Proceedings of the 2nd International Conference on Mathematical Physics and Computational Simulation
DOI: 10.54254/2753-8818/38/20240566

Research on the factors influencing the mental issue of university students

Kexin Jiang

Yew Chung international school of Shanghai Pudong Campus, Shanghai, 200000, China

kexinjiang.melody@stu.sqxy.edu.cn

Abstract. In current years, the mental issues of university students have become progressively thoughtful, attracting widespread attention from society. Therefore, studying the elements that influence the mental issues of university students has become an urgent issue, but few scholars have done this work. Therefore, based on the multiple linear regression model, this article quantitatively studies several factors that affect the mental health status of college students, attempting to make a contribution to explaining the causes of mental issues among university students. The empirical study finds that stress level is currently the main factor affecting the mental health status of college students, and a significant positive correlation between this variable and the incidence of mental health problems has been found in the model. Therefore, schools and society must heed the psychological pressure of students, provide reasonable help and psychological counseling when necessary, and college students should also learn how to eliminate their own psychological pressure to prevent the occurrence of mental health problems caused by excessive pressure.

Keywords: Mental health, college students, multiple linear regression.

1. Introduction

Due to the influence of living environment and traditional beliefs, the psychological health issues of college students have long been overlooked [1]. With the development of society, the daily affairs faced by college students are constantly changing, and the life pressure and learning pressure of the college student group cannot be underestimated. At present, research on the mental health of college students mostly remains in the qualitative research stage, lacking quantitative empirical analysis.

In this article, the author draws on empirical analysis of relevant theories and practices to quantitatively study the connection between the mental health of college students and their influencing factors. The study collected information and data through visits and questionnaires, and used a multiple linear regression model to preliminarily explore the influencing factors of psychological health problems among students, such as depression, anxiety, and physical and mental symptoms [2].

Psychological health status is a complex and diverse topic. Firstly, college students face pressure from various aspects such as academic performance, employment, interpersonal relationships, and economic pressure [3]. Academic pressure is one of the main sources of psychological pressure for college students, and the complexity of university courses and the heavy workload of learning content have brought enormous learning pressure to college students. Employment pressure is also a common

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problem faced by college students. With the increasingly fierce social competition, it has become increasingly difficult for college students to find an ideal job. In addition, the unstable socio-economic situation and economic pressure have made college students feel even more stressed [4].

Under such multiple pressures, the psychological problems of college students exhibit diverse characteristics. Anxiety and depression have become the main manifestations of psychological problems among college students, who often feel anxious and unable to bear them. Inferiority complex and weak sense of self-worth are also common psychological problems among college students [5]. In the new environment, college students often face various difficulties and challenges, and are prone to emotional depression and doubt their abilities [6, 7]. In addition, some college students also have psychological problems such as sleep problems, poor interpersonal relationships, and personality disorders.

However, it must also be noted that many college students are actively seeking various ways to alleviate and cope with these pressures and psychological problems [8, 9]. They may enhance their psychological resilience and coping abilities by attending mental health lectures, seeking psychological counseling, and participating in campus activities.

2. Methodology

2.1. Data source

The data is taken from a questionnaire survey conducted by the author among college students. This survey was conducted in October 2023, and the author collected a total of 212 questionnaires within a month [10]. Then, the answers to these questionnaires were organized into data and summarized into five explanatory variables and three dependent variables, respectively.

2.2. Variable selection

In the questionnaire survey, the author investigated whether students had depression, anxiety, or other psychosomatic symptoms, and these data were recorded as dummy variables in the panel data, which will be studied as the dependent variable. In addition, the author also asked students to evaluate their sleep quality, academic performance, study load, practice extracurricular activities, and stress levels as independent variables (Table 1).

Table 1. List of independent variables (X) and dependent variables (Y).

