SQL-Powered Healthcare Analytics Report

This dashboard analyzes patient visit data from 2023–2024 to identify trends in patient flow, admission behavior, wait times, satisfaction levels, and department referrals. The insights are intended to support operational efficiency, improve patient experience, and enable data-driven healthcare decision-making.

A.(KPI's)

1. Total Visits

```sql
SELECT COUNT(Patient_id) AS Total_Visits FROM healthcare;
```

	Total_Visits
1	9216

2. Avg. Satisfaction Score

```sql
SELECT CAST(SUM(Patient_Satisfaction_Score) *1.0 /
COUNT(Patient_id) AS DECIMAL (10,2)) AS Avg_Satisfaction_Score
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024 AND
        Patient_Satisfaction_Score IS NOT NULL;
```

	Avg_Satisfaction_Score
1	4.96

3. Avg. Patient Age

```sql
SELECT CAST(SUM(Patient_Age)*1.0/ COUNT(Patient_id) AS DECIMAL (10, 0)) AS
Avg_Patient_Age
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024;
```

	Avg_Patient_Age
1	40

B. Charts

4. Time Analysis | By Visits

i. Time Zone

```sql
SELECT Time_Zone, COUNT(Patient_id) AS Total_patients
FROM healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY Time_Zone;
```

	Time_Zone	Total_patients
1	Morning (6AM - 12PM)	1253
2	Afternoon (12PM - 4PM)	783
3	Night (8PM - 6AM)	2039
4	Evening (4PM - 8PM)	803

ii. Hourly

```sql
SELECT DATEPART(HOUR, Patient_Admission_Time) AS Hour, COUNT(Patient_id) AS
Total_Patients
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY DATEPART(HOUR, Patient_Admission_Time)
ORDER BY DATEPART(HOUR, Patient_Admission_Time);
```

Hour	Total_Patients
0	201
1	188
2	191
3	210
4	197
5	215
6	201
7	221
8	205
9	215
10	201
11	210
12	192
13	199
14	200
15	192
16	218
17	193
18	192
19	200
20	194
21	189
22	204
23	250

5. Month & Day Analysis | By Visits

i. Months

```sql
SELECT DATENAME(MONTH, Patient_Admission_Date) AS Months, COUNT(Patient_id) AS
Total_Patients
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY DATENAME(MONTH, Patient_Admission_Date), MONTH(Patient_Admission_Date)
ORDER BY MONTH(Patient_Admission_Date);
```

	Months	Total_Patients
1	January	513
2	February	431
3	March	506
4	April	469
5	May	519
6	June	485
7	July	488
8	August	530
9	September	466
10	October	471

ii. Weekday

```sql
SELECT DATENAME(WEEKDAY, Patient_Admission_Date) AS Day, COUNT(Patient_id) AS
Total_Patients
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY DATENAME(WEEKDAY, Patient_Admission_Date), DATEPART(WEEKDAY,
Patient_Admission_Date)
ORDER BY DATEPART(WEEKDAY, Patient_Admission_Date);
```

	Day	Total_Patients
1	Sunday	706
2	Monday	718
3	Tuesday	684
4	Wednesday	660
5	Thursday	706
6	Friday	679
7	Saturday	725

PATIENT PANEL

Charts

6. Gender Analysis

```sql
SELECT Patient_Gender, COUNT(Patient_id) AS Total_Patient
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY Patient_Gender
ORDER BY Total_patient DESC;
```

	Patient_Gender	Total_Patient
1	Male	2523
2	Female	2347
3	Femaleemale	8

7. Age Group| By Admissions, Non-Admissions

```sql
SELECT
    age_group,
    SUM(CASE WHEN Patient_Admission_Flag = 'Admission' THEN 1 ELSE 0 END) AS Admission,
    SUM(CASE WHEN Patient_Admission_Flag = 'Not Admission' THEN 1 ELSE 0 END) AS Not_Admission,
    COUNT(Patient_Id) AS Total_Patients
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY Age_Group
ORDER BY Age_Group;
```

	age_group	Admission	Not_Admission	Total_Patients
1	0-10	319	314	633
2	11-20	308	296	604
3	21-30	321	319	640
4	31-40	312	306	618
5	41-50	292	302	594
6	51-60	327	302	629
7	61-70	301	298	599
8	71-80	275	286	561

8. Age Group | By Avg Satisfaction Score

```sql
SELECT Age_Group, COUNT(Patient_id), CAST(SUM(Patient_Satisfaction_Score)*1.0 /
COUNT(Patient_id) AS DECIMAL (10, 2)) AS Avg_Satisfaction_Score
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024 AND Patient_Satisfaction_Score IS NOT
NULL
GROUP BY Age_Group
ORDER BY Age_Group;
```

	Age_Group	(No column name)	Avg_Satisfaction_Score
1	0-10	183	5.03
2	11-20	145	5.10
3	21-30	174	5.00
4	31-40	169	4.95
5	41-50	162	5.14
6	51-60	154	5.34
7	61-70	156	4.74
8	71-80	175	4.45

9. Age Group | By Avg Satisfaction Score

```sql
SELECT Age_Group, COUNT(Patient_id) AS Total_Patient,
CAST(AVG(CASE
            WHEN Patient_Satisfaction_Score IS NOT NULL
            THEN Patient_Satisfaction_Score*1.0
            END) AS DECIMAL (10, 2)) AS Avg_Satisfaction_Score
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY Age_Group
ORDER BY Age_Group;
```

