

HEALTHCARE ANALYTICS

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Table Of Contents

- | 01 Introduction
- | 02 Data Set Description
- | 03 Pivot Tables
- | 04 Insights via visuals
- | 05 Conclusions

Introduction:

In this case study, we will analyze a comprehensive health dataset for various hospitals across Pakistan. The provided dataset represents detailed information on patient visits, including personal and medical data. Our task is to explore patient demographics to understand the distribution of age, gender, height, and weight across different hospitals. We will evaluate disease prevalence to identify the most common conditions treated and their distribution across various cities and provinces. Additionally, we will assess treatment costs to understand the financial burden on patients, focusing on comparisons between those with and without insurance.

Data Set Description:

The dataset contains 2000 rows and 15 columns, representing health-related data from various hospitals in Pakistan. Each row corresponds to a patient's visit to a hospital, including personal and medical information.

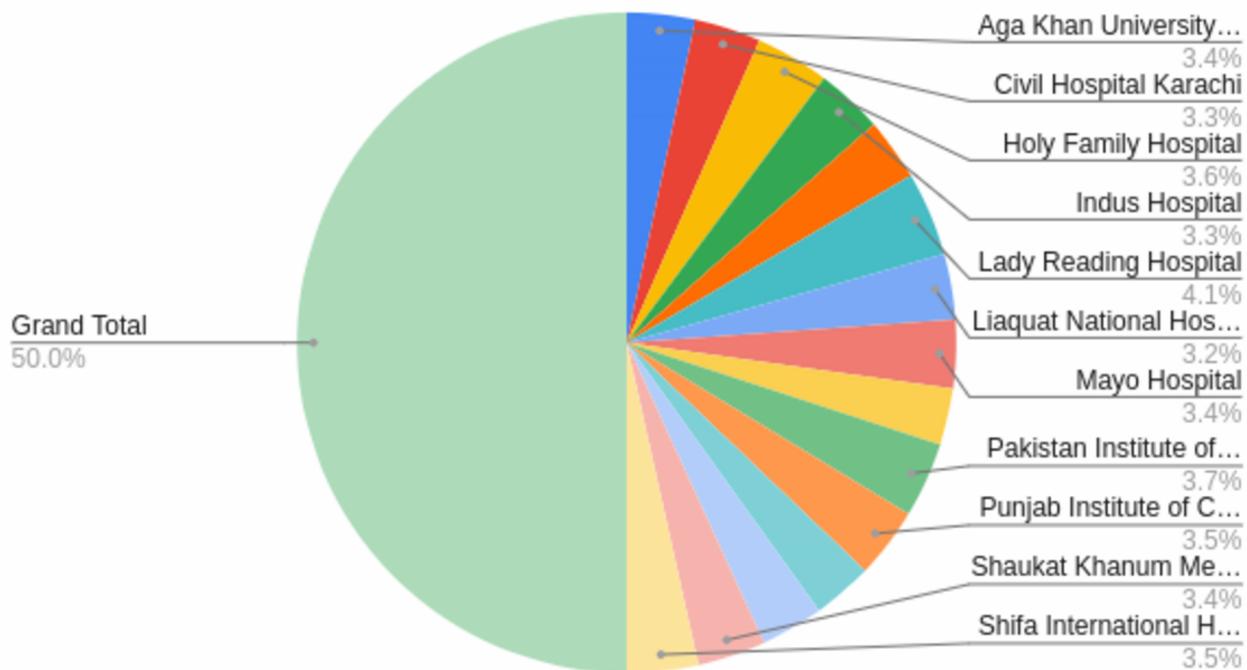
How do I clean this dataset?

| | |
|---------------------------|---|
| Apply Filter | First of all ,I apply filter on whole dat set and chech whether thei is aerror o not. |
| Remove Dulpicate s | After apply filtering ,i remove duplicates on whole datset and clean this data. |
| Handling Error | In this dataset, when their is error i handle this error by standerdization. |

Pivot Table:

