

Understanding and Addressing Mental Health: A Comprehensive Analysis of Depression and Anxiety Among Students

Background

At the Grayson Institute we are dedicated towards the development and implementation of scalable solutions that allow young people to thrive and actualize their life potential by addressing their mental health needs. We combine rigorous social science research and deep contextual knowledge of the education and mental healthcare systems of the communities that we work in to develop and deploy at scale effective and holistic interventions. For this study we are investigating two important aspects of mental health anxiety and depression. We created a survey that used the principles of the **Patient Health Questionnaire-8 (PHQ-8)** is a brief diagnostic measure for depression and **Generalized Anxiety Disorder Screener-7 (GAD-7)**, which is a brief, cost-effective measure of generalized anxiety, this two are medical tools that are used to guage a person's depression and anxiety level through self-assessed survey.

Data Analysis Methods

Objective:

The objective of this data analysis is to examine and analyze the mental health scores of students based on responses to specific survey questions related to depression and anxiety. We aim to calculate overall depression and anxiety measures, categorize the severity levels, and visualize the results

Data Set Description:

The dataset, named **task_data**, includes information collected from students who participated in a survey. Key columns of interest include responses to depression and anxiety questions in the survey, a unique identifier for each student ("study_id"), the condition, time, and demographic information such as gender, age and form.

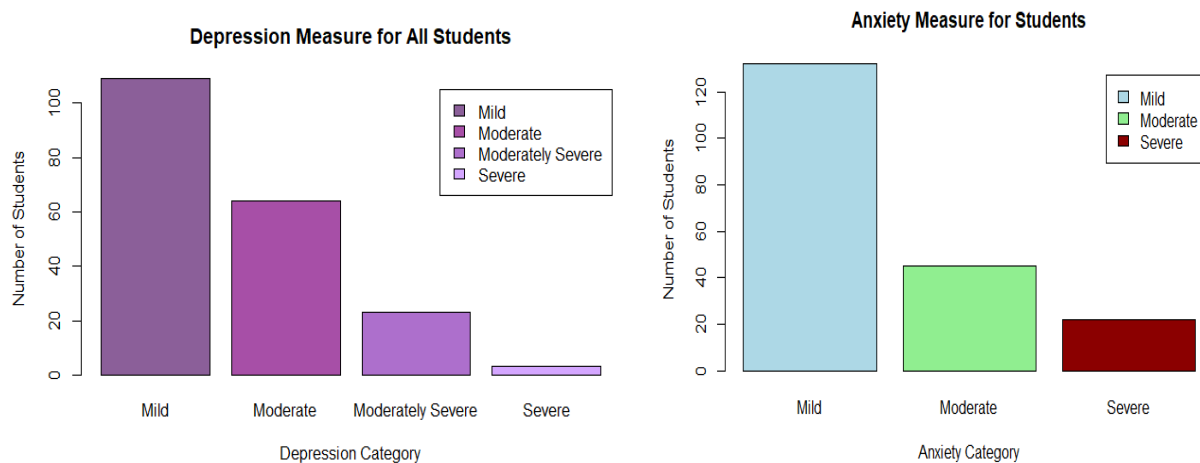
Data Preprocessing:

1. **Loading Data and Libraries:** The dataset was loaded into RStudio using functions like **read.csv** or **read_excel**. Essential libraries, including **tidyverse**, were loaded for streamlined data manipulation and visualization.
2. **Renaming Column Titles:** Column titles were renamed for clarity and consistency. Depression-related columns were changed from "PHQ_1" to "PHQ_8," and anxiety-related columns from "GAD_1" to "GAD_7."
3. **Mutating Answers to Numeric Values:** Answers in text form were transformed into numeric values: "Not at all" -> 0, "Several days" -> 1, "Over half the days" -> 2, "Nearly/almost every day" -> 3. This aids numeric calculations for data analysis.
4. **Summing Depression Scores:** Depression scores were computed by summing responses from "PHQ_1" to "PHQ_8," resulting in the "depression_measure" variable.
5. **Categorizing Depression Levels:** Depression measures were categorized into mild, moderate, moderately severe, and severe levels based on predefined criteria.
6. **Summing Anxiety Scores:** Anxiety scores were calculated by summing responses from "GAD_1" to "GAD_7," leading to the "anxiety measure" variable.

