Cardiac Patients

Medical Report Analysis

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Introduction

Heart attacks are a leading cause of premature mortality globally, with India witnessing over 3 million deaths annually due to heart attacks and strokes. Numerous factors can impact heart health and efficiency. By gaining valuable insights and taking necessary precautions, we can effectively manage the challenges and complications associated with cardiac health.

Project Objective

In this study, we conducted a detailed analysis of medical reports from numerous heart patients. The goal was to perform exploratory analysis, uncover significant findings, and process the dataset for potential use in machine learning models. Ultimately, these models could aid in predicting the likelihood of heart attacks in new patients.

By conducting this in-depth analysis, we hope to contribute to the advancement of medical knowledge, enhance patient care, and improve outcomes for individuals at risk of cardiac issues.

Data Source: https://www.kaggle.com/datasets/johnsmith88/heart-disease-dataset

Methodology

- Cleaning of the data so that the final data is comprehensible.
- Understanding which fields to use for our purpose.
- Performing necessary calculations.
- Creating Pivot tables as per our needs.
- Creating dashboard for easy understanding of the entire analysis.
- Making useful insights and recommendations for the profit of the business.

Goals

1) Identify which Age group is most vulnerable to heart disease in the given countries - Cleveland, Hungary, Switzerland, and Long Beach V.
2) Identify which gender is mostly prone to heart diseases and evaluating possible reasons for it.
3) To identify the most threatening type of chest pain.
4) To analyze the impact of Fasting Blood Sugar in the occurrence of cardiac diseases.
5) To analyze the impact of Serum Cholesterol in causing cardiac diseases.

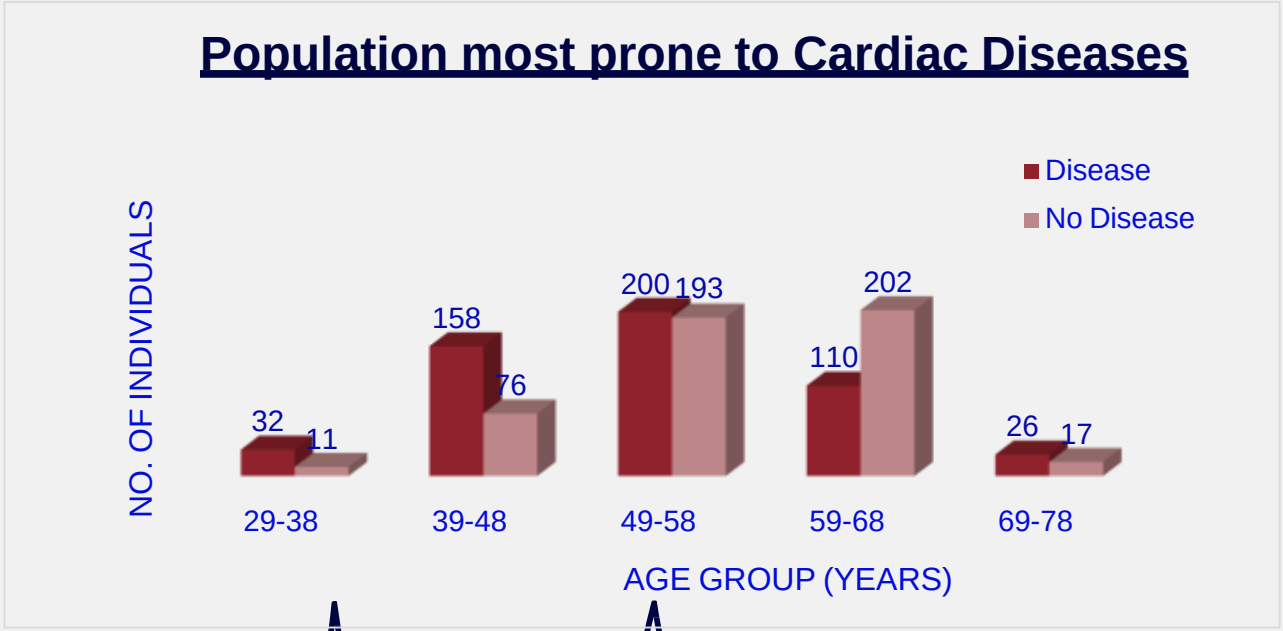
Key Performance Indicators (KPIs)

- Age group of the population
- Gender
- Types of Chest Pain
- Fasting Blood Sugar
- Serum Cholesterol

