Care_Stat Project

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The Problem This Project Addresses

The healthcare sector faces challenges in managing vast and diverse data leading to information fragmentation difficulty in tracking medical records inefficiency in managing appointments and resources and challenges in financial and operational analysis This project aims to provide a centralized and integrated database system to address these issues to improve operational efficiency and healthcare quality and support decision-making

Database Design

The Care_Stat database was designed as a comprehensive system for hospital data management, relying on a relational model to ensure data integrity and minimize redundancy Key tables include

Patients	(name, age, gender, height, weight, country, city, visit count)
Doctors	(name, age, gender, email, specialization, years of experience, rating, salary)
Departments	(name, code, head doctor, capacity, staff count, working hours, emergency support)
Appointments	(appointment_id, appointment_date, notes)
Medical_Records	(diagnosis, severity level, prescription cost, record date)
Payments	(payment_id, method, amount, payment_date, payment_status, transaction_id)
Visits	(Visit_id, Visit_data)
ChronicDiseases	(Diseases_id, Diseases_Name)
Linking Tables	(DoctorDepartment, DoctorPhones, DoctorWorkplaces, PatientPhones, Department_Equipment)

This design ensures accurate representation of complex relationships and efficient analysis

Main Insights from Analysis

Based on data analysis and the dashboard several important insights were extracted

1. Hospital Overview:

- Human Resources and Departments: Indicators on the number of doctors and departments (12departments) total maximum capacity (500), current occupancy (201) and total patient IDs (10.00K) These provide a quick overview of the hospital's size and structure
- Department Utilization: Visualizations show the utilization of departments, indicating how effectively space and resources are being used
- Patient Turnover (In/Out Per Day): Trends in daily patient admissions and discharges are tracked, offering insights into patient flow and bed management
- Emergency Support: The dashboard highlights the capacity and utilization of emergency support services

2. Doctors Performance:

- Doctor Rating Distribution: Analysis of doctor ratings (Sum of rating_avg by first_name) helps identify top-performing doctors and areas for improvement
- Workload Distribution: Insights into doctors' workload (Sum of workload_hours_week) across different departments or specializations
- Specialization Distribution: Breakdown of doctors by specialization (Cardiology, Pediatrics, Radiology, Emergency) shows the hospital's medical expertise areas
- Salary vs. Rating: Correlation between doctor salaries and their average ratings can be observed

3. Patient Insights:

- Patient Demographics: Detailed patient information including age, gender, country, city, height, weight, and visit counts provides a comprehensive demographic profile
- Department Utilization by Patient Count: Visualizations show which departments are most utilized by patients, indicating patient flow and preferences

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4. Appointments & Visits:

- Appointment Scheduling: Analysis of appointment dates and times, including earliest appointment dates and quarterly appointment counts, helps in optimizing scheduling processes
- Patient Turnover (In/Out Per Day): Similar to healthcare operations, this section specifically tracks patient turnover related to appointments and visits

5. Financial Performance:

- Revenue and Payments: Total revenue, average transaction value, and completed payment ratio
- Payment Methods: Identification of common payment methods (credit card, debit card, insurance, cash, online) and their contribution to total revenue
- Payment Status Distribution: Analysis of payment statuses (pending, completed, failed, refunded) helps identify bottlenecks in the billing process
- Monthly Revenue Trends: Tracking monthly revenues to identify seasonal trends and future forecasts
- Departmental Financial Contribution: Insights into financial contributions per department or transaction ID

These analyses provide valuable insights for hospital management, supporting

informed decision-making to improve healthcare quality, operational efficiency, and

financial sustainability

Finally, I would like to thank Instant and Engineer Mohamed Abu Obeida and Engineer Mariam