Symbol	Variable	Span	Question
X1	sleep quality	0, 1, 2, 3, 4, 5	How would you rate your sleep quantity
X2	academic performance	0, 1, 2, 3, 4, 5	How would you rate your academic presentation
X3	study load	0, 1, 2, 3, 4, 5	How would you rate your study load
X4	practice extracurricular activities	0, 1, 2, 3, 4, 5	How many times a week you preparation extracurricular activities
X5	stress level	0, 1, 2, 3, 4, 5	How would you rate your stress level
Y1	depression	0, 1	Do you have any symptoms of depression
Y2	anxiety	0, 1	Do you have any symptoms of anxiety
Y3	other psychosomatic symptoms	0, 1	Do you have any other psychosomatic symptoms

Five explanatory variables were obtained from the corresponding self rated questions, and their values were limited to 1 to 5 in the survey questionnaire. Three dependent variables are obtained from another three questions, which are considered as dummy variables and take values between 0 or 1, for which 0 indicates that the symptom does not exist, and 1 indicates that the symptom exists.

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2.3. Model introduction

For a binary dependent variable that takes value between 0 and 1 and a series of independent variables $x_1, x_2, x_3, \cdots, x_n$, logit model is commonly used to estimate the probability for the dependent variable to takes value 1:

$$Logit(Y) = \beta_0 + \sum_{i=1}^{n} \beta_i x_i \quad (1)$$

In the logit model, it is mainly studied whether an independent variable has a major impact on the probability of the dependent variable to take 1, then determine whether this independent variable is the main influencing factor of the dependent variable.

3. Results

3.1. Descriptive analysis

Before further analysis, the following table 2 reports the descriptive statistics of dependent variables and independent variables:

Table 2. Descriptive Statistics

Variable	Type	Min	Max
Sleep quantity	Category	1	5
Academic Performance	Category	1	5
Study Load	Category	1	5
Practice Extracurricular Activities	Category	1	5
Stress levels	Category	1	5
Depression	Category	0	1
Anxiety	Category	0	1
Psychosomatic Symptoms	Category	0	1

Besides, in the following Figure 1, a plot of the three dependent variables is made:

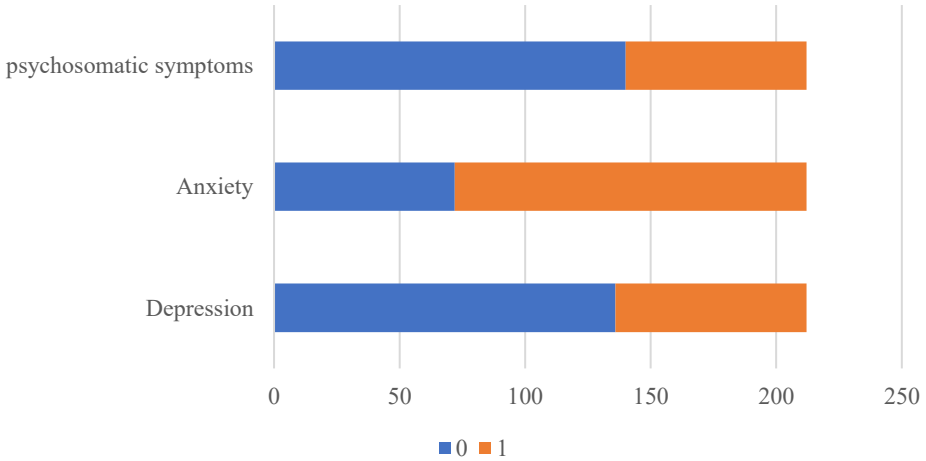

Figure 1. Stacked Bars Graph of Depression, Anxiety and Psychosomatic Symptoms.

From Table 2 and Figure 1, it can be seen that approximately 35.85% of surveyed college students reported experiencing depression, approximately 66.04% of surveyed college students reported

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experiencing anxiety, approximately 33.96% of surveyed college students reported experiencing other psychosomatic symptoms. It is indicated that a considerable proportion of college students are suffering from these mental health problems, which is a phenomenon worthy of attention.

3.2. Correlation analysis

This following table shows the correlation between the independent variables:

Table 3. Covariance Matrix of Independent Variables

Variable	Sleep Quality	academic performance	study load	practice extracurricular activities	stress levels
Sleep Quality	1	0.362	0.161	-0.002	0.465
Academic Performance	-	1	0.118	0.082	0.009
Study Load	-	-	1	0.111	0.659
Practice Extracurricular Activities	-	-	-	1	0.354
Stress Levels	-	-	-	-	1

Since Table 3, the author can know that there is a positive correlation between the dependent variables, especially the correlation coefficient between the pressure level and the learning load is the largest, reaching 0.659, which suggests that college students should adjust their attitude in the learning process and face the learning content with a positive attitude.