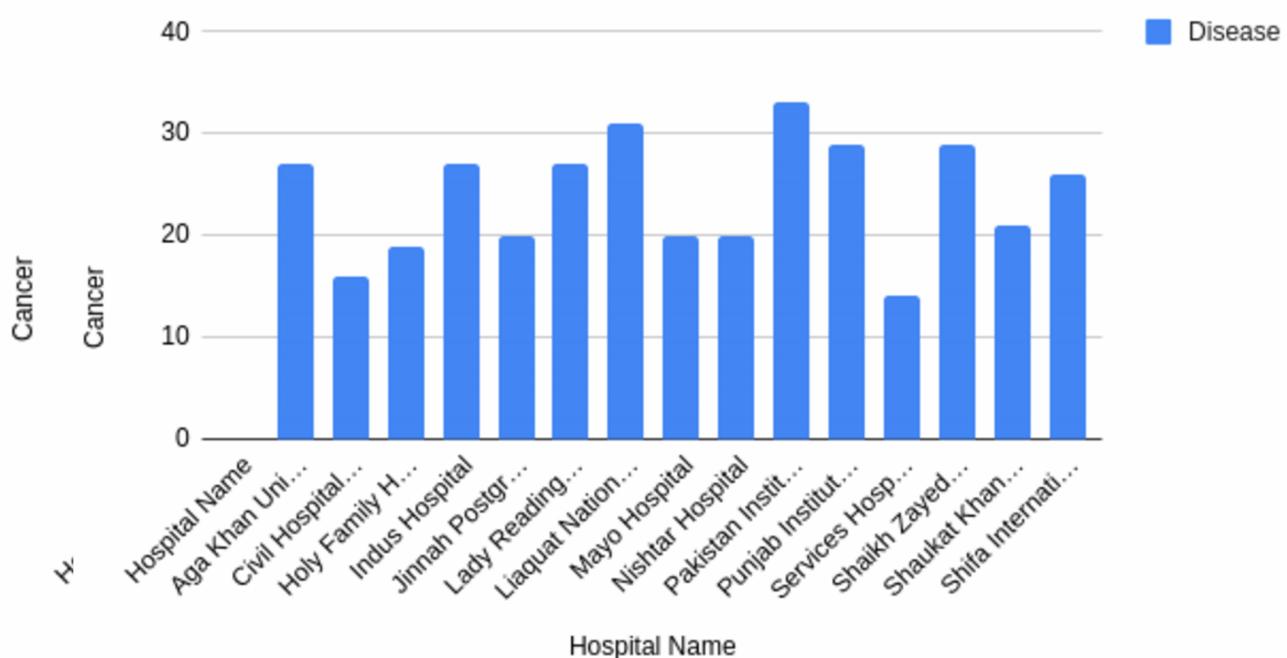
Hospital statistics

COUNTA of Patient Name



Common diseases:

Cancer vs. Hospital Name

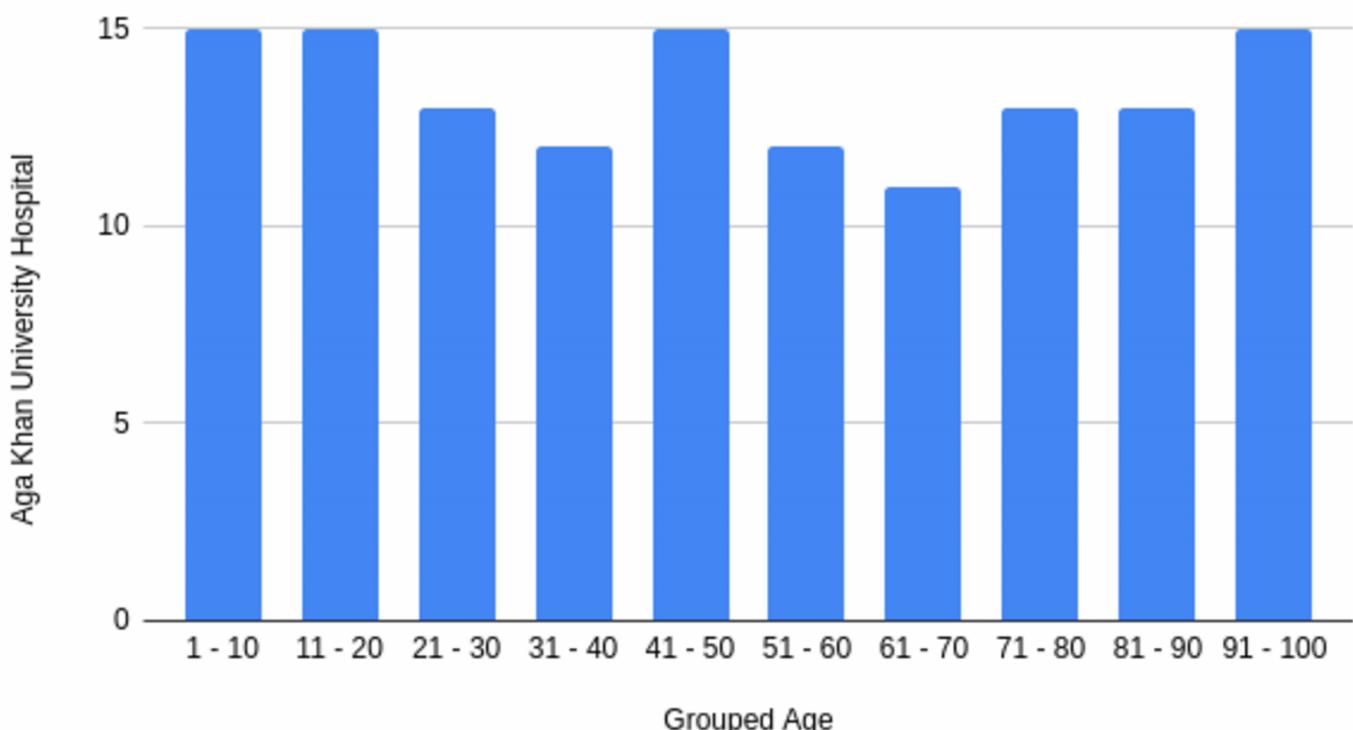


cancer is the common disease in hospitals

Age distribution of patient:

In aga khan university hospital,raph shows age distribution of patient in this hospital.

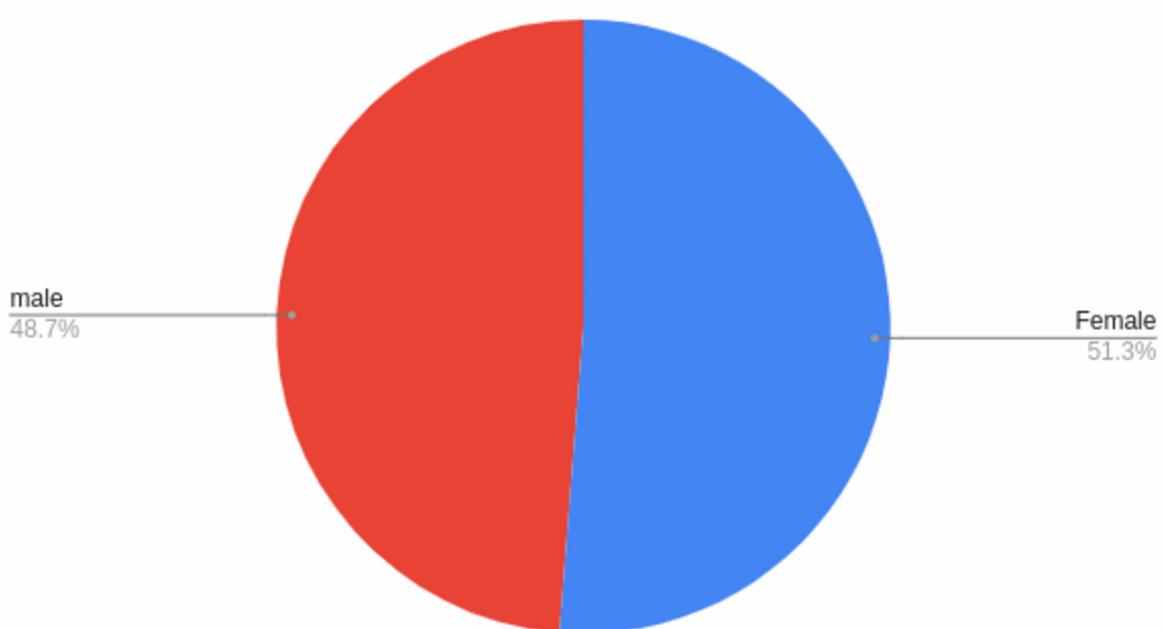
Aga Khan University Hospital vs. Grouped Age



Gender ratio:

