

STUDENT'S MENTAL HEALTH ANALYSIS

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ABSTRACT

In this paper there will be a study aimed to understand the relation between the mental health and academic performance among college and university students using data analytics, full stack development and machine learning. The researchers collected the data from students between the ages of 18-25 enrolled in many different and different courses. They examined the student's academic and educational year performance, measured through their pointer means average Cumulative Grade Point CGPA, and their experiences with anxiety. The study found that many students experience anxiety when they are feel like they may not achieve their academic or non-academic goals. However, anxiety can sometimes motivate students to think more critically about how to achieve their objective. A number of many different students cope with anxiety in different ways, and some students may struggle with it effectively. This struggle can lead to symptoms that affect their mental health. When will identify several risk factors for anxiety, depression and stress among college students. Work load work poor sleep quality and fatigue were found to be risk factor for anxiety and depression, while experiencing low grade fever and frequent headaches were risk factors for stress and anxiety. In this paper will be find in every sector students which reasons they are depressed and which types of problems they are facing and suffering and student the and research deeply. Additionally, comprehensive intervention strategies should be developed to support students who are experiencing anxiety and related mental health issues. By providing appropriate support and interventions, institutions can help students effectively manage their mental health and persist in their studies.

Keywords: Analysis, Students, Mental Health, Classifier, Depression, Anxiety.

I. INTRODUCTION

In determining the impact of depression, anxiety, and stress on academic performance, the researchers decided to analyze data and uncover the mental health profiles of the students. Although there were several cases of students reporting moderate depression, specifics regarding anxiety and stress levels were not provided in the given information. Among educational institutions, the emotional and psychological well-being of students is referred to as student mental health. The breadth of mental health issues that can affect students is vast and can include depression, anxiety, suicidal thoughts, self-harm, eating disorders, ADHD, and substance abuse.

A student's daily activities and academic performance can be disrupted by excessive worry, fear, or nervousness, which are indicative of anxiety. Meanwhile, ongoing emotions of sadness, hopelessness, and disinterest in activities are hallmarks of depression.

This article addresses the connections between learning and mental health, practical takeaways for practitioners, and directions for future research. The purpose of the study was to understand the mental health of all Course students in Vocational Colleges. The researchers wanted to see if issues like depression, anxiety, and stress affect the academic performance of these students. They collected data and analyzed it to determine the mental health profiles of the students. The findings showed that a significant number of students reported moderate levels of depression, but specific percentages for anxiety and stress levels were not provided in the available information.

II. LITERATURE REVIEW

- Research by Suldo, Shannon & Gormley, Matthew & DuPaul, George & Anderson-Butcher, Dawn [1] indicates that students who suffer from mental health issues are more likely to experience academic difficulties, such as lower grades, higher absenteeism, and dropout rates. Conversely, students who have good mental health are more likely to succeed academically. Schools can play a crucial role in promoting student mental health and academic achievement by providing mental health services, promoting mental health awareness and prevention, and fostering a supportive school climate.

- Another study done by Lee, J., Jeong, H.J. & Kim [2] states that the COVID-19 pandemic caused increased stress, anxiety, and depression among undergraduate students. This can be attributed to numerous factors such as academic disruptions, financial stress, social isolation, and concerns about health and safety. Students who suffer from these mental health problems are more likely to face academic difficulties and experience issues with their well-being. While many students have reported facing hurdles in accessing mental health services, universities have expanded their offerings during the pandemic to help students cope better.
- Further research by Ms. Vishakha Joseph [3] examines the relationship between college students' mental health and academic success. It highlights the adverse impact of mental illness on degree persistence and stresses the importance of integrating mental health support into educational practices. The paper provides practical recommendations for educators and identifies avenues for future research, emphasizing the need for a supportive and inclusive educational environment.
- The study by Mali Sandip [4] aimed to investigate the influence of mental health on academic performance among 100 adolescent students belonging to the faculties of Arts and Science. The findings revealed that gender did not play a significant role in determining mental health status. However, variations were noted in mental health and academic performance between genders and faculties. Moreover, the study indicated a positive association between mental health and academic outcomes.
- Another study by Sahlan and co-authors [5] provides a definition of mental illness, emphasizes its impact on individuals and society, underlines the importance of early detection, and highlights the prevalence of mental wellness issues among university students. Machine learning was used to identify that a student's choice of major and gender have a significant effect on their well-being. The study concludes that Decision Trees outperform KNN and SVM, with an accuracy and F1-score of 0.64 and 0.61, respectively.

