Heart Failure Prediction

Project Description

This project focuses on patients with various health issues leading to heart failure. Heart failure is a frequent event caused by cardiovascular diseases, the number one cause of death globally. People with cardiovascular diseases or at high cardiovascular risk (due to the presence of one or more risk factors such as hypertension, diabetes, hyperlipidemia, or already established disease) need early detection and management.

Therefore, the purpose of this report was to predict how often patients with specific diseases have heart disease, gender with a high probability of having heart disease, and their age group. Also, to determine which conditions often lead to heart disease, how to tackle these issues, and recommendations on how to go about it subsequently.

The problem

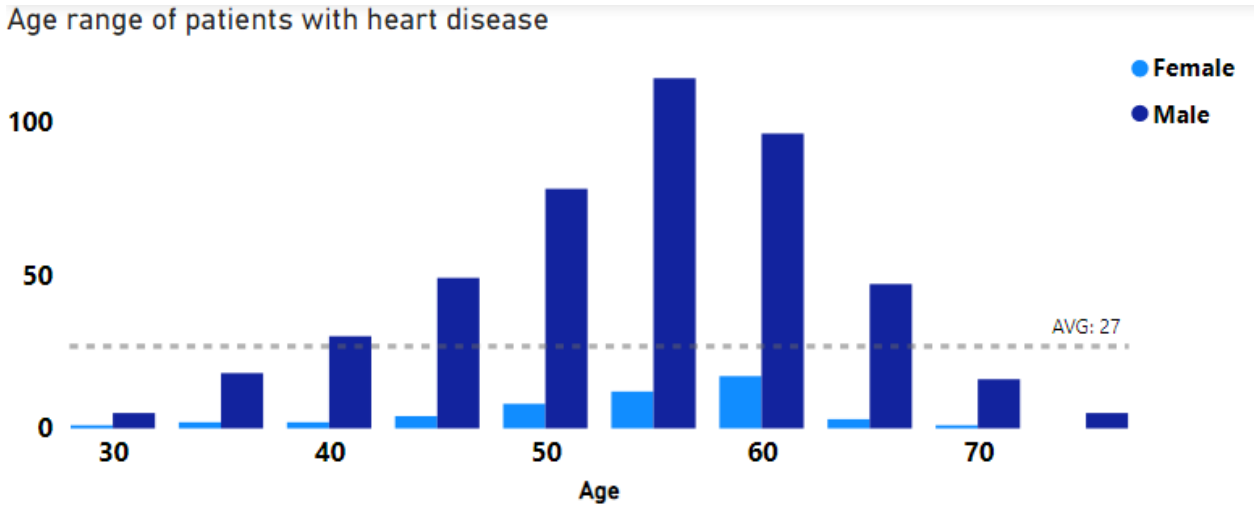
Frequent occurrence of heart failure caused by cardiovascular disease worldwide.

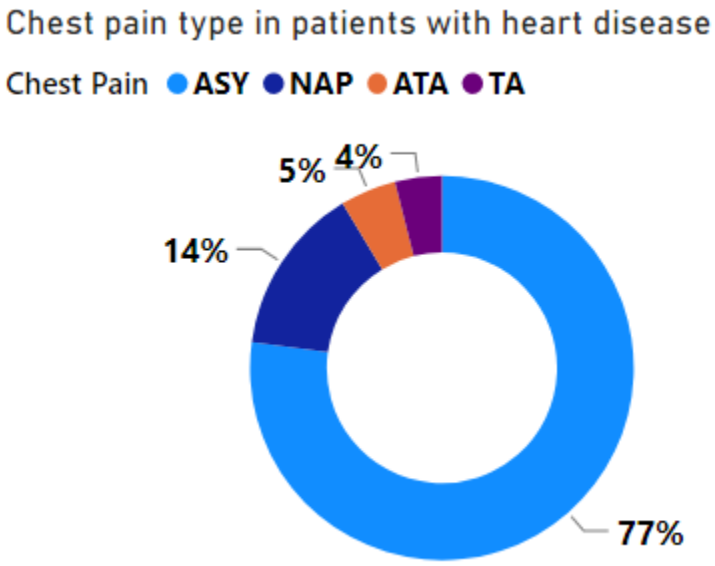
Design

The dataset contained features used to predict possible heart disease. It was subjected to the ETL process. After which, SQL Server Management Studio was used to access the database, retrieve, manipulate and derive insights from the data. Power BI was then used to visualise.

