PREDICTION OF POLYCYSTIC OVARY SYNDROME (PCOS) DIAGNOSIS USING ARTIFICIAL NEURAL NETWORK ALGORITHM

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CHAPTER 4

Exploratory Data Analysis (EDA)

1.1   Introduction

Exploratory Data Analysis (EDA) is a key part of understanding the data about Polycystic Ovary Syndrome (PCOS). It helps us discover important patterns and relationships in the data. In this section, we will use simple statistics and visual tools like charts and graphs to get a clear picture of the dataset. These tools will help us spot trends, find any unusual data points, and see how different factors might be connected to PCOS.
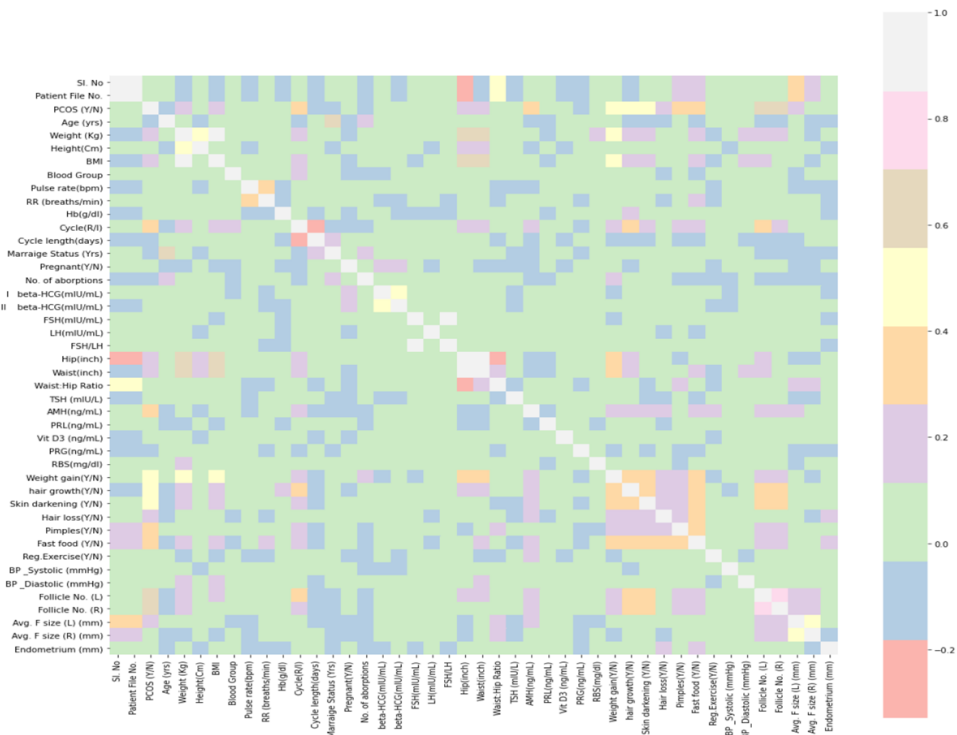
By analyzing these relationships, we can identify which factors are most important for predicting and understanding PCOS. This analysis sets the stage for building accurate models that can help healthcare professionals diagnose and manage PCOS more effectively. Overall, EDA is a crucial step that helps us make sense of the complex data and informs our approach to improving PCOS research and treatment

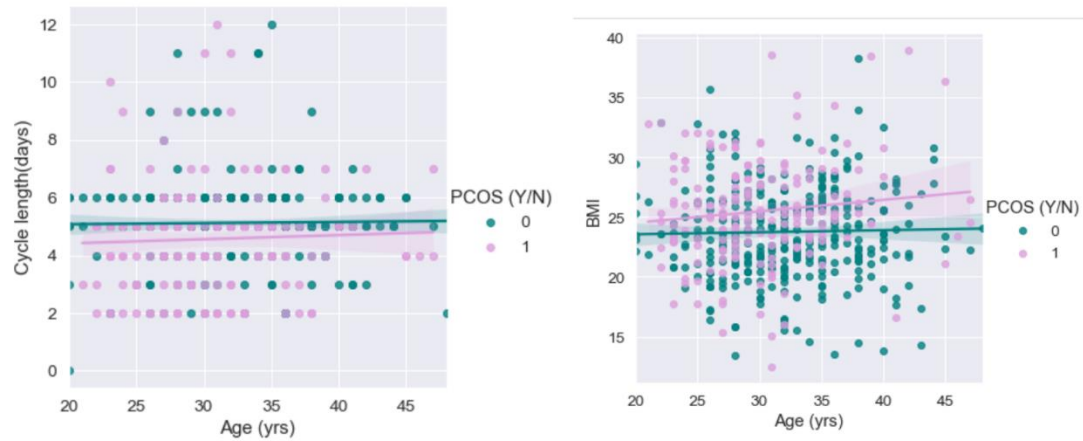### 1.2   Exploratory Data Analysis (EDA)

Case 1: Primary Data PCOS_data_without_infertility

Case 2: Secondary Data PCOS_infertility

Visualizations Descriptive statistics Initial insights Feature engineering

Examining a correlation matrix of all the features by using a heatmap to see the pattern illustrated the correlation between feature For the PCOS dataset, at the right of the figure, we can see there is a high correlation between weight gain, hair growth (in undesired spots), skin darkening, hair loss, pimples, and fast food, at the right of figure, at the middle we can see there is a correlation between hip, waist size, and waist-hip ratio when waist size increase the hip size increase also.

Length of menstrual phase in PCOS vs normal we can see that PCOS patients have less length of the cycle compared to normal women whos do not have PCOS, on the other hand, The pattern of weight gain (BMI) over years in PCOS vs Normal shows that PCOS patients have higher BMI compared to normal women also it illustrates that the BMI increase over years for PCOS patient.