III. METHODOLOGY

In this study, we will put various methods to investigate the prevalence of health issues among academic students. Specifically, we will utilize machine learning technology to determine the number of academic students facing health problems. Our focus will be on two major diseases affecting academic students: anxiety and depression.

Step 1: Data Collection

We will begin by collecting data from students, both male and female, which includes essential demographic information:

- 1) Gender
- 2) Academic course
- 3) Age

Additionally, we will inquire about other relevant factors.

Step 2: Health Assessment

We will assess the mental and physical health of the students by asking the following questions:

- 1) Do you experience depression?
- 2) Do you suffer from anxiety?
- 3) Have you ever had a panic attack?
- 4) Have you sought treatment from a specialist?

These two steps are integral to our research.

In our research paper, we will utilize system-inbuilt functions like 'Sum.' Afterward, we will analyze which courses have the highest incidence of health problems among students. This analysis will be presented graphically, and the results will be explained every year.

Method for Graph Design and Statistical Analysis:

Our graphical representation will be divided into three categories:

- 1) Anxiety vs. Courses:

Students enrolled in IT exhibit the highest levels of anxiety.

2) Depression vs. Courses:

Males are less likely to experience depression compared to females.

A surprising 2/3 of females in Psychology experience depression.

Approximately 50% of IT students experience depression.

3) Panic Attack vs. Courses:

Males are less susceptible to panic attacks compared to females.

About 37.5% of Engineering students experience panic attacks.

Approximately 62.5% of IT students experience panic attacks.

Around 18% of BCS students experience panic attacks.

These analyses will provide insight into the prevalence of anxiety, depression, and panic attacks among academic students, highlighting trends across different courses and genders

IV. IMPLEMENTATION

Random forest algorithm:

This algorithm combines the output of multiple decision trees to reach a single result.

The Formula for implementing a Random forest algorithm involves several steps:

- Data Preparation
- Random Sampling
- Feature Selection
- Tree-building
- Ensemble Creation
- Prediction

We will begin by collecting data from students, both male and female, which includes essential demographic information:

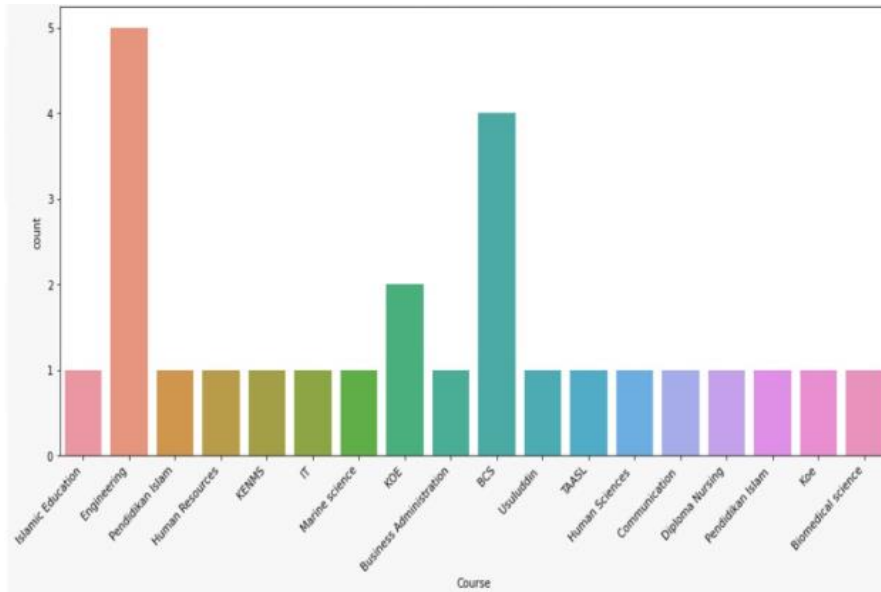
Gender, Academic course, Age, CGPA, Marital Status.

