analysis

Data were analyzed using descriptive and inferential statistics. Mean, standard deviation, frequency, and percentage were computed. The Chi-square test was applied for association, and unpaired t-test for group comparison. Significance was set at $p \leq 0.05$.

3. Results

Group Comparison

Table 1: Showing Comparison

| PCOS Risk		Day Scholar Group (%)	Hosteller Group (%)	Day Scholar Group (f)	Hosteller Group (f)
BMI>=25	NO	79%	72%	59	54
	YES	21%	28%	16	21
Menstrual Irregularity	NO	81%	80%	61	60
	YES	19%	20%	14	15
Acne (moderate-severe)	NO	69%	68%	52	51
	YES	31%	32%	23	24
Hirsutism score (FG>8)	NO	9%	5%	7	4
	YES	91%	95%	68	71
Sleep >6 Hrs or Disturbed	NO	75%	49%	56	37
	YES	25%	51%	19	38
Low Physical Activity (MET<600)	NO	85%	67%	64	50
	YES	15%	33%	11	25
Waist-hip ratio >0.85	NO	53%	37%	40	28
	YES	47%	63%	35	47
Elevated BP (SBP>130, DBP>85)	NO	93%	95%	70	71
	YES	7%	5%	5	4

Hostellers had a higher mean PCOS risk score (3.28 ± 1.203) compared to day scholars (2.56 ± 1.397), with a significant difference (t=3.382, p=0.001).
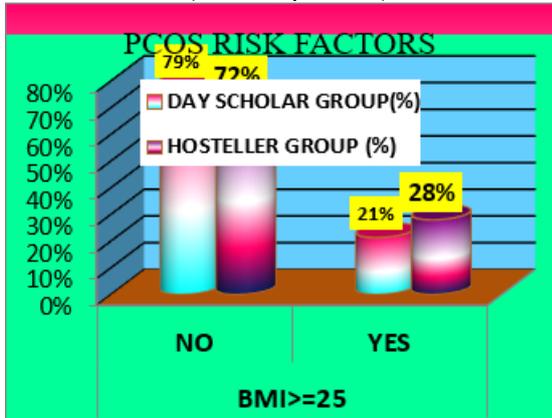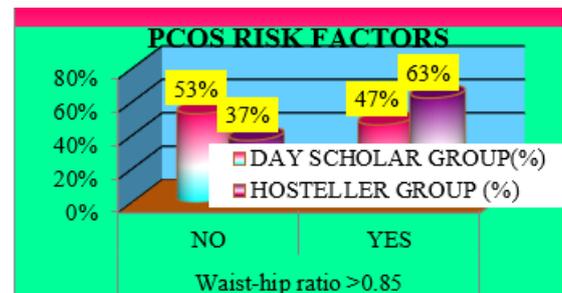

BMI ≥25: 28% of hostellers vs 21% of day scholars
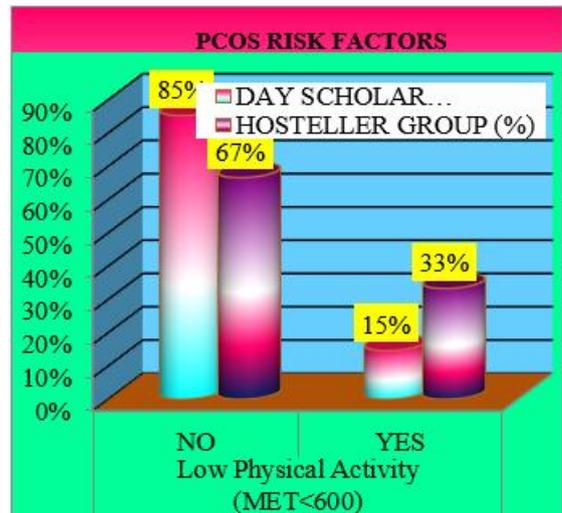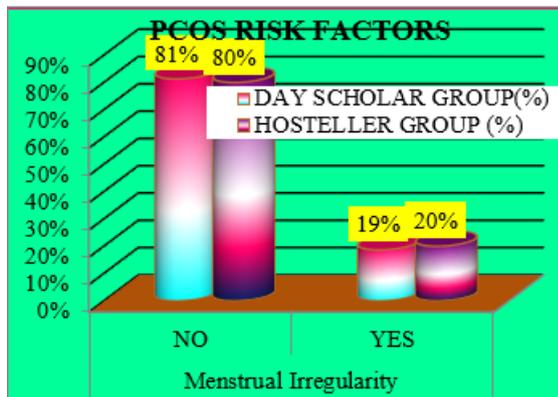

