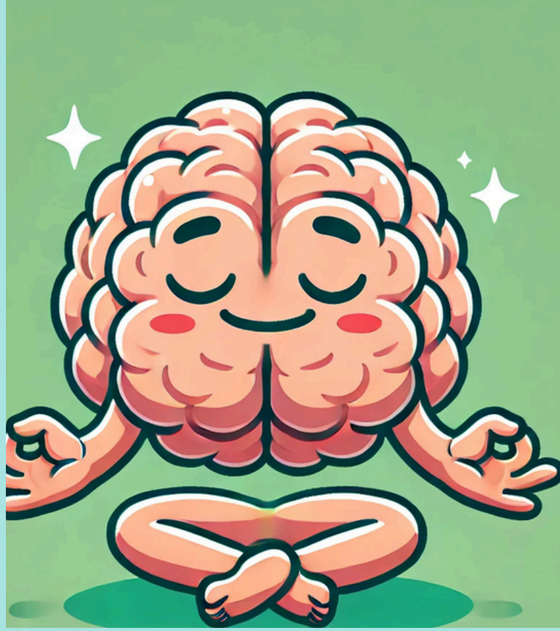
Mental Health Analysis

- PRANAV PAWAR

OBJECTIVE

- Utilized SQL to analyze Mental Health of people leveraging data analysis to gain insights into patient treatments, diagnoses, and outcomes.
- The project aims to identify patterns and correlations in mental health care.
- The ultimate goal is to enhance decision making processes by uncovering actionable information, contributing to improved mental health interventions and patient care outcomes.

PROBLEM STATMENT



- **Basic**

1. Calculate number of patients allocated to different medications
2. Sort the patients according to the outcome of treatment
3. Find the number of treatments that started in each month
4. Find the average adherence to treatment and average treatment progress level

- **Intermediate**

1. Find out people affected with major depressive disorder according to gender
2. Find the average score of all tests in level monitoring in male and female patients
3. Find the count of male and female patients prescribed antidepressants and their average stress level
4. Find the number of patients with improved state in first three months of 2024

- **Advanced**

1. Classify the patient according to age group i.e (elderly & adult) and gender
2. Find number of patients on the basis of Emotional State detected by AI

LET’S BEGIN ANALYSIS USING

MySQL®

Calculate number of patients allocated to different medications

```
select medication, count(Patient_ID) as number_of_patients_using_medication
from Diagnosis group by medication;
```

medication	number_of_patients_using_medication
Mood Stabilizers	87
Antipsychotics	87
SSRIs	89
Anxiolytics	71
Antidepressants	76
Benzodiazepines	90

Sort the patients according to the outcome of Treatment

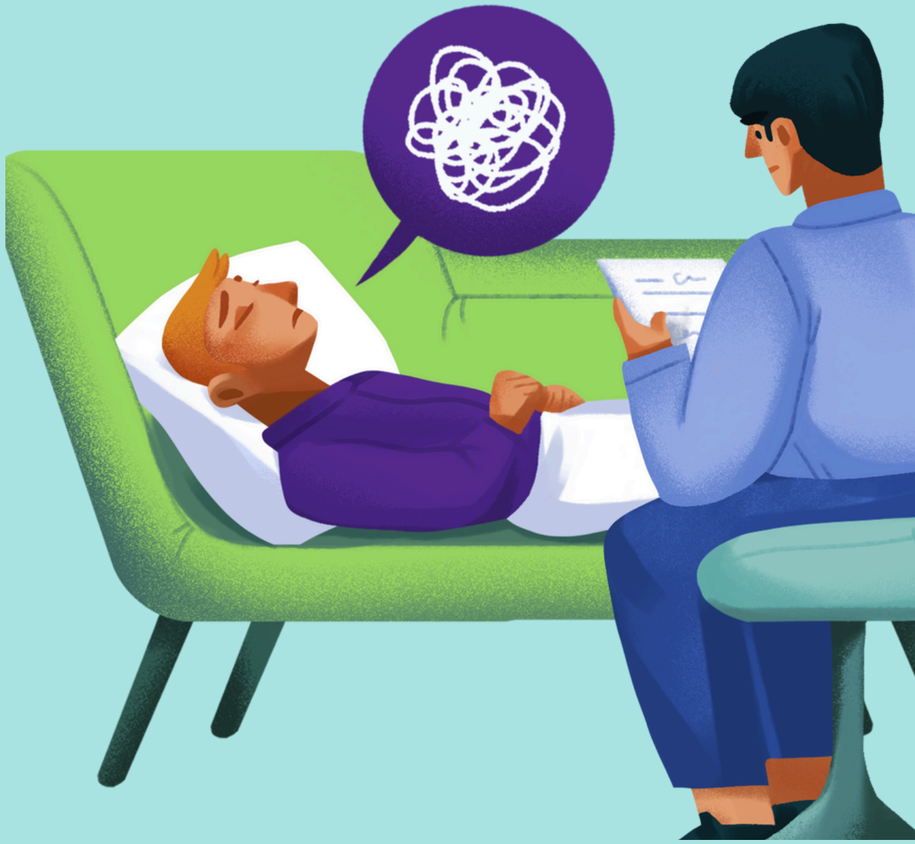
```
SELECT COUNT(TREATMENT_ID),OUTCOME FROM TREATMENTS
GROUP BY OUTCOME;
```

COUNT(TREATMENT_ID)	OUTCOME
171	Deteriorated
159	No Change
170	Improved

Find the number of treatments that started in each month

```
SELECT MONTH(treatment_start_date),COUNT(TREATMENT_ID) FROM TREATMENTS
GROUP BY MONTH(treatment_start_date);
```