	Age_Group	Total_Patient	Avg_Satisfaction_Score
1	0-10	633	5.03
2	11-20	604	5.10
3	21-30	640	5.00
4	31-40	618	4.95
5	41-50	594	5.14
6	51-60	629	5.34
7	61-70	599	4.74
8	71-80	561	4.45

10. Satisfaction Score | By Patients

```sql
SELECT
    CASE
        WHEN Patient_Satisfaction_Score IS NULL THEN 'Not Rated'
        ELSE CAST(Patient_Satisfaction_Score AS VARCHAR)
    END AS Patient_Satisfaction_Score,
    COUNT(Patient_id) AS Total_Patient
FROM Healthcare
WHERE Patient_Admission_Date >= '2024-01-01'
  AND Patient_Admission_Date < '2025-01-01'
GROUP BY
    CASE
        WHEN Patient_Satisfaction_Score IS NULL THEN 'Not Rated'
        ELSE CAST(Patient_Satisfaction_Score AS VARCHAR)
    END
ORDER BY
    MAX(CASE
            WHEN Patient_Satisfaction_Score IS NULL THEN 10
            ELSE Patient_Satisfaction_Score
        END);
```

	Patient_Satisfaction_Score	Total_Patient
1	0	128
2	1	124
3	2	97
4	3	129
5	4	126
6	5	115
7	6	126
8	7	129
9	8	117
10	9	109
11	10	118
12	Not Rated	3560

HOSPITAL PANEL

A.KPI & Charts

11. Avg. Patient Wait Time (Minutes)

```sql
SELECT CAST(AVG(CAST(patient_Waittime AS FLOAT)) AS DECIMAL (10,2)) AS Avg_Waittime
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024;
```

	Avg_Waittime
1	35.47

```sql
SELECT Age_Group, CAST(AVG(CAST(patient_Waittime AS FLOAT)) AS DECIMAL (10, 2)) AS Avg_Waittime
FROM Healthcare
WHERE YEAR(Patient_Admission_Date) = 2024
GROUP BY Age_Group
ORDER BY Age_Group;
```

	Age_Group	Avg_Waittime
1	0-10	34.81
2	11-20	35.79
3	21-30	36.12
4	31-40	35.99
5	41-50	34.98
6	51-60	35.41
7	61-70	35.33
8	71-80	35.26

12. Department Referral Count | By Avg Satisfaction Score

```sql
SELECT Department_Referral, COUNT(Patient_id) AS Total_patient,
CAST(AVG(CAST(Patient_Satisfaction_Score AS FLOAT)) AS DECIMAL (10,2)) AS
Avg_Patient_Satisfaction_Score
FROM Healthcare
WHERE YEAR (Patient_Admission_Date) = 2024
GROUP BY Department_Referral
ORDER BY COUNT(Patient_id) DESC;
```

	Department_Referral	Total_patient	Avg_Patient_Satisfaction_Score
1	None	2886	4.96
2	General Practice	966	5.11
3	Orthopedics	532	4.47
4	Physiotherapy	142	5.10
5	Cardiology	123	5.44
6	Neurology	104	5.21
7	Gastroenterology	85	5.56
8	Renal	40	4.36

13. Department Referral | By Age Group Count

```sql
SELECT Department_Referral,
SUM(CASE WHEN Age_Group = '0-10' THEN 1 ELSE 0 END) AS '0-10',
SUM(CASE WHEN Age_Group = '11-20' THEN 1 ELSE 0 END) AS '11-20',
SUM(CASE WHEN Age_Group = '21-30' THEN 1 ELSE 0 END) AS '21-30',
SUM(CASE WHEN Age_Group = '31-40' THEN 1 ELSE 0 END) AS '31-40',
SUM(CASE WHEN Age_Group = '41-50' THEN 1 ELSE 0 END) AS '41-50',
SUM(CASE WHEN Age_Group = '51-60' THEN 1 ELSE 0 END) AS '51-60',
SUM(CASE WHEN Age_Group = '61-70' THEN 1 ELSE 0 END) AS '61-70',
SUM(CASE WHEN Age_Group = '71-80' THEN 1 ELSE 0 END) AS '71-80',
COUNT(Patient_id) AS Total_Patient
FROM Healthcare
WHERE YEAR (Patient_Admission_Date) = 2024
GROUP BY Department_Referral
ORDER BY COUNT(Patient_id) DESC;
```

	Department_Referral	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	Total_Patient
1	None	375	365	379	364	361	378	345	319	2886
2	General Practice	124	99	130	116	115	119	130	133	966
3	Orthopedics	73	62	70	70	62	70	67	58	532
4	Physiotherapy	20	26	19	14	16	13	16	18	142
5	Cardiology	14	16	16	18	14	19	18	8	123
6	Neurology	17	15	15	16	10	16	8	7	104
7	Gastroenterology	5	12	8	11	12	10	12	15	85
8	Renal	5	9	3	9	4	4	3	3	40

14. Department Referral | Avg Wait Time (Minutes)

```sql
SELECT Department_Referral, CAST(AVG(CAST(Patient_Waittime AS FLOAT)) AS
DECIMAL(10, 2)) AS Avg_Patient_Waittime
FROM Healthcare
GROUP BY Department_Referral
ORDER BY CAST(AVG(CAST(Patient_Waittime AS FLOAT)) AS DECIMAL(10, 2));
```

	Department_Referral	Avg_Patient_Waittime
1	Renal	34.70
2	General Practice	34.91
3	Orthopedics	34.98
4	None	35.29
5	Cardiology	35.35
6	Gastroenterology	35.83
7	Physiotherapy	36.57
8	Neurology	36.80