Findings

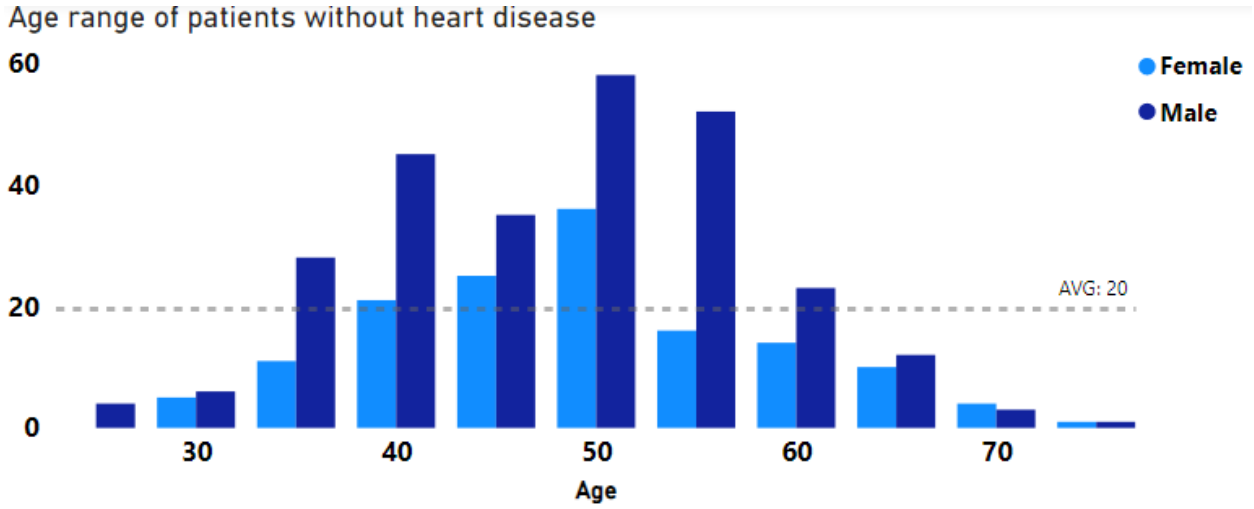
Finding 1

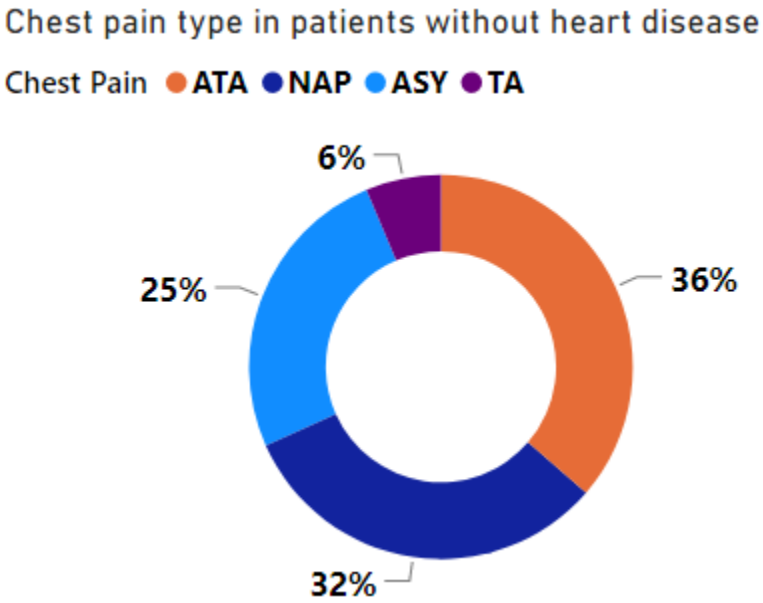




The above charts denote patients with heart disease. Male patients with asymptomatic chest pain type (77%) and age range 40 - 65 are at high cardiovascular risk. Female patients for all age ranges are way below the trend line and are at low cardiovascular risk. Here, the likelihood of patients having heart disease is increased if the patient has asymptomatic chest pain type, is male, age above 40, is diabetic, and resting blood pressure is above 140mmHg.

Finding 2





The above charts denote patients without heart disease. Here, female patients dominate. There's a close distribution of patients within the chest pain types, with the two highest being atypical angina with 36% and non-angina chest pain with 32%. If a patient is female, non-diabetic, age range between 25 - 60, resting blood pressure below 140, and with atypical angina or non-angina chest pain type, the likelihood of patients being without heart disease is increased.

Conclusion

Men are more prone to cardiovascular diseases than women, especially those aged 40 - 65. We can attribute this to many factors such as men not prioritising their health, stress, a lot of pressure. Generally, it is well-known that women tend to outlive men. Also, not all diabetic patients have heart failure, but most patients, especially males with resting blood pressure above 140mmHg, have heart disease resulting in heat failure.