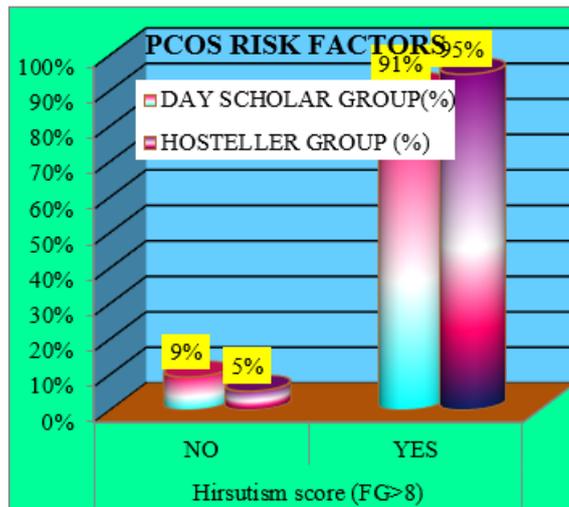Low physical activity: 33% of hostellers vs 15% of day scholars (p=0.028)
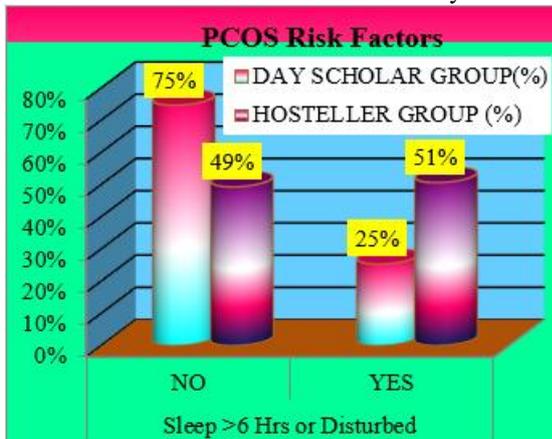
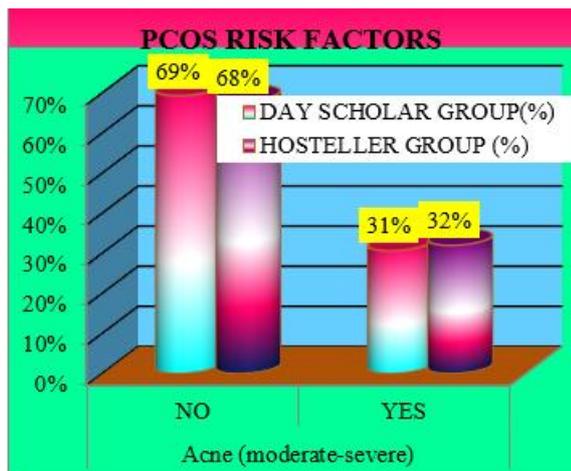Disturbed sleep: 51% of hostellers vs 25% of day scholars (p=0.006)



Waist–hip ratio >0.85: 63% hostellers vs 47% day scholars

Menstrual irregularity: similar in both groups (20% vs 19%)

Acne (Moderate-Severe): The occurrence of moderate to severe acne is slightly higher among hostellers (32%) than day scholars (31%).