7. **Categorizing Anxiety Levels:** Anxiety measures were categorized into mild, moderate, and severe levels using predefined criteria.
8. **Handling Null Values:** Null values were removed from the dataset using the `na.omit` function to ensure the accuracy of the analysis.

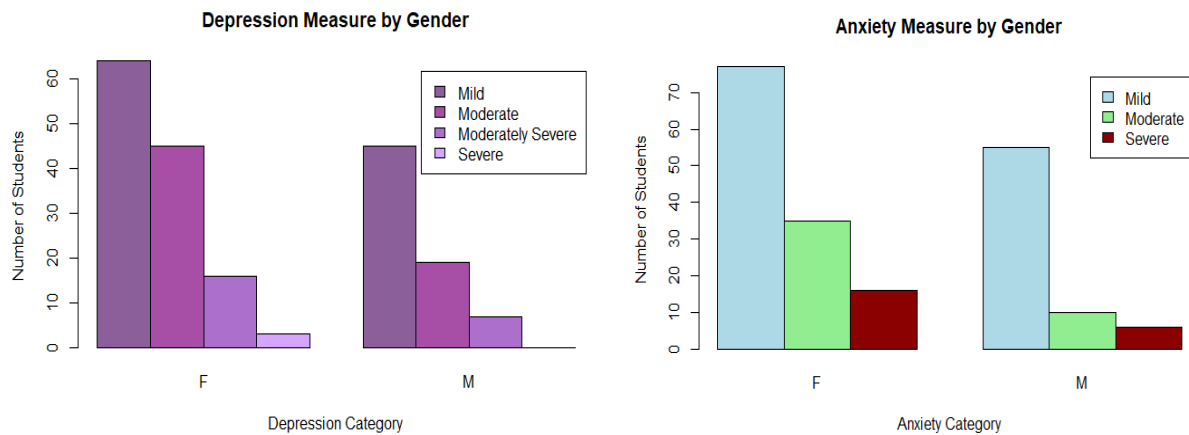
Findings:

1. Depression and Anxiety level for all students compiled.



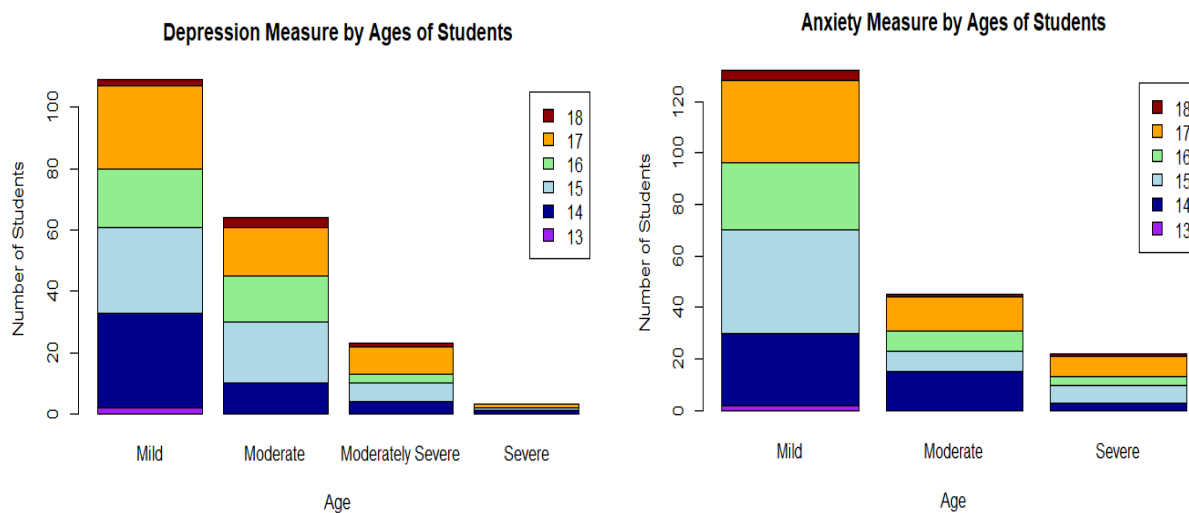
The graphs above are a compilation of all the students' answers on both tests. It shows that most of the students have mild or moderate depression and anxiety. When it comes to students who have severe depression it is divided into two, students with moderately severe depression make up 20% while make up about 5% of all the students that took part in the survey. When it comes to students who have severe anxiety, they make up 20% of all students.

