

Mental Health Insight Dashboard – Panic Attack Case Study

Project Summary

This project explores the **patterns and causes of panic attacks** using a dataset of **1,200 respondents** and **23 variables**. The analysis aims to uncover how **demographics, lifestyle habits, and therapy choices** relate to the frequency and severity of panic attacks.

The insights were visualized through a **Power BI dashboard**, divided into three meaningful sections for clarity and actionability.

Tools Used

- **Power BI** – for interactive data visualization
- **Microsoft Excel** – for basic data cleaning
- **Dataset** – 1,200 rows × 23 columns

Project Objective

The goal of this project is to identify:

- Which age groups are more affected by panic attacks
- The most common triggers behind panic attacks
- Time patterns of occurrences (e.g., day vs. night, weekdays vs. weekends)
- The impact of lifestyle habits such as alcohol, caffeine, and social media use

These insights aim to raise awareness about mental health patterns and promote healthier lifestyle decisions.

Data Cleaning

To prepare the dataset for analysis, the following data cleaning steps were performed:

1. **Removed Duplicates**
 - Checked for and removed any duplicate rows to ensure each entry represents a unique individual.
2. **Handled Missing Values**
 - Identified missing values in key columns such as **Age**, **Gender**, **Panic_Score**, and lifestyle factors.
 - For numerical columns like **Sleep_Hours** and **Heart_Rate**, missing values were filled using the **mean or median**.

- For categorical columns like **Smoking**, **Therapy**, and **Trigger**, missing values were filled using the **mode** or marked as "Unknown".
3. **Standardized Categorical Values**
 - Fixed inconsistent entries (e.g., "Male", "male", "MALE") to a single format like **"Male"**.
 - Converted binary responses like **Yes/No**, **True/False**, or **0/1** to a consistent format.
 4. **Created New Feature: Age Group**
 - A new column called **Age_Group** was created using conditional logic:
 - **Children** → Age ≤ 12
 - **Teenager** → Age ≤ 17
 - **Young Adult** → Age ≤ 24
 - **Adult** → Age ≤ 44
 - **Middle Adult** → Age ≤ 64
 - **Seniors** → Age > 64
 5. **Converted Data Types**
 - Ensured all columns had the correct data types:
 - **Age**, **Heart_Rate**, **Panic_Score**, etc. were converted to **numerical**.
 - **Gender**, **Trigger**, **Smoking**, etc. were treated as **categorical**.
 6. **Removed Irrelevant Columns (if any)**
 - Dropped columns that had too many missing values or were not useful for the analysis.

Key Insights

The Power BI dashboard has been divided into three logical sections for a clearer understanding of the data:

1. **Overview & Demographics** – Presents basic statistics and demographic distribution.
2. **Lifestyle & Behavioral Patterns** – Analyzes the influence of lifestyle habits on panic attacks.
3. **Symptoms & Therapy** – Highlights symptom severity and the impact of different treatment methods.

Overview & Demographics

1. **Panic Attack Frequency by Age Group**
 - **Middle-aged adults (45–64)** report the highest frequency of panic attacks.
 - **Young adults (18–24)** and **adult (25–44)** follow, showing slightly lower yet significant panic attack rates.
2. **Gender Distribution**
 - Total participants include **549 females**, **537 males**, and **114 non-binary individuals**.

- The number of panic attack cases is **nearly equal** between males and females.
- 3. **Top Triggers**
 - The most common triggers reported are:
 - **PTSD (Post-Traumatic Stress Disorder)**
 - **Phobia**
 - **Caffeine**
 - **Social Anxiety**
 - **Stress**
 - These triggers are **evenly distributed** and affect a large portion of the population.
- 4. **Panic Attack Frequency by Trigger and Gender**
 - Panic attacks caused by **PTSD, caffeine, and social anxiety** are consistently high across **all genders**.
 - Interestingly, **non-binary participants** reported **slightly fewer panic attacks** triggered by caffeine compared to others.

Lifestyle & Behavioral Patterns

This section explores how lifestyle choices—such as sleep, caffeine, exercise, and alcohol consumption—are associated with panic attack experiences.

1. **Average Panic Score by Sleep Hours**
 - The **lowest panic scores** are reported by individuals sleeping **4 to 5 hours** (5.29–5.4), but the **panic score peaks at 6 hours** (5.75).
 - There is a **slight drop in panic score** after 7 hours of sleep (5.52), suggesting that **both sleep deprivation and oversleeping** can influence anxiety levels.
2. **Caffeine Intake vs Panic Score**
 - Panic score tends to **increase with caffeine intake**, peaking at **3 cups/day** (5.6), and then **drops slightly** as intake goes higher.
 - This indicates a **threshold effect**, where **moderate caffeine** levels may trigger more panic than very high or no caffeine.
3. **Exercise Frequency vs Panic Score**
 - Individuals who **do not exercise at all** report **moderate panic levels** (5.68).
 - Surprisingly, the panic score **drops sharply** at **3 sessions per week** (5.22), but **rises again** at 5 sessions per week (5.81), indicating that **moderate exercise may help reduce anxiety**, while **over-exercising might be counterproductive**.
4. **Alcohol Consumption vs Panic Frequency**
 - Panic attack frequency is **highest for those with PTSD and caffeine triggers**, and **lowest for those triggered by stress**.
 - Alcohol consumption mirrors this trend, with **heavy drinkers reporting higher panic frequencies**—especially when paired with triggers like PTSD or caffeine.
 - This implies a **compounding effect** of alcohol and mental health triggers on panic attacks.

Symptoms & Therapy

This section focuses on participants' medical history, therapy participation, and how both therapy and medication influence panic attack severity.

1. Panic Attack Frequency by Medical History

- Individuals with a history of **Anxiety** experience the **highest number of panic attacks (2,228)**, followed by those with **Depression** and **PTSD**.
- Even participants with **no medical history** reported a notable frequency (542), suggesting **panic attacks can affect anyone**.

2. Medical History Distribution

- A large portion of the participants report **Anxiety (492)** or **Depression (349)** as existing conditions.
- This supports the finding that pre-existing mental health conditions are strongly linked with panic attack occurrences.

3. Therapy Participation

- Participation is nearly **evenly split: 605 participants** have taken therapy, while **595 have not**, which may point to **limited accessibility, awareness, or willingness** to seek therapy.

4. Average Panic Score by Therapy & Medication Status

- For participants with **Anxiety and Depression**, therapy shows **slightly lower or similar panic scores**, indicating **some benefit**.
- For participants with **PTSD**, therapy does **not significantly reduce panic scores**, highlighting the **need for more targeted support**.
- Surprisingly, participants with **no medical history** who took therapy report a **higher average panic score (5.70)** than those who did not (4.91), possibly due to **acute or recent onset issues**.

Conclusion

Working on this Project has helped me understand how real-world data can reveal powerful insights about mental health.

By dividing the dashboard into three sections - Overview & Demographics, Lifestyle & Behavioral Patterns, and Symptoms & Therapy. I was able to explore the data from different angles and extract meaningful trends.

From this project, I learned how factors like age, sleep, caffeine, alcohol, and therapy can influence the severity and frequency of panic attacks. It was interesting to see that poor sleep and high caffeine intake are clearly linked with higher panic scores, and that anxiety and depression are the most common medical histories among those affected.

Building this dashboard in Power BI helped me improve my data visualization skills, and more importantly, gave me a chance to work on a project that relates to health and well-being something I genuinely care about. I hope this analysis not only improves my technical skills but also contributes to spreading awareness about mental health.

Dashboard Preview