We will assess the mental and physical health of the students by asking the following questions:

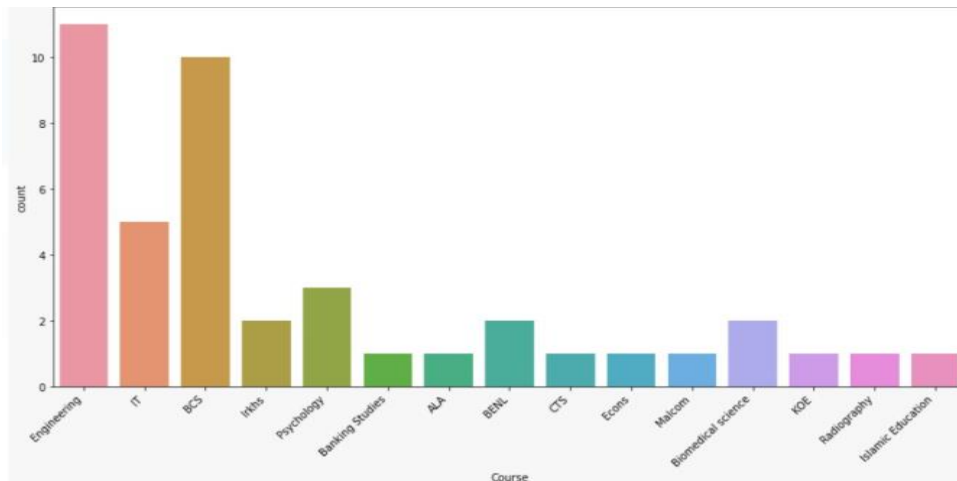
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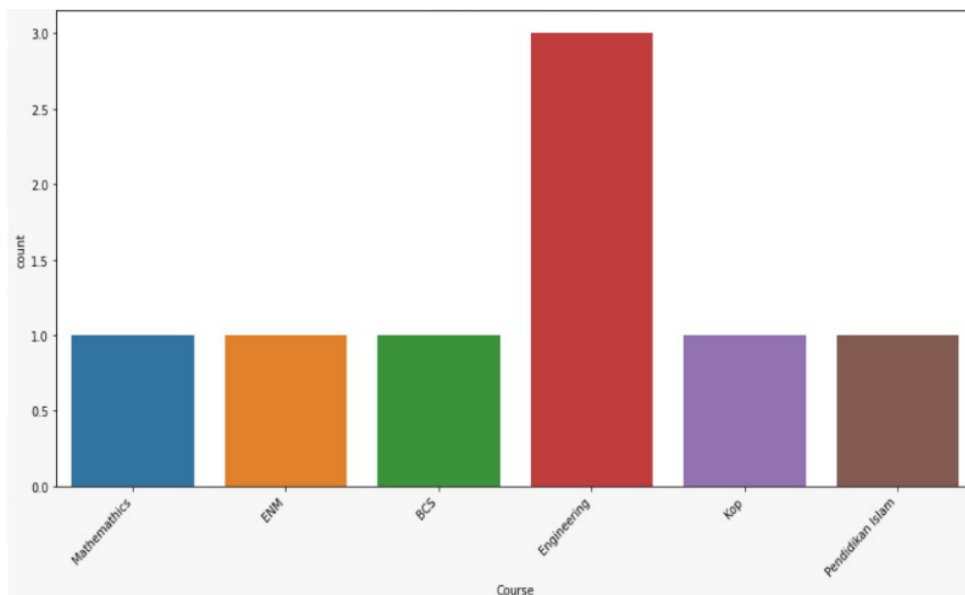
| | Date_Time | Gender | Age | Course | Year | CGPA | Marital_Status | Depression | Anxiety | Panic_Attack | Treatment |
|---|----------------|--------|------|-------------------|------|-------------|----------------|------------|---------|--------------|-----------|
| 0 | 8/7/2020 12:02 | Female | 18.0 | Engineering | 1 | 3.00 - 3.49 | No | Yes | No | Yes | No |
| 1 | 8/7/2020 12:04 | Male | 21.0 | Islamic Education | 2 | 3.00 - 3.49 | No | No | Yes | No | No |
| 2 | 8/7/2020 12:05 | Male | 19.0 | IT | 1 | 3.00 - 3.49 | No | Yes | Yes | Yes | No |
| 3 | 8/7/2020 12:06 | Female | 22.0 | Law | 3 | 3.00 - 3.49 | Yes | Yes | No | No | No |
| 4 | 8/7/2020 12:13 | Male | 23.0 | Mathematics | 4 | 3.00 - 3.49 | No | No | No | No | No |



