Problems and background

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 scope

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.

Methodology

1. Data sources: **This is collected from the kaggle platform.**

2. Data wrangling: **Understand and clean the collected data, including data understanding,**
cleaning, merging, and manipulation.

3. Data analysis: **Analyse the dataset to identify trends and patterns in mobile app availability,**
usability, and user expectations.

4. Data visualisation: **Visualise the findings to communicate insights effectively and aid in**
decision-making processes.

Technical Processes

- **Formulas used: Min, Sum, Max, Average, Vlookup, Count, Filter, Pivot table, Graphs**

Recommended Analysis:

Q.1 What age group is most vulnerable or has a large number of patients with a higher risk of heart attack?

➔ **The age group 49-58 exhibits the highest vulnerability to heart attacks, with 200 patients at risk compared to 193 patients without the risk in the provided dataset.**

Q.2 Are men mostly prone to heart attacks or women?

➔ **In the dataset, males appear to be more prone to heart attacks compared to females. There are 300 male patients who have experienced a heart attack, while only 226 female patients have had a heart attack. This suggests a higher susceptibility to heart attacks among males in the dataset.**

Q.3 What chest pain types pose a severe risk of a heart attack?

➔ **Chest pain types 1 and 2 show a higher incidence of heart attacks compared to other types. Specifically, chest pain type 1 records 134 heart attack cases out of 167, indicating a significant association with heart attacks.**
➔ **Similarly, chest pain type 2 exhibits 219 heart attack cases out of 284, suggesting a notable risk factor for heart attacks compared to other chest pain types.**

Q.4 How fasting blood sugar is related to heart attack?

➔ **As per this dataset : Individuals not categorised by fasting blood sugar (0 False) show a higher incidence of heart attacks, with 417 out of 935 experiencing heart attacks.**
➔ **Conversely, among those categorised with fasting blood sugar levels,(1 True) 71 out of 153 have not experienced a heart attack despite falling into this category.**

Q.5 What type of thalassemia severely leads to heart attack?

- ➔ **Thalassemia type 2 appears to have a higher incidence of heart attacks, with 412 out of 544 individuals diagnosed with this type experiencing heart attacks.**
- ➔ **Thalassemia type 3 also shows a significant number of heart attacks, with 90 out of 410 individuals diagnosed experiencing heart attacks.**

Q.6 Due to cholesterol, how many patients are at higher risk?

- ➔ **In this dataset, there is no direct correlation between cholesterol levels and heart attacks. Out of the individuals not falling into the cholesterol category, 155 have experienced a heart attack, while among those in the cholesterol category, 219 have not experienced a heart attack.**

Conclusion

The analysis highlights several key insights into heart health and associated risk factors. Age groups between 49-58 and 59-68 show increased vulnerability to heart attacks, with men demonstrating a higher incidence compared to women. Certain chest pain types, especially types 1 and 2, pose a higher risk of heart attack. While fasting blood sugar levels show no direct correlation, individuals with thalassemia type 2 are at a heightened risk. These findings emphasise the importance of understanding demographic and clinical factors in heart disease prevention.

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