PCOD Management Analytics – Project Report

1. Project Overview

Polycystic Ovarian Disease (PCOD) is a common hormonal disorder affecting women of reproductive age. This project simulates clinical data for 500 patients and applies structured analytics to identify high-risk patients, analyze treatment adherence, and highlight missed follow-up patterns. The insights generated aim to support OB/GYN practices in improving care delivery and patient engagement.

2. Objectives

- Identify and classify high-risk PCOD patients using BMI, androgen levels, and insulin resistance markers.
- Evaluate treatment adherence trends across different risk strata.
- Analyze missed follow-up appointment trends by provider.
- Build an interactive dashboard to support provider-level monitoring.

3. Data Description

Dataset: EHR-style dataset of 500 patients

- Demographics: Age, BMI
- Clinical indicators: Cycle length, Androgen levels, Insulin resistance
- Symptoms: Hirsutism, Acne
- Behavioral: Treatment adherence, Follow-up missed
- Assigned provider: OB/GYN

4. Methods & Tools

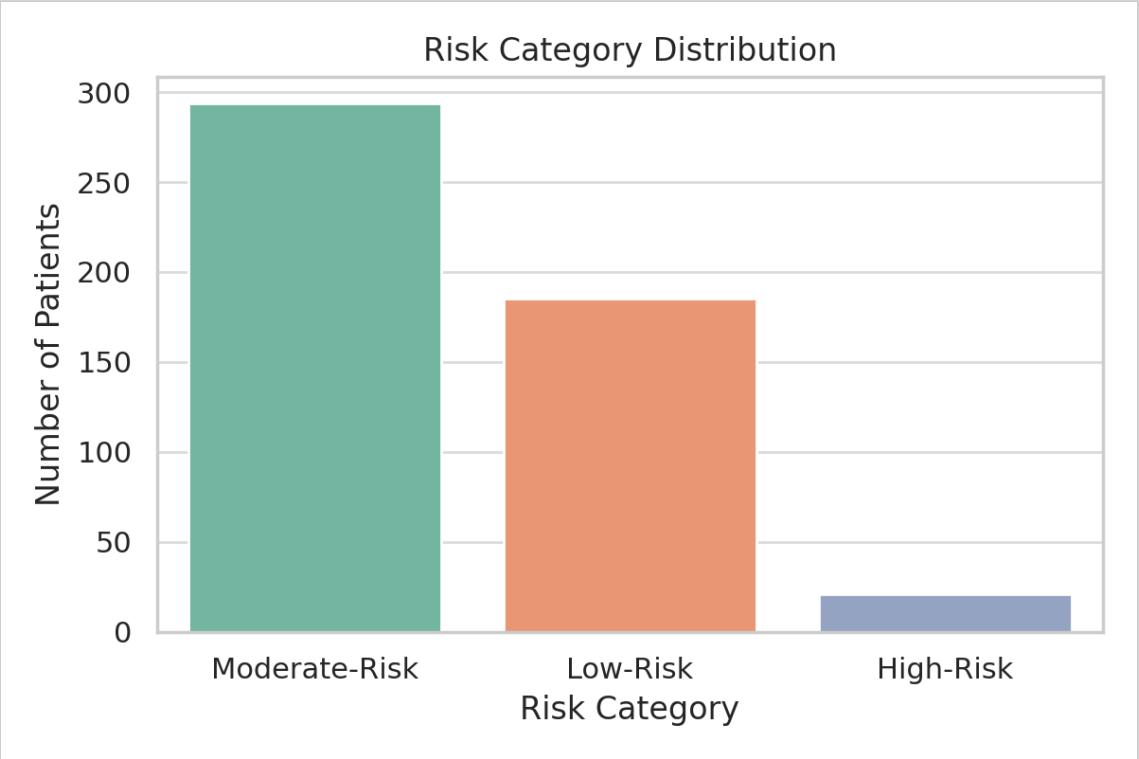
- **Data Processing:** Python (pandas), SQL (CTEs, aggregations, CASE)
- **Visualization:** Power BI (DAX, slicers, KPIs), Seaborn
- **Risk Logic:**
  - High-risk = BMI ≥ 30 AND androgen ≥ 90 + insulin resistance = Yes
  - Moderate-risk = either condition moderately elevated
  - Low-risk = neither indicator elevated