MONTH(treatment_start_date)	COUNT(TREATMENT_ID)
1	164
3	158
2	144
4	34



Find the average adherence to treatment and average treatment progress level

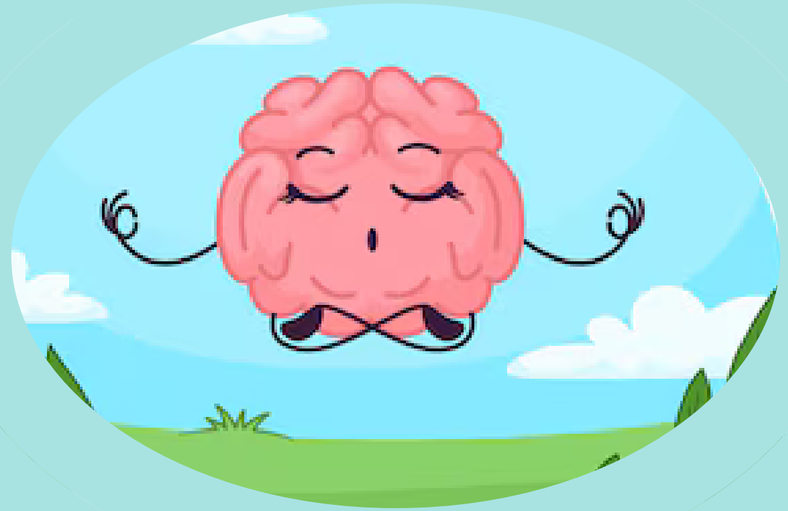
```
SELECT AVG(Treatment_Progress) AS TREATMENTLEVELS
AVG(Adherence_to_Treatment) FROM TREATMENTS;
```

	TREATMENTLEVELS	AVG(Adherence_to_Treatment)
▶	7.4360	75.4540

Find out people affected with major depressive disorder according to gender

```sql
select diagnosis.disease, patient_details.gender,
count(patient_details.gender) as count from patient_details
join diagnosis on patient_details.Patient_ID = diagnosis.Patient_ID
where diagnosis.disease = 'major depressive disorder'
group by diagnosis.disease, patient_details.gender;
```

disease	gender	count
Major Depressive Disorder	Female	60
Major Depressive Disorder	Male	65



Find the average score of all tests in level monitoring in male and female patients

```sql
SELECT patient_details.GENDER,
AVG(LEVEL_MONITORING.STRESS_LEVEL_SCORE) AS Average_Stress_Level,
AVG(LEVEL_MONITORING.symptom_severity_score) AS Average_severity,
AVG(LEVEL_MONITORING.mood_score) AS BEHAVIOR_LEVELS,
AVG(LEVEL_MONITORING.sleep_quality_score) AS SLEEP_LEVELS,
AVG(LEVEL_MONITORING.physical_test_score) AS PHYSICAL_TEST_RECORD
FROM LEVEL_MONITORING
JOIN patient_details
ON LEVEL_MONITORING.PATIENT_ID = patient_details.PATIENT_ID
GROUP BY patient_details.GENDER;
```

GENDER	Average_Stress_Level	Average_severity	BEHAVIOR_LEVELS	SLEEP_LEVELS	PHYSICAL_TEST_RECORD
Female	7.5769	7.6111	5.5812	6.6581	5.0983
Male	7.5113	7.3609	5.3947	6.3083	5.3195

Find the count of male and female patients prescribed antidepressants and their average stress level

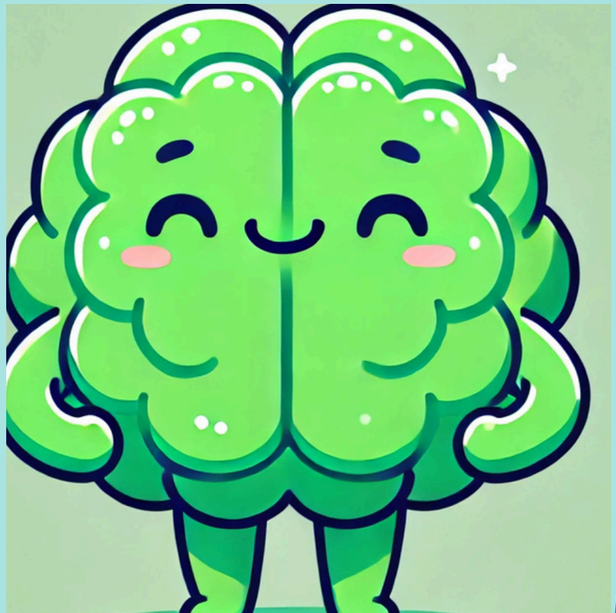
```sql
SELECT patient_details.GENDER,
COUNT(patient_details.Patient_ID) AS Patient_Count,
diagnosis.MEDICATION,
AVG(level_monitoring.stress_level_score) AS Avg_Stress_Level
FROM patient_details JOIN diagnosis
ON patient_details.Patient_ID = diagnosis.Patient_ID
JOIN level_monitoring
ON level_monitoring.patient_id = diagnosis.Patient_ID
WHERE diagnosis.MEDICATION = 'ANTIDEPRESSANTS'
GROUP BY patient_details.GENDER,diagnosis.MEDICATION;
```

