PROBABILIY AND STATISTICS PROJECT

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Introduction

Stress is a common experience among university students, often linked to academic pressure, lifestyle factors, and personal circumstances. This study investigates how various factors—such as sleep, physical activity, financial stability, and religious practices—impact stress levels among students at FAST University. Using regression analysis, the research aims to identify significant predictors of student stress and provide insight into how these factors interact to affect well-being. The results may inform strategies to mitigate stress and improve student health.

Literature Review

Stress among university students is influenced by multiple factors, with several studies highlighting the roles of sleep, physical activity, financial stability, and spirituality.

- **Sleep**: Poor sleep has been consistently associated with increased stress levels. Lack of sleep can impair cognitive functions and emotional regulation, contributing to higher stress.

- **Physical Activity**: Physical exercise has long been recognized as a stress-reliever. Regular physical activity is shown to release endorphins, reducing stress and improving mood.

- **Financial Stability**: Financial insecurity is a significant stressor, especially for students managing tuition fees, accommodation, and living expenses. Research shows that students with greater financial stability report lower levels of stress.

- **Religious Practices**: Spirituality and practices such as prayer can provide emotional support and help individuals cope with stress. Previous studies suggest that students with stronger religious engagement experience lower levels of stress.

Regression Model and Variables

Regression Model

The study used a multiple linear regression model to analyze how various independent variables affect stress levels among students. The model is expressed as follows:

Stress Level=β_0+β_1(Sleep Hours)+β_2(Physical Activity)+β_3(Financial Stability)+β_4(Prayer)+ϵ

Where:

- **Stress Level**: is the dependent variable.

- **Sleep Hours**: The average number of hours of sleep per night.

- **Physical Activity**: Rated from 1 to 10 based on perceived level of activity.

- **Financial Stability**: Rated from 1 to 10 based on perceived financial security.

- **Prayer**: Rated from 1 to 10 based on relationship with prayer (Namaz).

Variables

- **Stress Level**: Self-reported stress level on a scale from 1 to 10.

- **Sleep Hours**: Continuous variable, indicating average hours of sleep per night.

- **Physical Activity**: Rating of physical activity on a scale from 1 to 10.

- **Financial Stability**: Rating on a scale from 1 to 10.

- **Prayer**: Rating of relationship with prayer on a scale from 1 to 10.

Description, Results, and Discussion

Descriptive Statistics

The dataset comprises 47 students, with the following key statistics:

- **Stress Levels**: Mean = 6.36, Median = 6.0, Range: 1 to 10.

- **Sleep**: Mean = 6.15 hours, Median = 6.0 hours, Range: 2 to 12 hours.

- **Physical Activity**: Mean = 4.40, Median = 5.0, Range: 1 to 9.

- **Financial Stability**: Mean = 5.49, Median = 5.0, Range: 1 to 10.

- **Prayer**: Mean = 6.13, Median = 6.0, Range: 1 to 10.

Outliers

Outliers were detected using the Interquartile Range (IQR) method. The following outliers were found:

- **Stress Level**: No outliers detected.

- **Sleep**: Outliers found at 2 and 12 hours.

- **Physical Activity**: No outliers detected.

- **Financial Stability**: No outliers detected.

- **Prayer**: No outliers detected.

Regression Results

The results of the multiple linear regression are as follows:

- **Intercept**: $\beta_0 = 14.29$, p-value $= 1.31 \times 10^7$ (significant).

- **Sleep Hours**: $\beta_1 = -0.6086$, p-value $= 0.0212$ (significant).

- **Physical Activity**: $\beta_2 = -0.1413$, p-value $= 0.4097$ (not significant).

- **Financial Stability**: $\beta_3 = -0.1666$, p-value $= 0.3574$ (not significant).

- **Prayer**: $\beta_4 = -0.4324$, p-value $= 0.0131$ (significant).

Model Interpretation

- **R-squared**: 0.2441. This indicates that approximately 24.41% of the variation in stress levels can be explained by the independent variables in the model.

- **Adjusted R-squared**: 0.1721. This value accounts for the number of predictors in the model, suggesting that the model has moderate explanatory power.

- **Significant Variables**: Sleep hours and prayer were found to be significant predictors of stress levels. Physical activity and financial stability did not show significant effects on stress levels.

Discussion

The regression analysis suggests that sleep and religious practices are the most significant predictors of stress levels among students. The negative relationship between sleep and stress that better sleep can lead to lower stress levels. Similarly, the significant negative association between prayer and stress supports the idea that religious practices can help reduce stress.

Physical activity and financial stability did not show significant effects in this study, which may indicate that these factors might not be as influential in the current sample, or that other unmeasured factors are contributing to stress.

References

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