Concepts Used

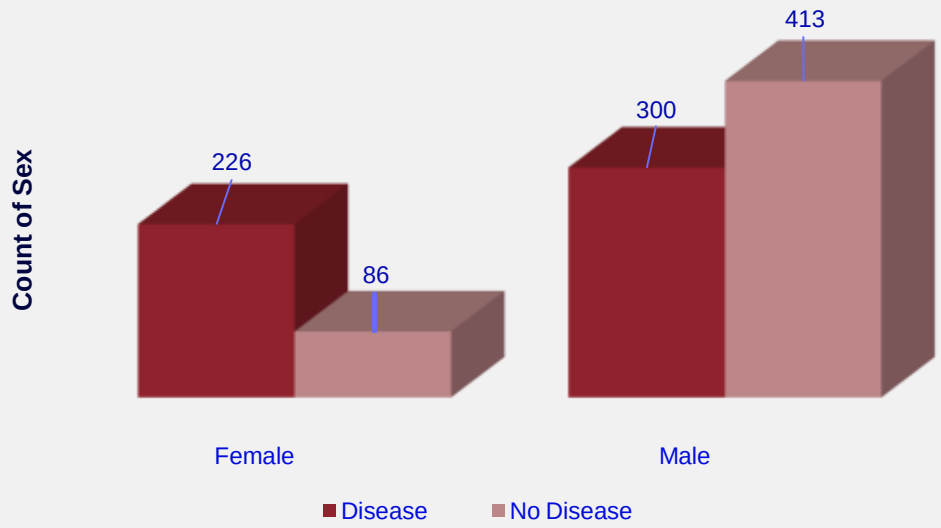
- Data Cleaning & Analysis
- Conditional formatting
- Sorting
- Pivot Tables
- Charts

Data Analysis

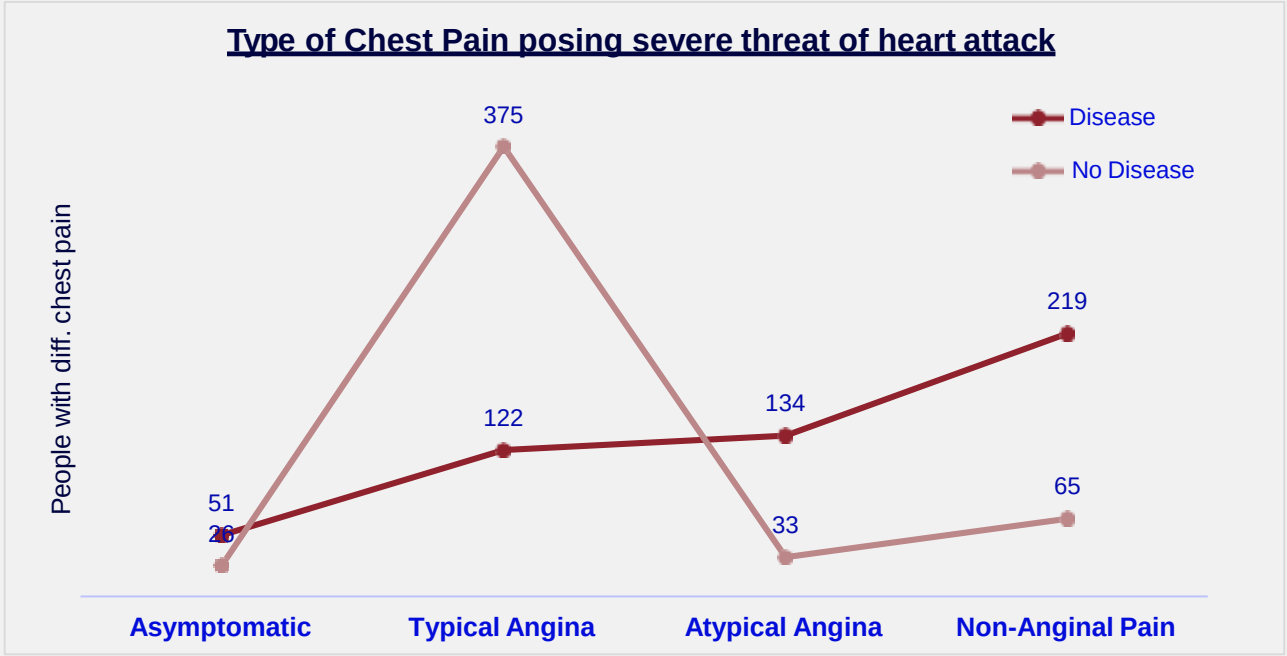


The people in the age group between **39-58 years** are the most affected ones.