GENDER	Patient_Count	MEDICATION	Avg_Stress_Level
Female	38	Antidepressants	7.8158
Male	38	Antidepressants	7.5263

Find the number of patients with improved state in first three months of 2024

```sql
SELECT MONTHNAME(Treatment_Start_Date) AS Treatment_Month,
COUNT(*) AS Improved_Patients FROM treatments
WHERE Outcome = 'Improved'
GROUP BY MONTHNAME(Treatment_Start_Date),
MONTH(Treatment_Start_Date)
ORDER BY Improved_Patients DESC
LIMIT 3;
```

	Treatment_Month	Improved_Patients
▶	January	56
	March	52
	February	50



Classify the patient according to gender and age group i.e (elderly & adult)

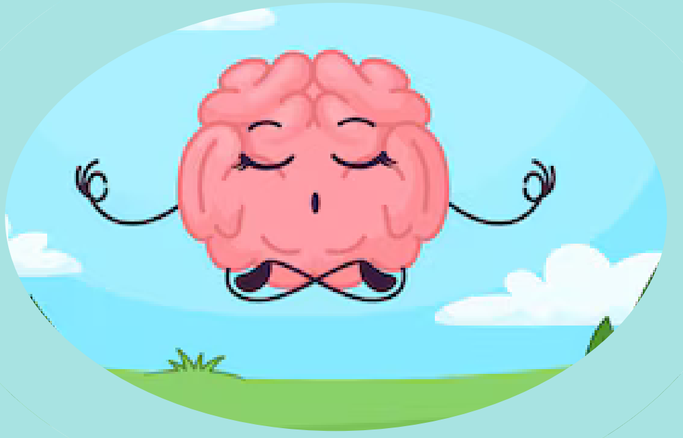
```sql
SELECT
    age_group,
    gender,
    COUNT(Patient_ID) AS patient_count
FROM (SELECT Patient_ID,gender,
CASE
WHEN age < 60 THEN 'adult'
WHEN age >= 60 THEN 'elderly'
END AS age_group
FROM patient_details)
AS categorized_patients
GROUP BY age_group, gender;
```

age_group	gender	patient_count
adult	Female	228
adult	Male	255
elderly	Male	11
elderly	Female	6

Find number of patients on the basis of Emotional State detected by AI

```sql
SELECT TREATMENTS.AI_Detected_Emotional_State AS Behavior,
patient_details.GENDER,
COUNT(patient_details.PATIENT_ID) AS Patient_Count
FROM LEVEL_MONITORING JOIN patient_details
ON LEVEL_MONITORING.PATIENT_ID = patient_details.PATIENT_ID
JOIN TREATMENTS
ON LEVEL_MONITORING.TREATMENT_ID = TREATMENTS.TREATMENT_ID
GROUP BY TREATMENTS.AI_Detected_Emotional_State, patient_details.GENDER
ORDER BY TREATMENTS.AI_Detected_Emotional_State ASC,
patient_details.GENDER ASC;
```

Behavior	GENDER	Patient_Count
Anxious	Female	32
Anxious	Male	70
Depressed	Female	33
Depressed	Male	36
Excited	Female	44
Excited	Male	41
Happy	Female	34
Happy	Male	44
Neutral	Female	46
Neutral	Male	41
Stressed	Female	45
Stressed	Male	34



KEY TAKEAWAYS

1. Data Integration and Relationships :

The project successfully integrates data across multiple tables: Patients, Diagnoses, Treatments, and Level Monitoring.

2. Insights on Gender and Mental Health Trends

The project explores gender-based trends in mental health using AI-detected behaviors, helping identify conditions that are more prevalent in males or females.

3. Behavioral Analysis

The project highlights AI-detected mental behaviors, allowing identification of patterns such as the most common mental health issues or trends across demographics.

4. Treatment Effectiveness

Analysis of treatment outcomes (e.g., improved, unchanged) provides insights into which treatments are most effective for specific diagnoses or patient groups.

5. Stress-Level Monitoring

The dataset enables tracking of stress levels over time, allowing comparisons across different groups (e.g., by gender or treatment).

6. SQL Skills Demonstrated

The project showcases SQL skills ranging from basic queries (e.g., filtering and sorting) to advanced techniques like Joins, Subqueries, Grouping and Aggregation, Conditions and filters

THANKYOU FOR THE ATTENTION