Hirsutism Score (FG > 8): A very high proportion of students in both groups have a hirsutism score greater than 8, but it is even higher in hostellers (95%) compared to day scholars (91%).
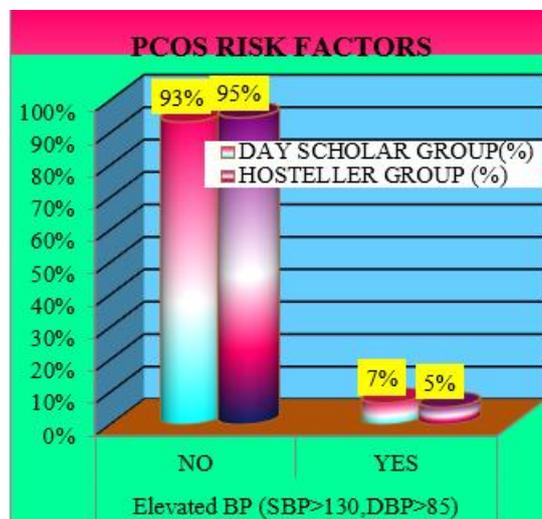
Elevated BP (SBP > 130, DBP > 85): Both groups have low rates of elevated blood pressure, with only 7% of day scholars and 5% of hostellers affected.

PCOS Risk		Levels		Comparison				
Variables	Opts	Day Scholar	Hosteller	Chi Test	P Value	df	Table Value	Result
BMI>=25	No	59	54	0.897	0.639	2	5.991	Not Significant
	Yes	16	21					
Menstrual Irregularity	No	61	60	0.043	0.979	2	5.991	Not Significant
	Yes	14	15					
Acne (moderate-severe)	No	52	51	0.031	0.985	2	5.991	Not Significant
	Yes	23	24					
Hirsutism score (FG>8)	No	7	4	0.883	0.643	2	5.991	Not Significant
	Yes	68	71					
Sleep >6 Hrs or Disturbed	No	56	37	10.215	0.006	2	5.991	Significant
	Yes	19	38					
Low Physical Activity (MET<600)	No	64	50	7.164	0.028	2	5.991	Significant
	Yes	11	25					
Waist-hip ratio >0.85	No	40	28	3.874	0.144	2	5.991	Not Significant
	Yes	35	47					
Elevated BP (SBP>130, DBP>85)	No	70	71	0.118	0.943	2	5.991	Not Significant
	Yes	5	4					

Most PCOS risk factors, including BMI, menstrual irregularity, acne, hirsutism, waist-hip ratio, and blood pressure, are not significantly different between day scholars and hostellers. However, hostellers have significantly higher rates of disturbed sleep and low physical activity, suggesting

these lifestyle factors are more problematic among hostellers and may contribute more to their overall PCOS risk.

Table: Frequency & Percentage distribution level of Day Scholar Group of PCOS scores

Criteria Measure of PCOS Risk Scores N=75	
Category Score	Day Scholar Group f (%)
High Risk (6-8)	3(4%)
Moderate Risk (3-5)	29(38.7%)
Low Risk (0-2)	43(57.3%)

Maximum = 8 Minimum = 0

Among the 75 day scholars assessed for PCOS risk, the majority (57.3%) fall into the low risk category, having scores between 0 and 2. A substantial portion (38.7%) are classified as having moderate risk, with scores ranging from 3 to 5. Only a small minority (4%) of day scholars are in the high risk category, with scores between 6 and 8. This suggests that most day scholars have a lower overall risk for developing PCOS based on the integrated lifestyle-based risk assessment, with relatively few at high risk.

Figure: Showing PCOS Scores in Day Scholar group.

Table: Comparison of descriptive statistics Day Scholar Group of PCOS Score

Descriptive Statistics		Mean	S.D.	Median	Range	Maximum	Minimum	Mean %
PCOS Risk Scores	Day Scholar Group	2.56	1.397	2	6	7	1	32.00