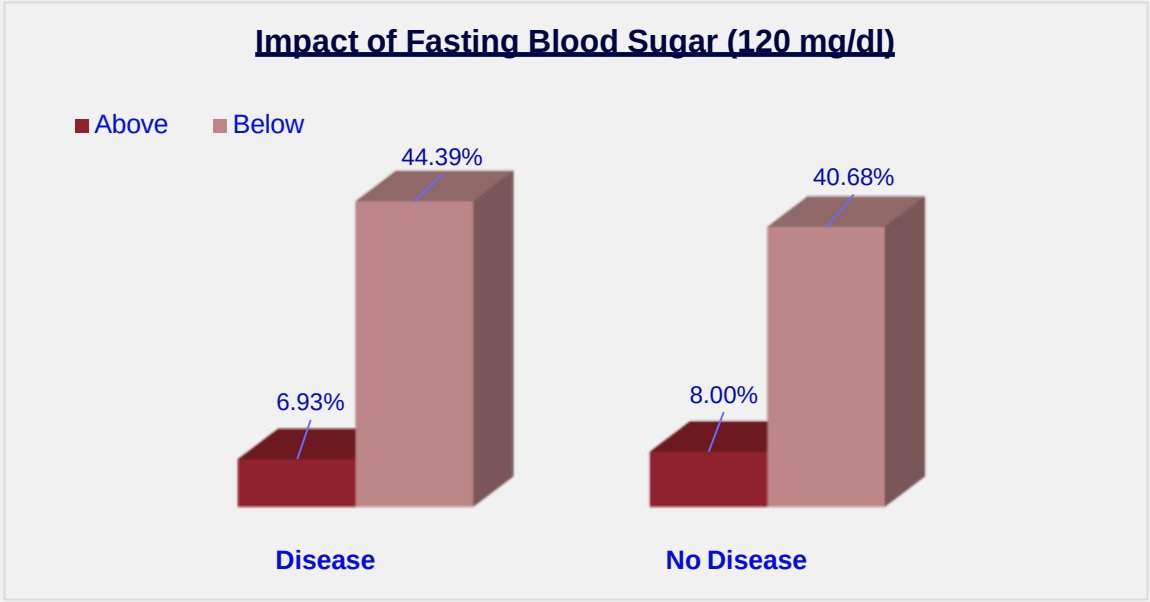
Who is more prone to disease?



We can see that both men and women are equally affected.



Non-anginal Chest pain is the most common type and poses severe threat to heart attack.



Fasting glucose levels >100 mg/dL→ risks CVD, ischemic heart disease, myocardial infarction, and thrombotic stroke progressively but risk for haemorrhagic stroke did not.

Fasting glucose levels <70 mg/dL→ risk of all stroke (hazard ratio 1.06, 95% CI 1.01–1.11) in men and (hazard ratio 1.11, 1.05–1.17) in women."

Therefore, fasting blood sugar is not much significant in predicting the occurrence of heart diseases.

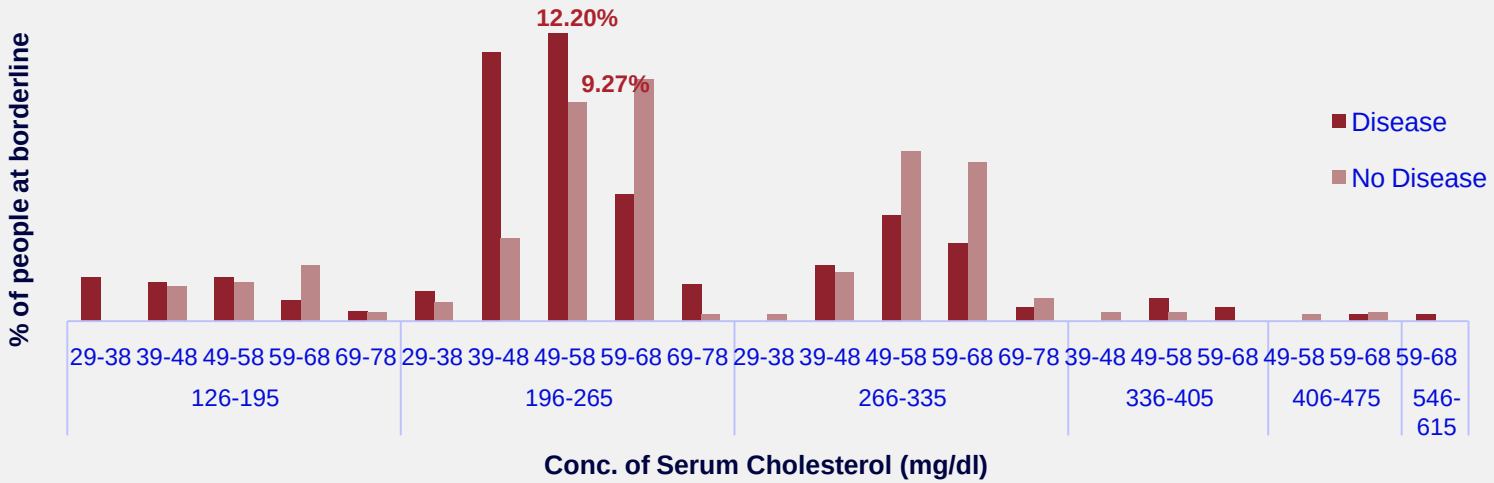
Fasting Blood Sugar level does not poses great risk to the occurrence of heart diseases.