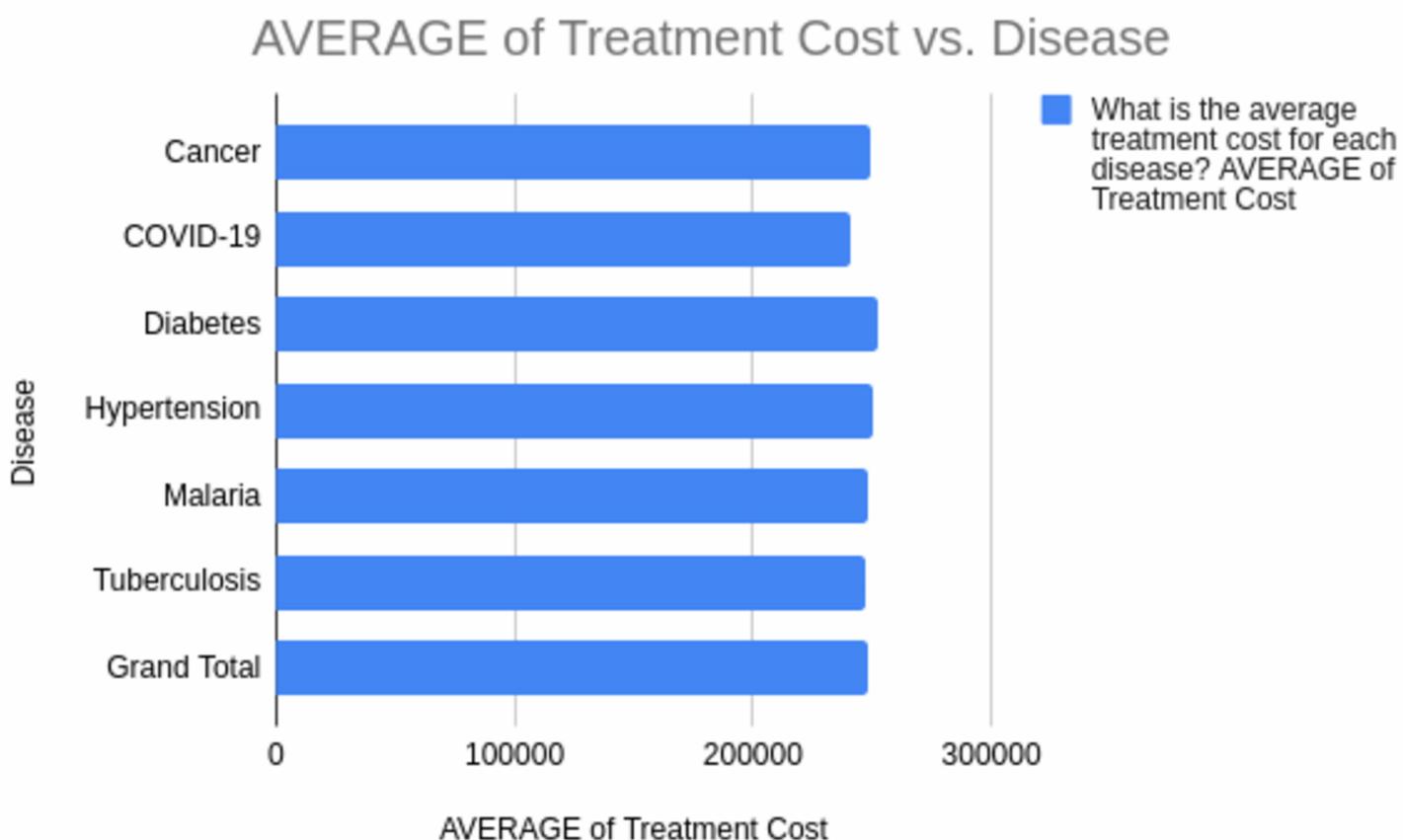
In this hospital dataset,51% female are in cancer while man are 48%,