2. Depression and Anxiety level by Gender.



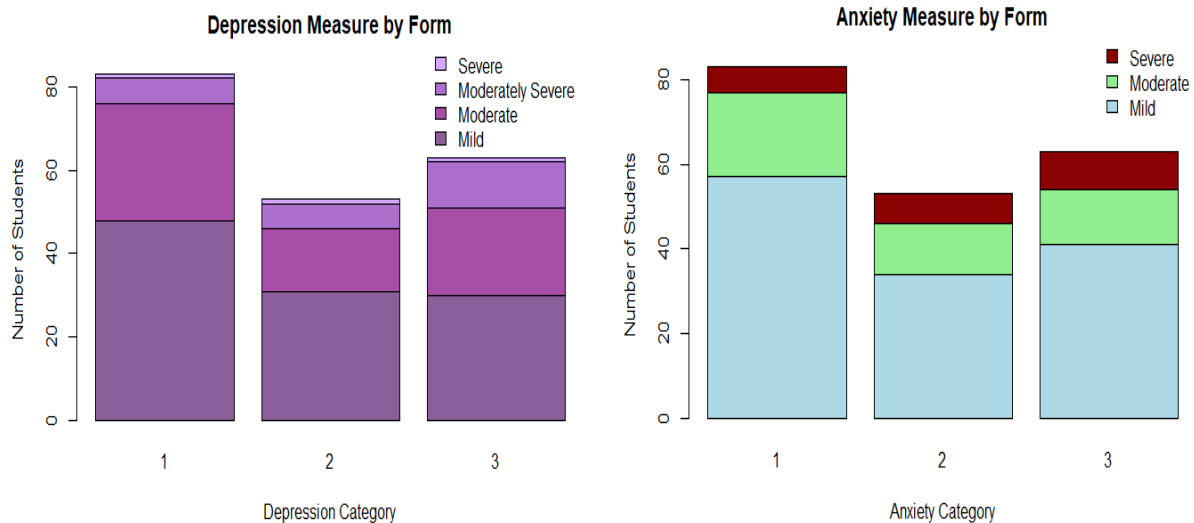
The graphs above show a compilation of the survey data divided by gender. The data shows that most students both male and female have mild or moderate depression and anxiety, but there is a variation when it comes to the statistics in students with severe depression wherein female students are more severely than male students.

3. Depression and Anxiety level by Age.



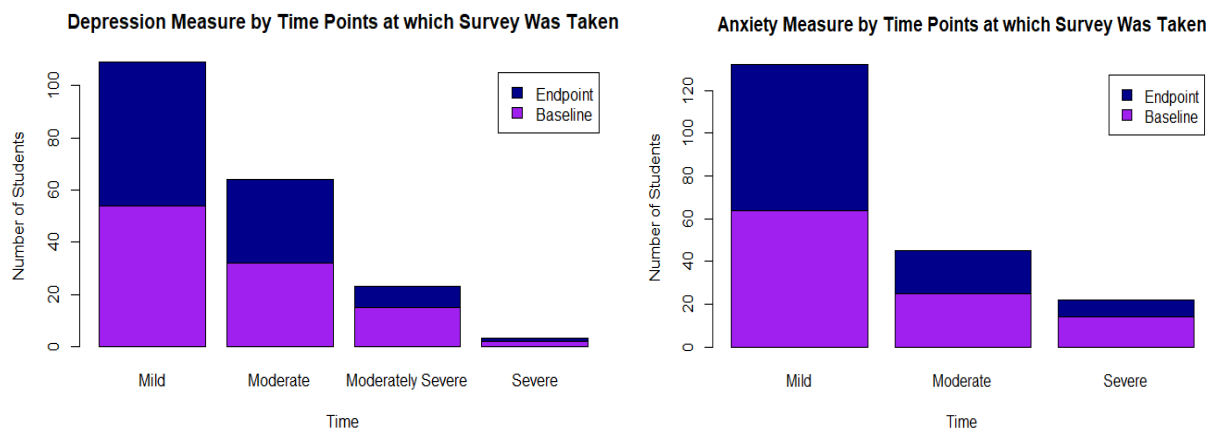
The graphs above show a compilation of the survey data divided by age. The data shows that for the most part students from all 6 age groups have similar depression and anxiety levels. 17-year-olds have more moderately severe depression compared to the other students in that category. 17- and 15-year-olds have more severe anxiety according to the data.