Source:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3687304/

Row Labels	Disease	No Disease
196-265	**31.80%**	**24.10%**
29-38	1.27%	0.78%
39-48	11.41%	3.51%
49-58	12.20%	9.27%
59-68	5.37%	10.24%
69-78	1.56%	0.29%
266-335	**10.73%**	**17.27%**
29-38	0.00%	0.29%
39-48	2.34%	2.05%
49-58	4.49%	7.22%
59-68	3.32%	6.73%
69-78	0.59%	0.98%

24.10% people having serum cholesterol level between 196-265 (mg/dl) are at the risk of developing cardiac diseases especially people between the age group of 49-68 years.

Patients at higher risk of developing heart diseases

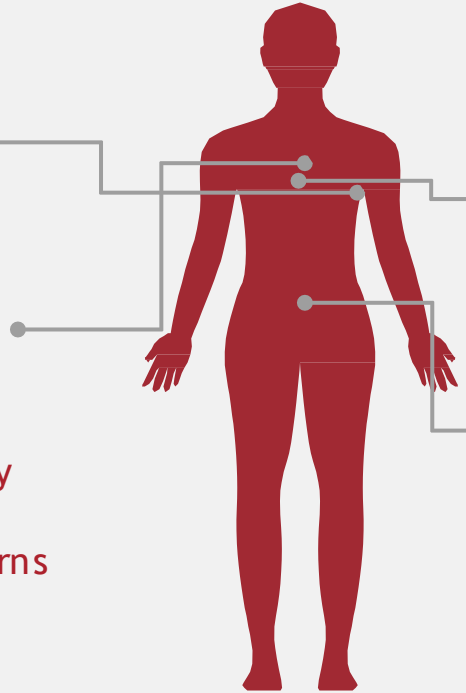


Interpretations

- It is important to closely monitor people who are in the age group of 39-58 years of age.
- With respect to gender analysis data shows that men are mostly affected than women.
- Among different types of chest pain, Non-Anginal pain is the most common one which can occur due to underlying Coronary Artery Disease (CAD).
- Fasting glucose level seems to affect the occurrence of Type 2 Diabetes instead of CAD.
- Serum cholesterol is one of the great players to cause the occurrence of CAD.

Causes of the disease

Age



Family History & Genetics

Lifestyle Habits

- Alcohol Use
- Drug Abuse
- Lack of physical activity
- Smoking tobacco
- Unhealthy Eating patterns

Stress

Recommendations

- It is important to closely monitor people who are in the age group of 39-58 years of age. These groups of people are usually employees working in various corporate and government sectors. Regular health check-ups should be conducted.

- With respect to gender analysis data shows that men are most affected than women. But it is also important to note that many at times less number of cases are reported by women due less awareness and negligence in their health. Hence, more initiative should be taken to take care of the women and health facilities should be made accessible to both rural and urban populations.

- Among different types of chest pain, Non-Anginal pain is the most common one which occurs due to underlying Coronary Artery Disease (CAD). It happens when plaque (a fatty, waxy substance) builds up in the coronary arteries, which supply blood to the heart. These arteries narrow or harden (atherosclerosis), reducing blood flow to your heart. This suggests that people should take great care of their diet.