Cancer

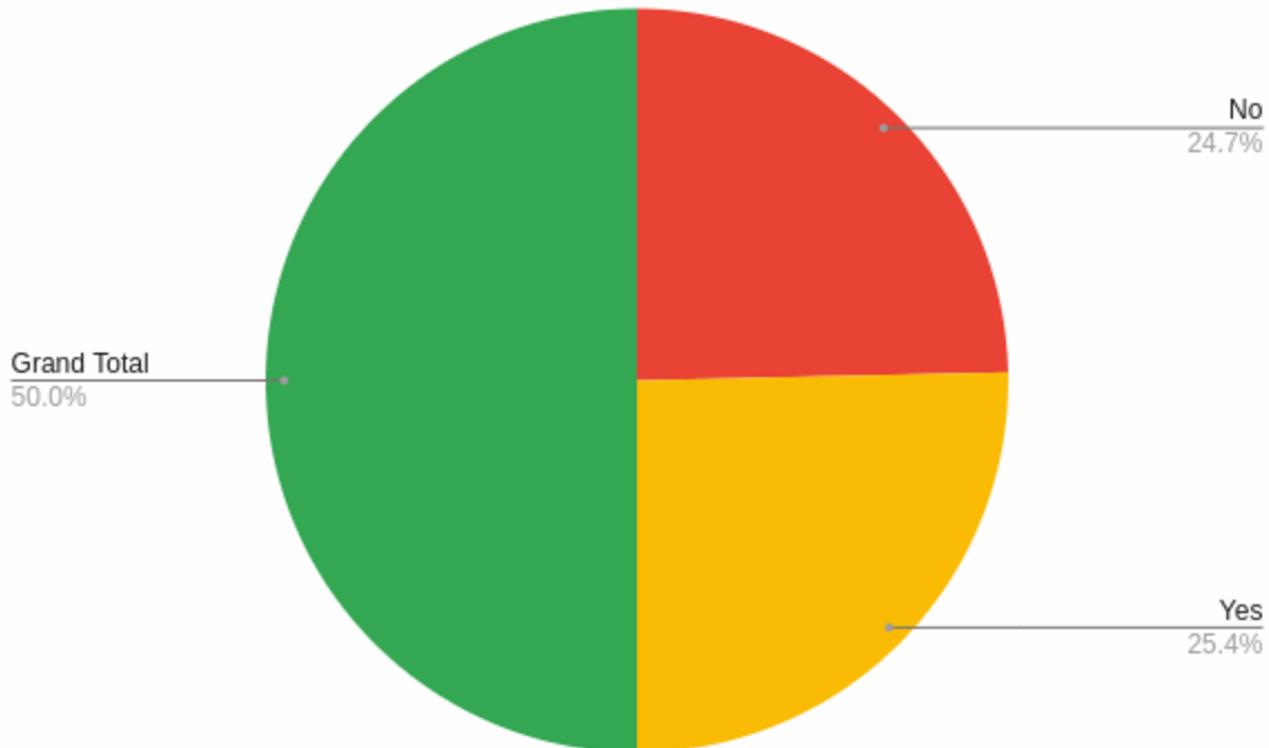


Treatment cost analysis:

This graph shows the average of treatment cost of each disease

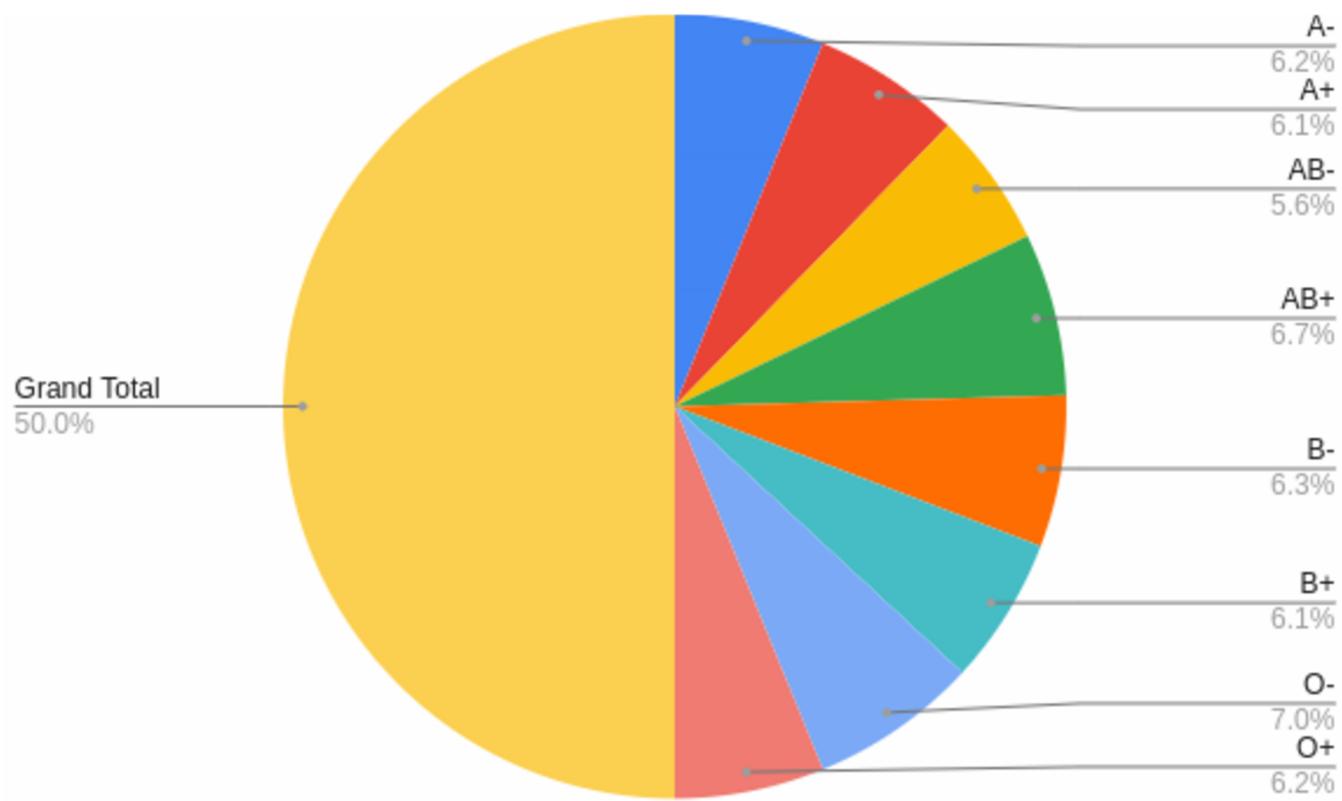


Insurance coverage:

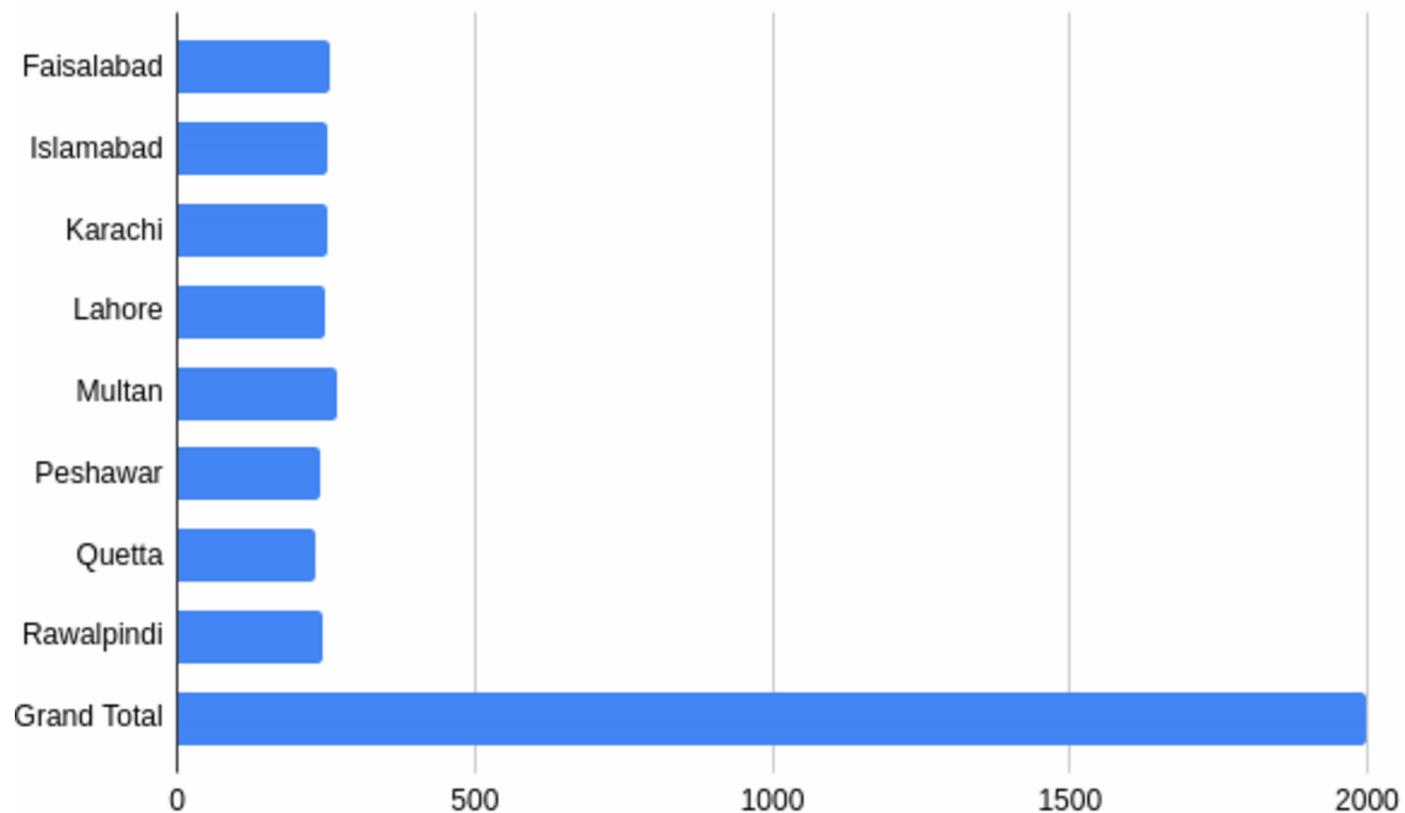


Blood group distribution:

patient of A+,o+,AB+,O-,B+,B_- are distributed in this graph

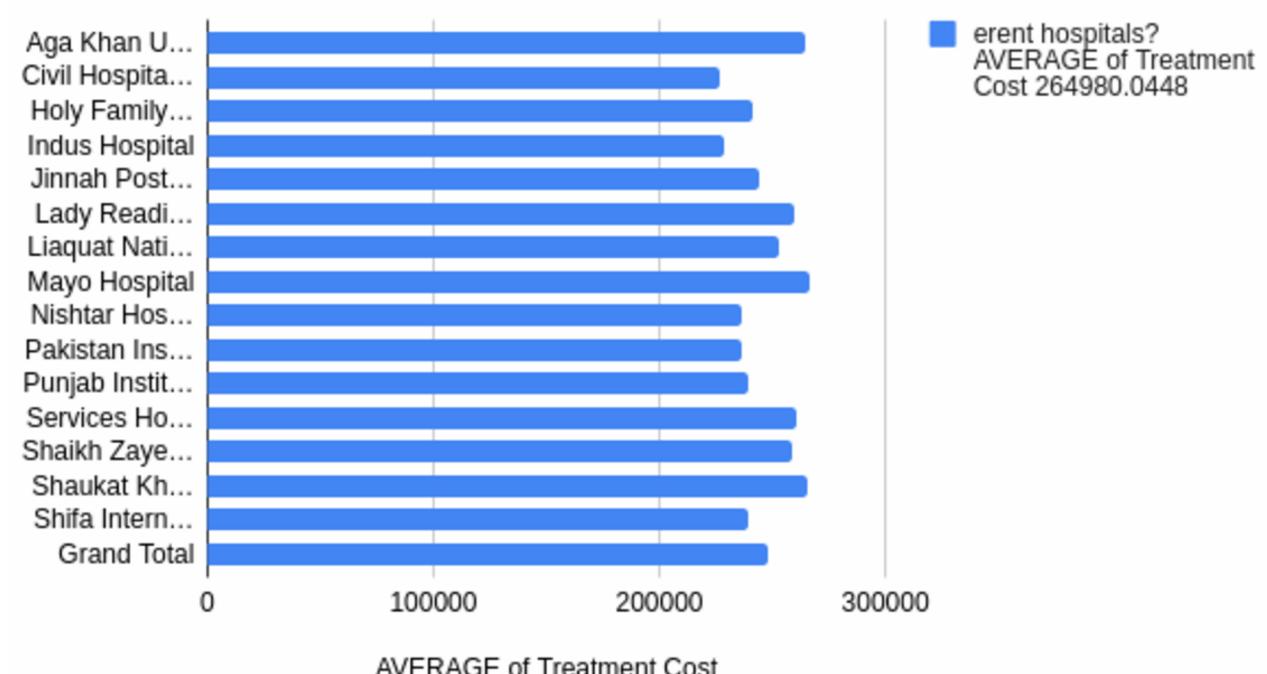


City wise patient distribution:



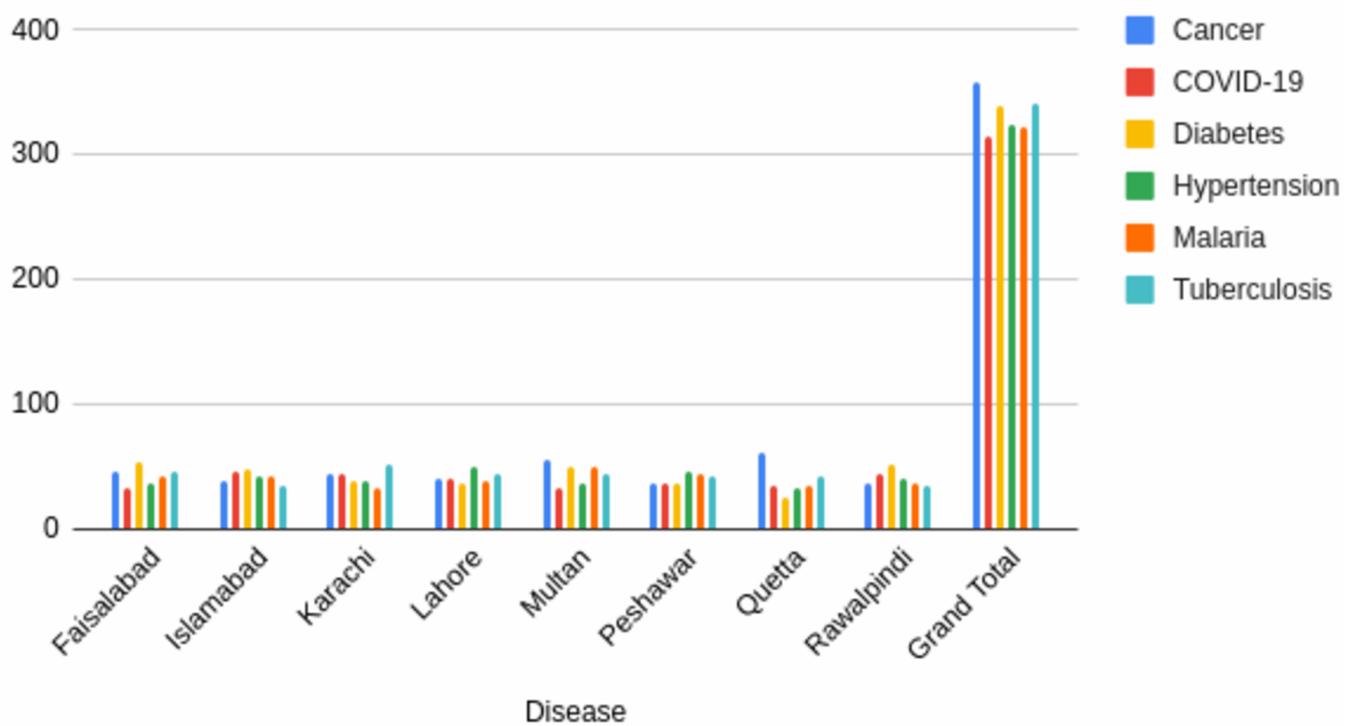
Treatment cost by each hospital:

AVERAGE of Treatment Cost



Common Disease in each city:

Cancer, COVID-19, Diabetes, Hypertension, Malaria...



Insights via visuals:

Our comprehensive analysis of health data from hospitals across Pakistan reveals significant variations in patient distribution, disease prevalence, and treatment costs, highlighting regional healthcare disparities. Lady Reading Hospital, with the highest patient count of 165, and Nishtar Hospital, with the lowest at 111, showcase the differences in hospital capacities and healthcare demands. Diseases such as cancer and COVID-19 show distinct patterns: the Pakistan Institute of Medical Sciences treats the most cancer patients, while Services Hospital treats the fewest. Liaquat National Hospital leads in COVID-19 cases, contrasted with the lower count at the Pakistan Institute of Medical Sciences. Additionally, diabetes is most prevalent at Lady Reading Hospital, Aga Khan University Hospital, and Mayo Hospital, while Punjab Institute of Cardiology and Liaquat National Hospital see the fewest cases. Analyzing age groups, Lady Reading Hospital treats the most babies, whereas Nishtar Hospital, Shaikh Zayed Hospital, and the Pakistan Institute of Medical Sciences have the fewest. Pakistan Institute of Medical Sciences also leads in treating children, while Services Hospital has the lowest count. Indus Hospital sees the highest number of middleaged adults, with Nishtar Hospital, Punjab Institute of Cardiology, and Jinnah Postgraduate Medical Centre at the lower end. Lady Reading Hospital leads in treating the old adults, compared to the fewer numbers at Nishtar Hospital. Gender distribution shows more female patients for diseases like cancer, COVID-19, and malaria, while more males are treated for diabetes, hypertension, and tuberculosis.

Conclusion

we recommend targeted resource allocation to high-volume hospitals like Lady Reading to address their significant patient loads, while also investigating low-volume hospitals like Nishtar to improve their accessibility.

Specialized programs should be developed for managing prevalent diseases such as cancer and COVID-19 at hospitals with high patient counts, while expanding insurance coverage is crucial to reduce financial burdens, given that nearly half the patients lack insurance. Regional insights suggest the need for tailored healthcare services, particularly in cities like Multan and Karachi, to address specific disease prevalence.