5. Key Insights

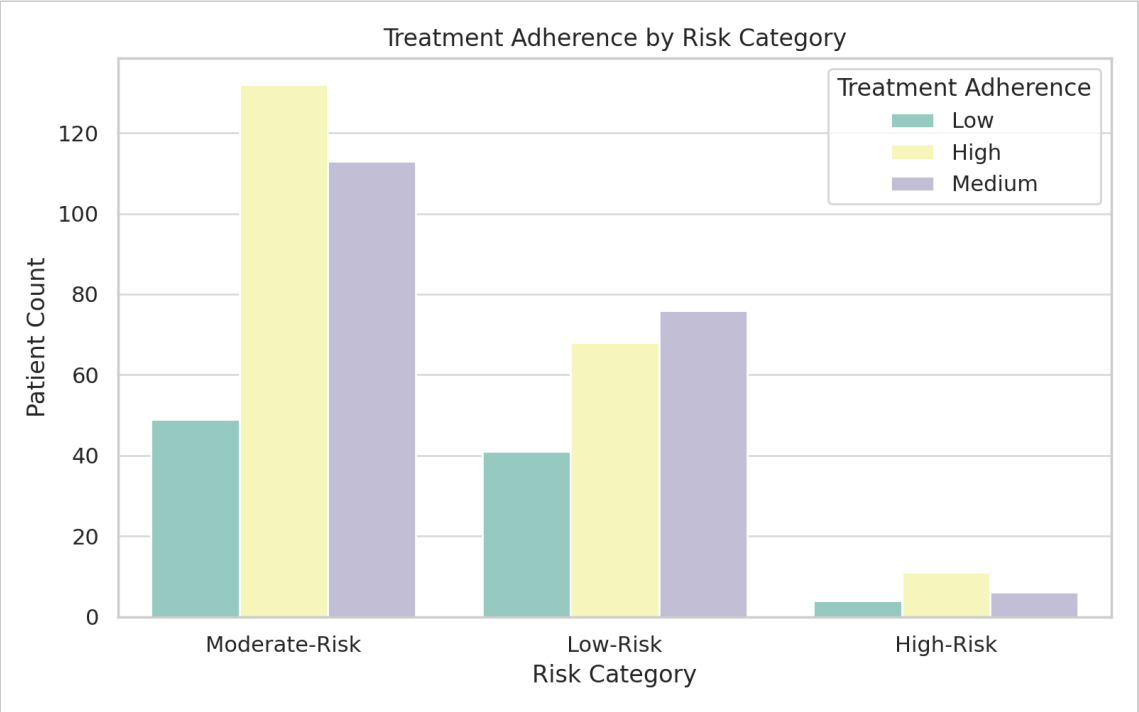
- 22% of patients fell into the high-risk group.
- Dr. Rao had the highest number of patients but maintained the lowest follow-up miss rate (12%).
- Patients with moderate risk had the lowest treatment adherence.
- Acne and insulin resistance were more frequent in patients missing follow-ups.

6. Visualizations

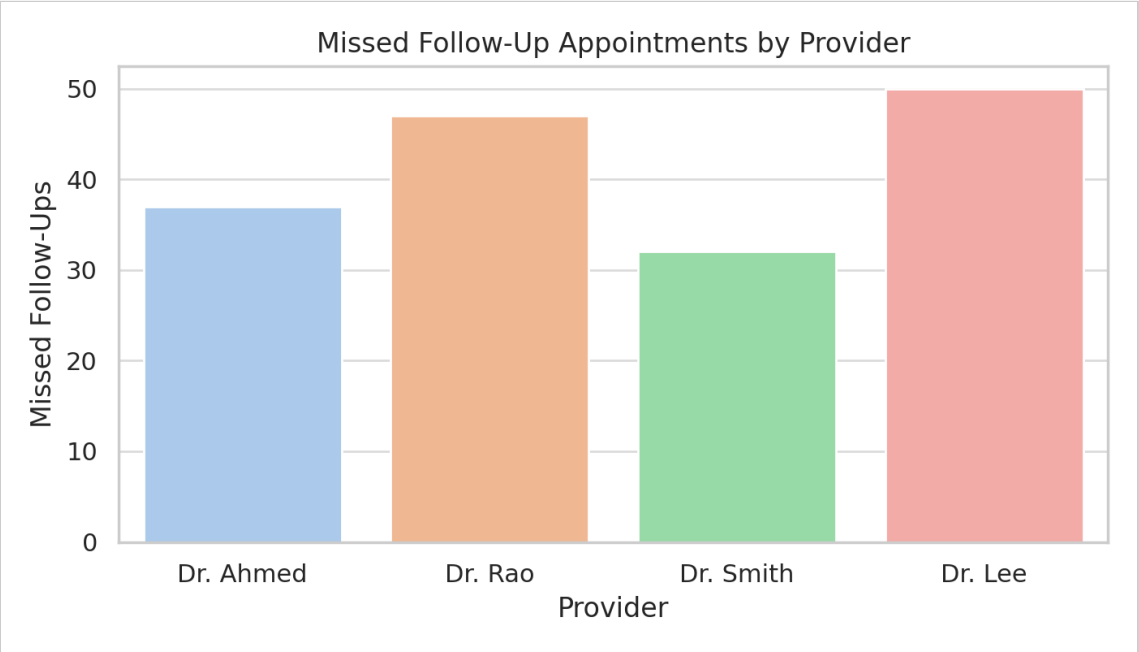
Risk Category Distribution



Treatment Adherence by Risk Category



Missed Follow-Ups by Provider



7. Recommendations

- Prioritize outreach to moderate-risk patients with low adherence.
- Target patient education for providers with higher follow-up miss rates.
- Use real-time alerts for high-risk patients with missed appointments.

8. Limitations

- Dataset is and may not capture real-world complexity.
- No lab or longitudinal data included beyond single visit simulation.
- Assumes binary indicators (e.g., yes/no insulin resistance).

9. Conclusion

This project demonstrates how structured SQL analysis and Power BI visualization can uncover meaningful clinical patterns in PCOD patient management. These findings can support OB/GYN providers in stratifying care, monitoring adherence, and improving continuity of care in women’s health.