Maximum = 8 Minimum = 0

For day scholars, the **mean PCOS risk score** is 2.56 (SD = 1.397), with a **median score of 2**. The scores range from 1 to 7, with a maximum possible score of 8. The **mean percentage** is 32%. This indicates that, on average, day scholars are at a lower risk for PCOS compared to hostellers, with most students falling into the low to moderate risk categories. The risk distribution is more skewed towards lower scores, suggesting better overall lifestyle or protective factors among day scholars compared to hostellers.
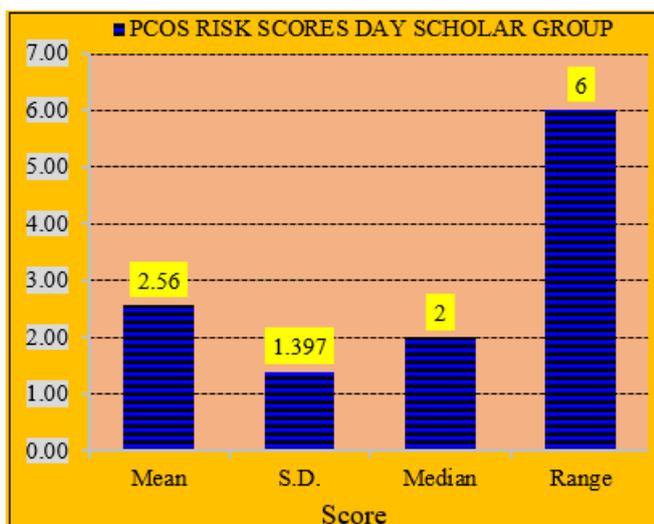
Table: Frequency & Percentage distribution level of Hosteller Group of PCOS sco

Criteria Measure of PCOS Risk Scores N=75	
Category Score	Hosteller Group f (%)
High Risk (6-8)	2(2.7%)
Moderate Risk (3-5)	51(68%)
Low Risk (0-2)	22(29.3%)

Maximum = 8 Minimum = 0

Among the 75 hostellers assessed, the majority (68%) fall into the **moderate risk** category for PCOS, with scores between 3 and 5. About 29.3% of hostellers are in the **low risk** group (scores 0–2), while only 2.7% are in the **high risk** category (scores 6–8). This shows that most hostellers are at a moderate risk for developing PCOS according to the integrated lifestyle-based risk assessment, and fewer hostellers have low risk compared to day scholars.

Figure: Diagram representing descriptive statistics level of Day Scholar group of PCOS Score

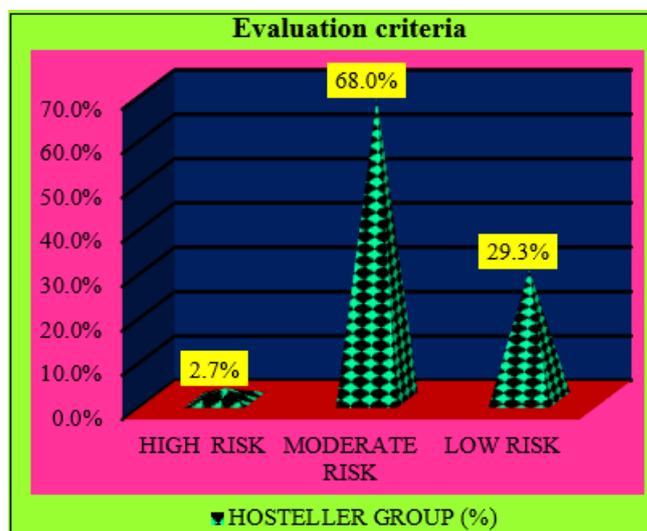**Figure:** Showing PCOS Score Scores in Hosteller group

Table: Comparison of descriptive statistics Hosteller Group of PCOS Score, N= 75

Descriptive Statistics		Mean	S.D.	Median	Range	Maximum	Minimum	Mean %
PCOS Risk Scores	Hosteller Group	3.28	1.203	3	5	6	1	41

Maximum = 8 Minimum = 0

Among hostellers, the **mean PCOS risk score** is 3.28 (SD = 1.203), with a **median score of 3**. The scores range from 1 to 6, with a maximum possible score of 8. The **mean percentage** score is 41%. This indicates that, on average, hostellers fall into the moderate risk category for PCOS, with most students scoring in the middle range of the risk scale. The distribution suggests that relatively few hostellers are at very low or very high risk, with most clustering around moderate risk scores.
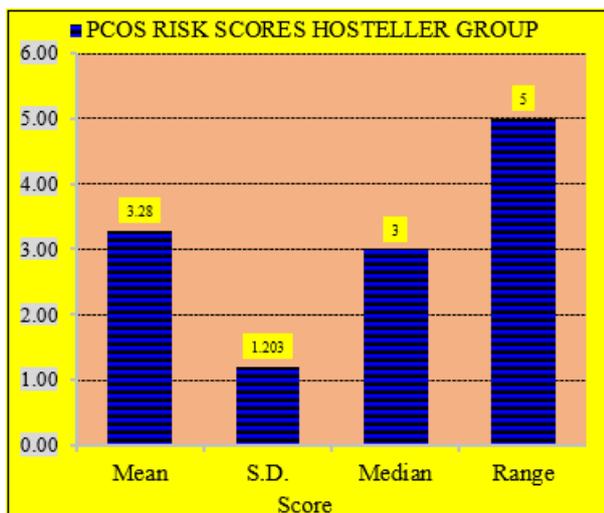