- Fasting glucose level seems to affect the occurrence of Type 2 Diabetes instead of CAD.

- Serum cholesterol is the great player to check in the occurrence of CAD.

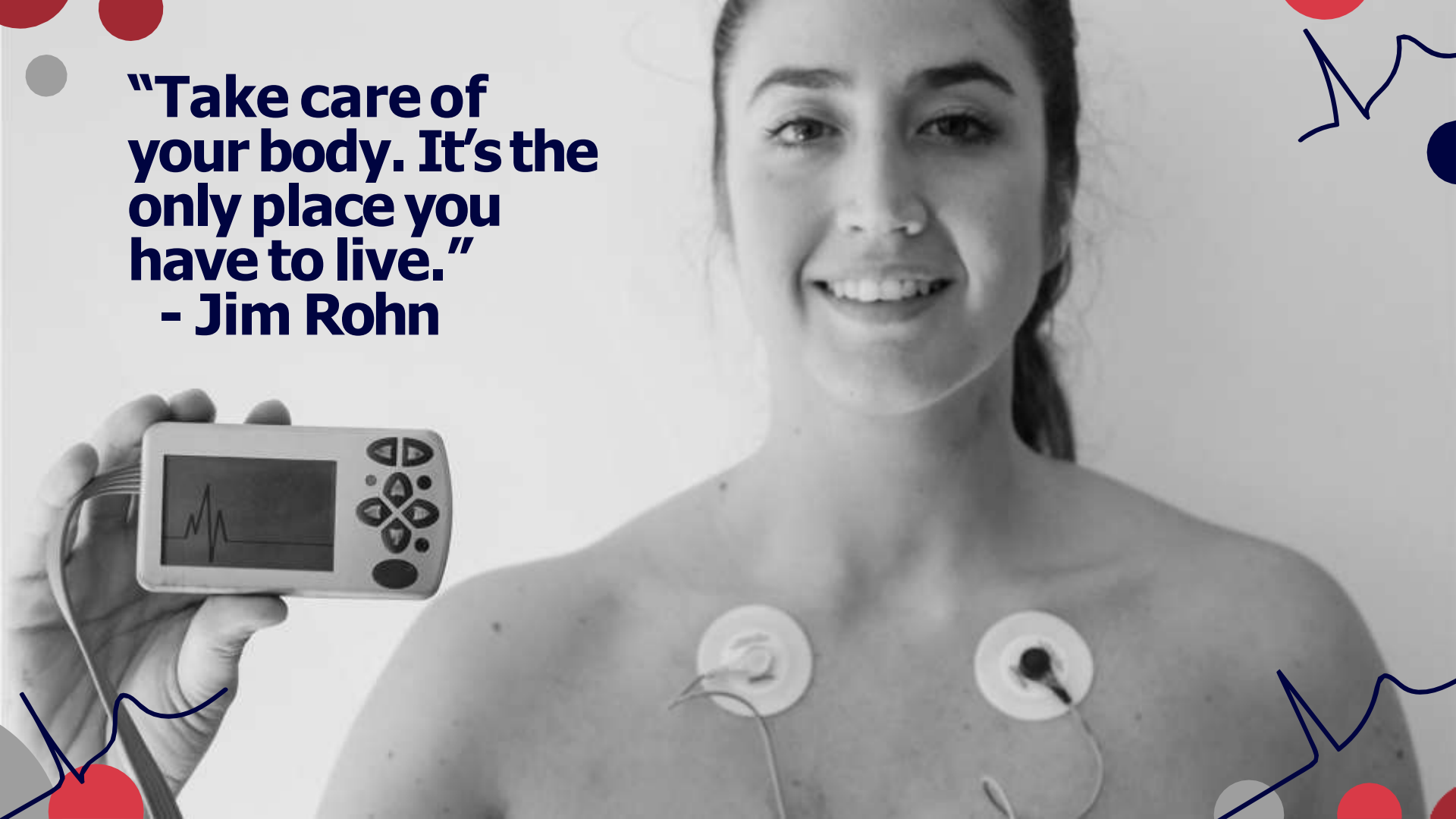
Recommendations

What to do

- Regular health check-ups
- More initiatives for the awareness of women health.
- Proper diet.
- Exercise.

What not to do

- Smoking
- Alcohol consumption
- Eating fast-foods


“Take care of your body. It’s the only place you have to live.”
- Jim Rohn

Thank You!

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