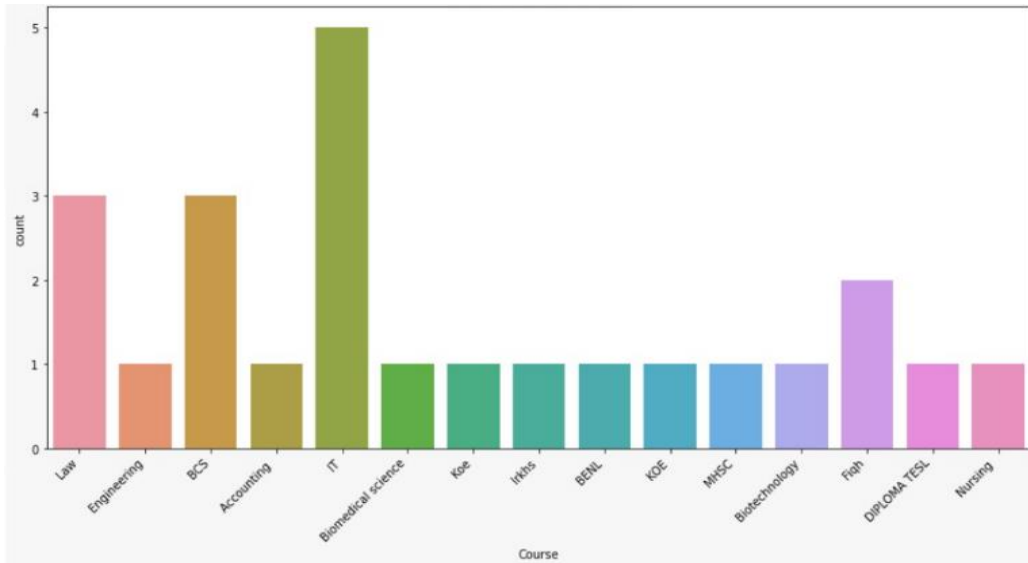
Student count for first year



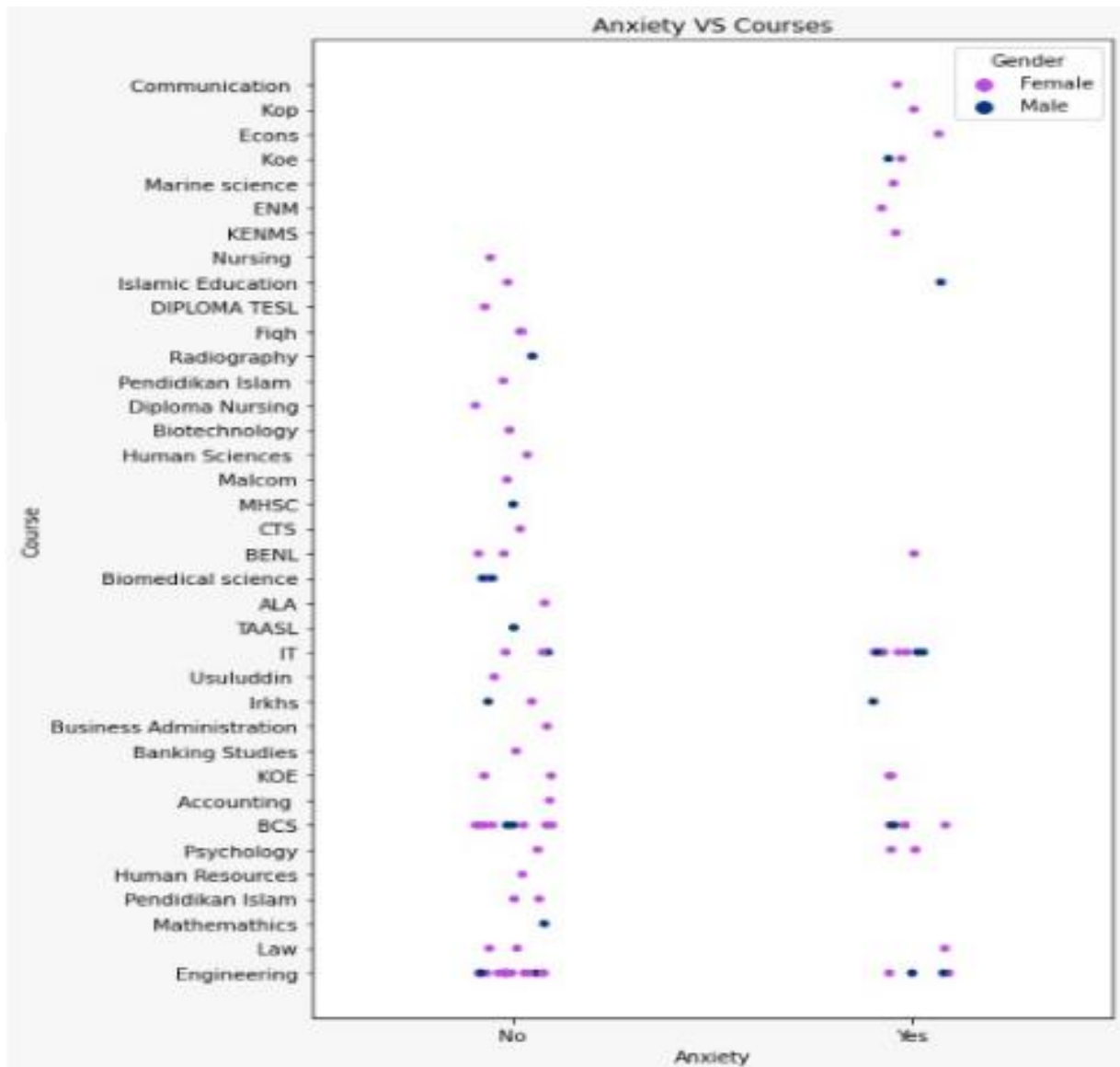