3.3. Model results

In this article, the author chooses the logit multiple linear regression model to analyze the relationship between depression, anxiety, and physical and mental symptoms of college students and these influencing factors, they are sleep quantity, academic performance, study Load, practice extracurricular activities and stress levels.

In the following formula, the independent variable Y represents depression, anxiety and psychosomatic symptoms respectively and X1, X2, X3, X4 and X5 are as described in 2.2:

$$Logit(Y) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \quad (2)$$

The following table 4 reports the result of estimated coefficient values of the logit models:

Table 4. Results of the Logit Regression.

Variable	Depression		Anxiety		Psychosomatic symptoms	
	coefficient	p	coefficient	p	coefficient	p
Sleep quantity	-0.414*** (0.147)	0.005	-0.689*** (0.172)	0.000	-0.128 (0.143)	0.371
Academic performance	-0.023 (0.140)	0.869	0.293* (0.166)	0.077	-0.226 (0.145)	0.119
Study load	-0.307*** (0.119)	0.009	0.381*** (0.138)	0.006	0.411*** (0.123)	0.001
Practice extracurricular activities	0.130 (0.108)	0.229	-0.362*** (0.134)	0.007	-0.313*** (0.113)	0.006
Stress levels	0.560*** (0.142)	0.000	0.983*** (0.164)	0.000	-0.179 (0.129)	0.165
Constant	-0.374 (0.658)	0.570	-0.527 (0.728)	0.469	0.621 (0.667)	0.352
R squared	0.0947***	0.000	0.247***	0.000	0.086***	0.000

*p<0.01; **p<0.05; ***p<0.10.

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The p-value in the line of R^2 represents the significance level of the model. From table 4, this paper can obtain the following three formulas:

$$Logit(Y_1) = -0.374 - 0.414X_1 - 0.023X_2 - 0.307X_3 + 0.130X_4 + 0.560X_5 \quad (3)$$

$$Logit(Y_2) = -0.527 - 0.689X_1 + 0.293X_2 + 0.381X_3 - 0.362X_4 + 0.983X_5 \quad (4)$$

$$Logit(Y_3) = 0.621 - 0.128X_1 - 0.226X_2 + 0.411X_3 - 0.313X_4 - 0.179X_5 \quad (5)$$

It is remarkable that stress levels have a significant positive effect on both depression and anxiety, indicating that excessive stress level is an important cause of depression or anxiety among college students.

Additionally, sleep quality, study load, and practice extracurricular activities also have a significant impact on some of the dependent variables. People with better sleep quality have a lower probability of experiencing these symptoms. The lower the study load, the lower the probability of experiencing anxiety and physical and mental symptoms. Appropriate practice extracurricular activities can reduce the probability of anxiety and other physical and mental symptoms.

In addition, the R-squared values of these regression results are relatively small, which means there may be a problem of missing variables in the model due to the limitedness of research materials. The mental health status is a very complex issue with complex manifestations and causes, and more researches should be conducted.

4. Conclusion

In this article, the author conducted a questionnaire survey to study the mental health status of college students and several possible influencing factors. Based on the data from the questionnaire survey, the author quantitatively analyzed the impact of these influencing factors on the dependent variable through a logit multiple linear regression model.

Through this study, the author found that the self rated stress level of college students have a significant impact on the occurrence of symptoms of depression and anxiety, and excessive stress levels are one of the important reasons leading to depression or anxiety symptoms in college students. The other explanatory variables, such as sleep quality and academic performance, study load, did not show significant effects. The author guesses that the effects of other explanatory variables absorbed by the variables of stress level due to multicollinearity in the model.

In summary, the descriptive statistics of dependent variables reveal a fact that a considerable number of college students are suffering from depression, anxiety, and other physical and mental symptoms. It is indicated that the mental health status of college students is indeed a topic worthy of attention.

The reason for this phenomenon is that some college students experience excessive level of stress, and they are unable to properly resolve or eliminate it. This phenomenon should attract the attention of society, schools, and medical institutions, and provide assistance to improve the mental health status of college students when necessary. In addition, members of the college student community should also learn how to properly adjust their own psychology, handle emotions in a reasonable way, to release stress and prevent the occurrence of mental health problems.

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