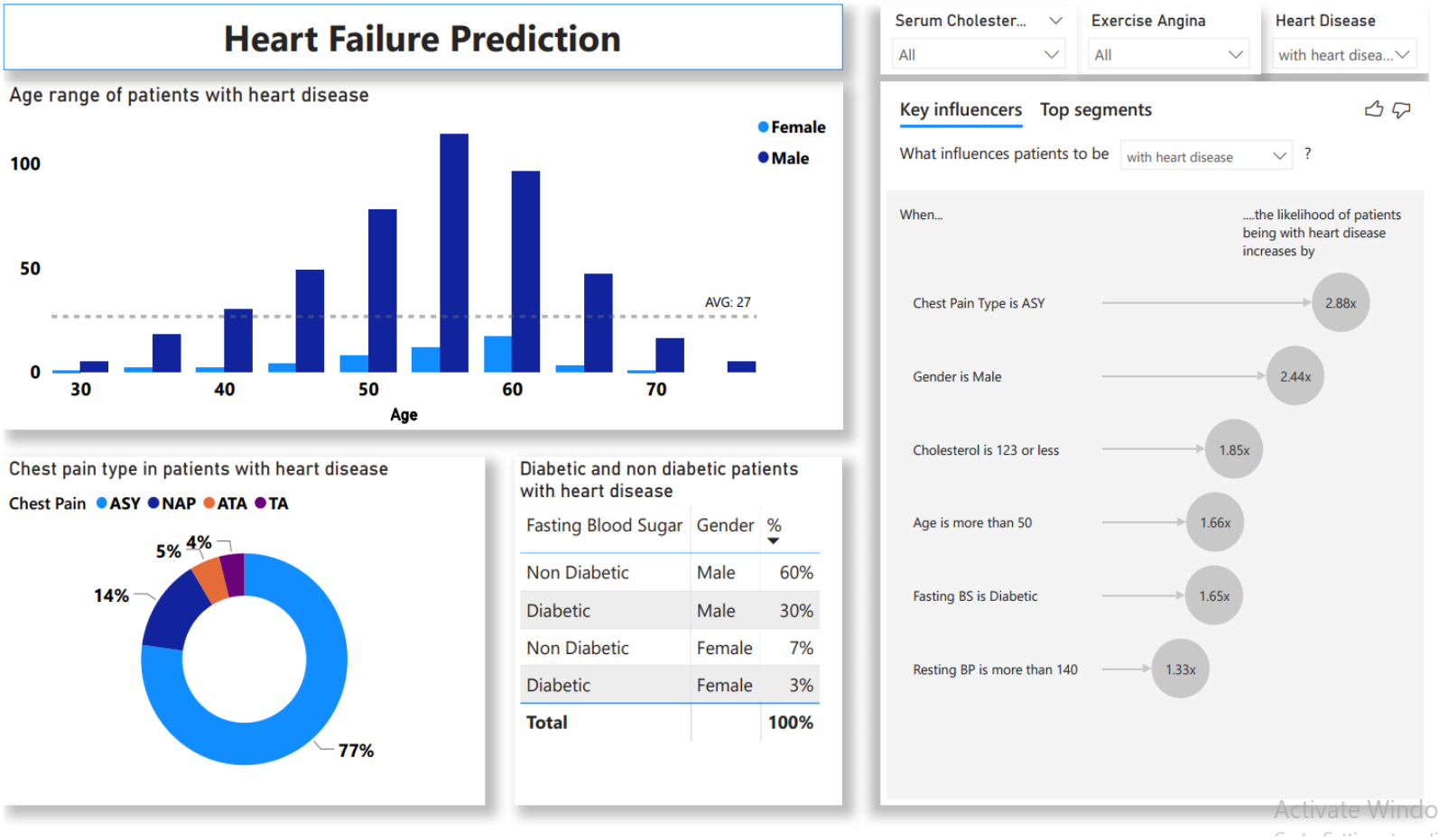
This project gathered that patients with Asymptomatic chest pain type experience heart disease more often than patients with other chest pain types. Therefore these patients have a higher risk of having heart failure. This can be attributed to the fact that these patients feel or experience no symptoms before the initial attack. Hence, making their condition lethal before detection.

Recommendation

Individuals, especially males (as they have high cardiovascular risk), should take their health seriously. And, regardless of any discomfort, visit the hospital regularly for checkups. This will go a long way in catching these diseases at their early stage, especially for those with asymptomatic symptoms. Also, governments and health sectors should have programs set up to enlighten citizens on the benefit of regular checkups.

Dashboards

Dashboard 1: Patients with heart disease



Dashboard 2: Patients without heart disease