Student count for second year

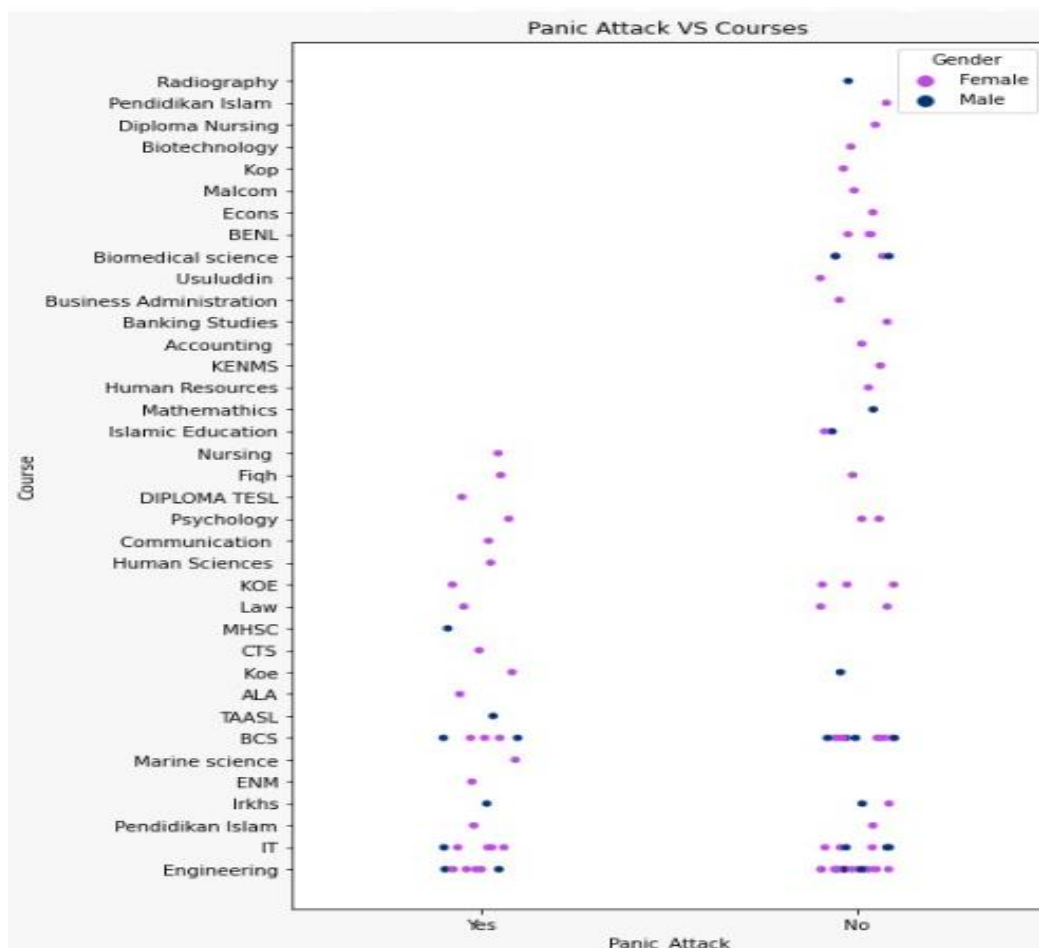
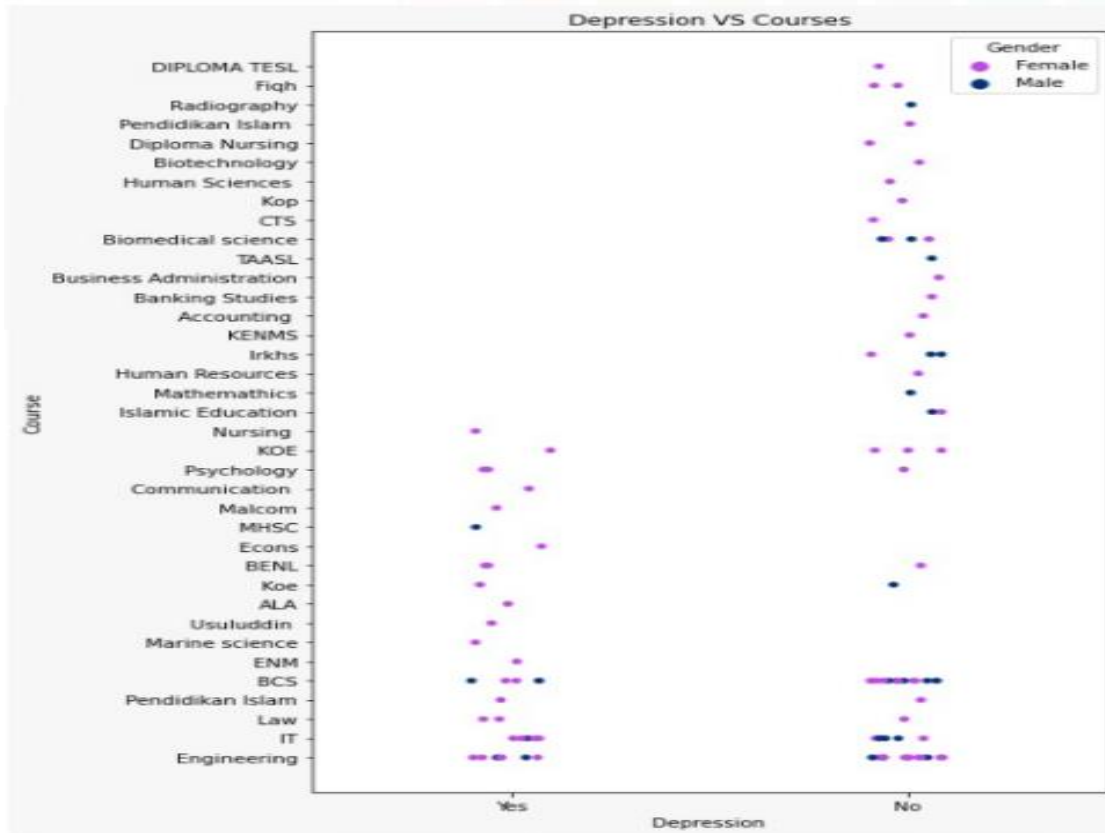


Student count for third year



Student count for fourth year





This is a year wise count of students in particular course.