Figure: Diagram representing descriptive statistics level of Hosteller group of PCOS Score.

Table: Comparison of frequency & percentage distribution of both groups of PCOS Score

Criteria Measure of PCOS Risk Score	
Category Score	Day Scholar Group f (%)
High Risk (6-8)	3(4%)
Moderate Risk (3-5)	29(38.7%)
Low Risk (0-2)	43(57.3%)

Maximum = 8 Minimum = 0

When comparing PCOS risk categories, a larger proportion of **day scholars (57.3%)** fall into the **low risk** group (score 0–2), whereas only **29.3% of hostellers** are in this category. In contrast, a significant majority of **hostellers (68%)** are classified in the **moderate risk** category (score 3–5), compared to **38.7% of day scholars**. Both groups have a **small percentage in the high risk** category (scores 6–8), with **4% of day scholars** and **2.7% of hostellers**.
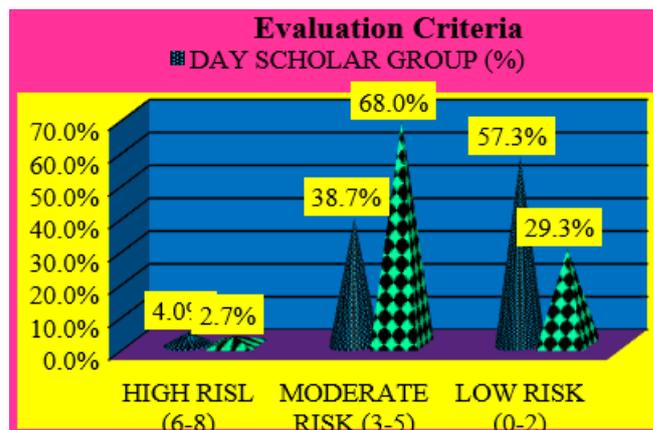

Figure No.: Diagrams representing comparison of percentage distribution of both groups of PCOS Score

This comparison shows that day scholars are more likely to have a low risk of developing PCOS, while hostellers are more likely to be at moderate risk. The proportion of high-risk individuals is low and similar in both groups. Overall, hostellers appear to have less favorable lifestyle or health factors contributing to higher PCOS risk compared to day scholars.

Risk Distribution
Day Scholars: 57.3% low risk, 38.7% moderate, 4% high risk
Hostellers: 29.3% low risk, 68% moderate, 2.7% high risk

4. Discussion

The study demonstrates that hostellers are at a significantly higher risk of PCOS compared to day scholars. The difference may be attributed to disturbed circadian rhythms, late-night study habits, irregular diet, and reduced physical activity. [Ibd]

These findings align with Bannigida et al. (2019), who reported that dietary and lifestyle imbalances in young Indian women significantly contribute to PCOS risk .[Ibd]

Similarly, Krishnan (2024) observed a strong association between poor sleep quality and increased PCOS symptoms among Indian females.[Ibd]

Psychological distress and anxiety, body image issues are becoming widely known as the major effects of PCOS that further interrupt lifestyle habits and hormonal balance.[12]

There are lifestyle modifications such as sleep quality, eating schedules, and exercise that directly affect androgen concentration and menstrual cycles of affected women.[13]

5. Conclusion

Hostellers are at a high risk of developing PCOS as compared to day scholars. The major contributing factors are disturbed sleep and low physical activity. Proper sleep

hygiene, exercise and food balance are effective in decreasing the risk of PCOS in young women.[6,7]

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