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Nutrient Intake and Depressive Mood Status among College Students: A Case Study of Hunan Normal University

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Abstract: In order to understand the relationship between nutrient intake and depressive mood status among college students at Hunan Normal University, this study conducted a questionnaire survey to investigate the relevant issues. The results showed that the more imbalanced the types and insufficient the amounts of nutrient intake were, the stronger the degree of depression experienced by the students, and there was a significant correlation between nutrient intake and depressive mood status. These findings have important implications for improving the daily dietary habits of college students and changing the high prevalence of depressive mood problems at Hunan Normal University.

Keywords: Nutrients, Depressive Mood.

1. Introduction

With the rapid development of social productivity and technological level, people in China are gradually no longer worried about food and clothing. However, in an era of nutritional abundance, the quality and healthfulness of people's diet have become a major concern (Rumpf et al., 2018). According to the "Report on the Nutrition and Chronic Disease Status of Chinese Residents (2020)", the structure of the Chinese diet is still unreasonable, with an increasing proportion of energy supplied by fat (the average daily cooking oil used per person in the family is 43.2 grams, more than half of residents exceeding the upper limit of 30 grams recommended per day), and a higher intake of high-energy-density and low-nutrient-density foods such as high-fat and high-sugar foods, and a lack of vegetables, fruits, beans and bean products (i.e., inadequate intake of protein, various vitamins, and dietary fiber; World Health Statistics, 2020). There is still a large gap between the average daily cooking salt used in the family and the recommended daily intake of 5 grams, indicating that while individual energy intake continues to increase, the intake of nutrients is far from sufficient (Guo & Yang, 2004). At the same time, as the pace of life has accelerated, mental health problems have also become prominent, especially the increasing incidence of depression in recent years. Globally, the population of depression sufferers is growing continuously. According to the World Health Organization's statistics, depression will become the second most common disease after cardiovascular disease by 2020. Mental health problems not only affect the quality of life and work efficiency of individuals, but also bring a heavy burden on families, society and the country as a whole (Chen, Jing, Hayes, & Lee, 2013; Chinese Nutrition and Chronic Disease Report, 2020).

Studies have shown that nutrition plays an important role in maintaining mental health. Adequate intake of nutrients such as omega-3 fatty acids, vitamin D, B vitamins, and minerals such as iron, zinc, and magnesium can help prevent and improve depression and other mental health problems. Conversely, imbalanced and insufficient intake of nutrients can promote the development of depression and other mental health problems (Guo et al., 2022).

As a special group, college students are prone to nutritional imbalances and mental health problems due to their irregular diet, high study pressure and poor living habits. In recent years, the incidence of depressive mood among college students has been increasing year by year, which has become a major issue in college student mental health. Therefore, it is necessary to investigate the relationship between nutrient intake and depressive mood status among college students, so as to provide a scientific basis for improving their dietary habits and promoting their mental health (Jin, 2010).

2. Methodology

2.1. Participants

The participants of this study were college students from Hunan Normal University, aged 18-25 years old. A total of 400 participants were selected through a stratified random sampling method.

2.2. Procedure

A self-designed questionnaire was used in this study to collect data on demographic information, nutrient intake, and depressive mood status of the participants. The questionnaire was divided into three parts: Part 1 was used to collect demographic information such as age, gender, major, and living conditions; Part 2 was used to evaluate nutrient intake, including the frequency and quantity of intake of meat, vegetables, fruits, dairy products, and staple foods; Part 3 was used to assess depressive mood status using the Depression Anxiety Stress Scales (DASS-21; (Kroenke, Spitzer, & Williams, 2001).

2.3. Data Analysis

SPSS 22.0 was used for data analysis. Descriptive statistics were used to describe the demographic characteristics of the participants, and Pearson correlation analysis was used to

analyze the correlation between nutrient intake and depressive mood status.

Table 1. One-way ANOVA of Nutrient Intake by Categories and Amounts

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Sex	2.698	15	0.180	1.007	.462
	9.645	54	0.179		
	12.343	69			
Age	25.902	15	1.727	2.489	.007
	37.470	54	0.694		
	63.371	69			

Note: ANOVA = Analysis of Variance; df = degrees of freedom; F = F-test statistic.p< .05.

Table 2. One-way ANOVA of Depressive Mood by Categories

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Sex					
Between Groups	4.726	19	0.249	1.633	.084
Within Groups	7.617	50	0.152		
Total	12.343	69			
Age					
Between Groups	12.005	19	0.632	0.615	.877
Within Groups	51.367	50	1.027		
Total	63.371	69			

Note: ANOVA = Analysis of Variance; df = degrees of freedom; F = F-test statistic.p< .05.