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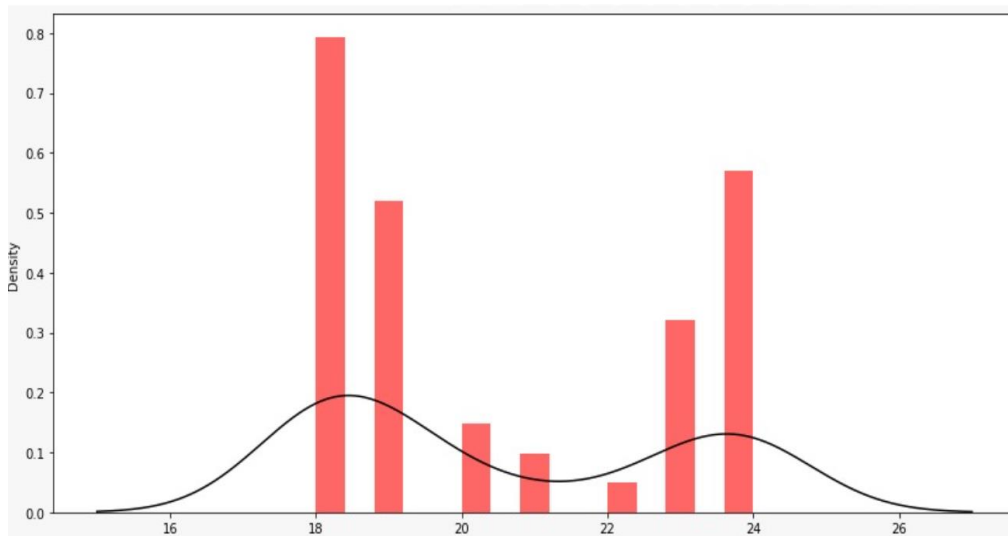
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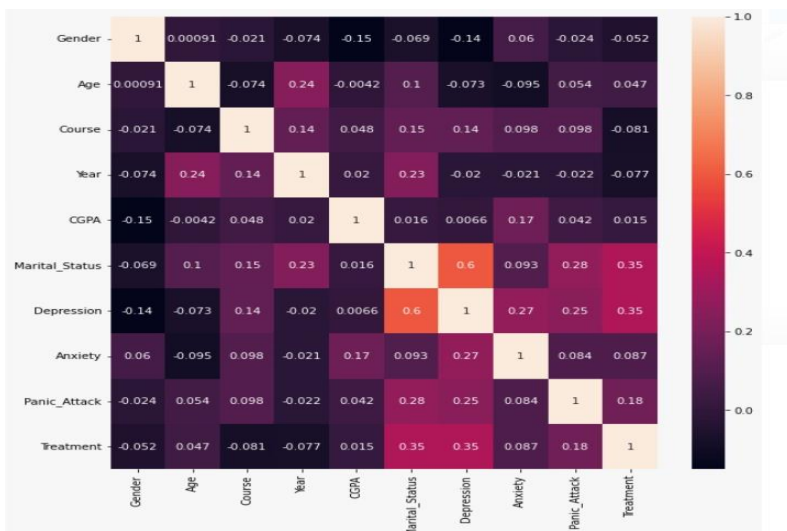
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V. RESULTS



This is age distribution graph for male and female, this graph shows that the anxiety and depression level that facing in the particular course.



From the above heatmap correlated matrix, we can say that Marital status shows a close association with depression.

Depression, Anxiety, Panic attack shows a significant correlation.

Medical assistance (Treatment) shows a slight correlation with mental_status.

VI. CONCLUSION

I have summarized the study on student's mental health over by proportion of categorized outcomes. Married students lead to negative results for students, while also married students tends to ask for more help. With the advent of mixed and confused categorial data, it no longer helps the model. These analyses will provide insight into the prevalence of anxiety, depression, and panic attacks among academic students, highlighting trends across different courses and genders. In this paper we compare students' anxiety and depression levels with their courses and conclude that the IT students enrolled in IT exhibit the highest levels of anxiety and depression, and approximately 50% of IT students experience depression. and Males are less likely to experience depression compared to females. About 37.5% of Engineering students experience panic attacks. Approximately 62.5% of IT students experience panic attacks. With the ML algorithms, and 84% accuracy was achieved.

VII. REFERENCES

- [1] Suldo, Shannon & Gormley, Matthew & DuPaul, George & Anderson-Butcher, Dawn. (2014). The Impact of School Mental Health on Student and School-Level Academic Outcomes: Current Status of the Research and Future Directions. *School Mental Health*. 6. 10.1007/s12310-013-9116-2.
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