4. Depression and Anxiety level by Form.



The graphs above show a compilation of the survey data divided by student form. The data shows that most of the students in each form have mild and moderate depression and anxiety level and only a small number have severe levels.

5. Depression and Anxiety level by Time Points at which Survey Was Taken.



The graphs above show a compilation of the survey data divided by time points at which survey was taken. The data shows that there's a slight variation in how the students answered the questions in the endpoint and baseline. The Baseline measurements help researchers compare changes or outcomes over time and the endpoint is the measurement or assessment taken at the conclusion of the study or after a specified period.

Conclusions:

- **Prevalence of Mild to Moderate Levels:** The survey data indicates that a significant proportion of students, both male and female, exhibit mild to moderate levels of depression and anxiety. This suggests a general need for mental health support and interventions in the student population.
- **Moderately Severe and Severe Cases:** While the majority falls into the mild to moderate categories, there are noteworthy percentages of students experiencing moderately severe and severe levels of depression and anxiety. This calls for targeted interventions and support for these specific groups, especially considering the impact on well-being.
- **Gender Disparities in Severe Cases:** The data reveals a gender disparity in the prevalence of severe depression, with female students showing a higher incidence compared to their male counterparts. Understanding and addressing gender-specific factors contributing to severe mental health issues is crucial for effective interventions.
- **Age-Related Patterns:** Age-related patterns suggest that 17-year-olds exhibit higher levels of moderately severe depression, and both 17- and 15-year-olds show elevated levels of severe anxiety. Tailoring mental health resources to address the unique challenges faced by specific age groups may be beneficial.
- **Consistent Levels Across Forms:** The data by student forms indicates relatively consistent levels of depression and anxiety across different forms. While mild to moderate levels are prevalent, addressing mental health concerns should be an inclusive effort for students in all forms.
- **Variation in Responses at Different Time Points:** Differences in responses between baseline and endpoint measurements suggest a dynamic nature of mental health experiences over time. This underscores the importance of considering the temporal aspect in designing interventions and support systems.

Recommendations:

- **Targeted Interventions:** Develop targeted mental health interventions focusing on students with moderately severe and severe depression and anxiety. Tailor these interventions to address specific challenges faced by different gender groups.
- **Age-Specific Programs:** Implement age-specific mental health programs to address the unique needs of students in different age groups. Pay particular attention to 17-year-olds and provide support that aligns with their challenges.
- **Promote Mental Health Awareness:** Launch initiatives to raise awareness about mental health and reduce the stigma associated with seeking support. This can be achieved through educational programs, workshops, and campaigns within the school community.
- **Enhance Mental Health Resources:** Allocate resources to enhance mental health services within the school setting. This may include counseling services, peer support programs, and access to external mental health professionals.

- **Periodic Assessments:** Conduct periodic mental health assessments to monitor changes over time. This enables a proactive approach in identifying emerging mental health concerns and adjusting interventions accordingly.
- **Collaboration with Parents:** Foster collaboration between schools and parents to create a supportive environment for students. Regular communication and involvement can contribute to a holistic approach in addressing mental health challenges.
- **Further Research:** Consider conducting further research to delve deeper into the factors contributing to gender disparities and age-related patterns in mental health. This can inform the development of more targeted and effective interventions.