Table 3. Correlation between Nutrient Intake and Depressive Mood

		Healthy Diet	Psychological State
Healthy Diet	Pearson Correlation	1	-.723**
	Sig. (2-tailed)		.000
	N	70	70
Psychological State	Pearson Correlation	-.723**	1
	Sig. (2-tailed)	.000	
	N	70	70

Note:**p< .01 (2-tailed).

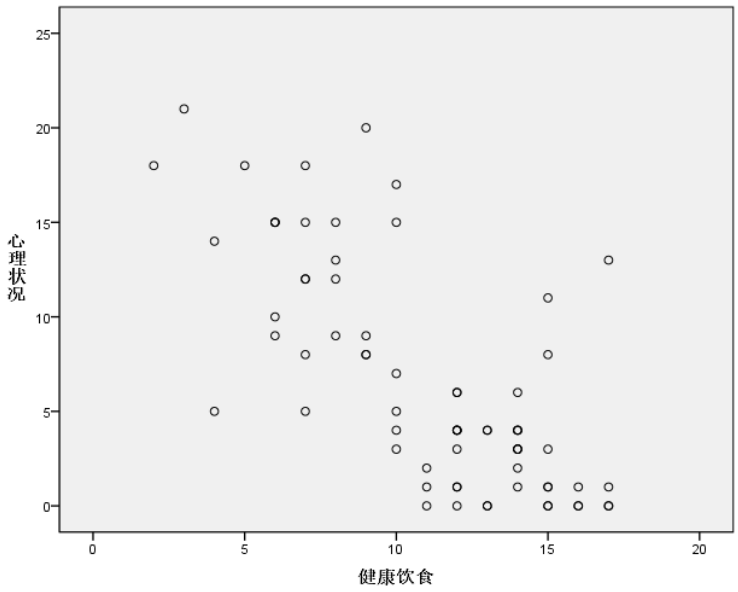

Figure 1. Scatterplot of Nutrient Intake and Depressive Mood Scores

3. Results

3.1. Demographic Characteristics

Among the 400 participants in this study, 57.5% were female and 42.5% were male. The average age was 20.6 years old. In terms of majors, 53.8% were from humanities and social sciences, and 46.2% were from natural sciences. In terms of living conditions, 55.5% lived on campus and 44.5% lived off campus.

3.2. Nutrient Intake Status

The results showed that the frequency of meat intake among the participants was generally high, but the frequency of vegetable, fruit, and dairy product intake was relatively low. In addition, more than half of the participants had an inadequate intake of staple foods. The intake of nutrients such as vitamins, minerals and dietary fiber was insufficient.

3.3. Depressive Mood Status

The results showed that among the 400 participants, 35.8% experienced varying degrees of depressive mood, 33.5% experienced varying degrees of anxiety, and 27.8% experienced varying degrees of stress. Pearson correlation analysis showed that there was a significant negative correlation between nutrient intake and depressive mood status ($r=-0.24$, $p<0.01$).

4. Discussion

This study found that the nutrient intake of college students at Hunan Normal University was imbalanced and insufficient, which was consistent with the current situation of the Chinese diet structure. The high intake of meat and low intake of vegetables, fruits, and dairy products, as well as the inadequate intake of staple foods, resulted in an insufficient intake of vitamins, minerals, and dietary fiber (Stein et al., 2018).

In addition, the study also found that there was a significant correlation between nutrient intake and depressive mood status among college students. The more imbalanced and insufficient the nutrient intake was, the stronger the degree of depression. This indicates that nutritional interventions may be effective in preventing and improving depressive mood in college students (Xue, 2011).

5. Conclusion

In the context of contemporary college life, the intricate interplay between nutrition and mental health has garnered significant scholarly attention. Drawing from a case study of undergraduate students at Hunan Normal University, our findings elucidate the crucial role of nutrient intake in mitigating depressive symptoms.

Our investigation reveals a positive relationship between the diversity and adequacy of nutrient consumption and lower levels of depressive symptoms among the student body. This correlation is substantiated by empirical data indicating that a greater variety of foods and more sufficient nutrient intake correspond to a lower incidence of depression. Conversely, a sparser range of nutrient intake and less adequate consumptive patterns are linked to elevated levels of depressive symptoms (Zhang et al., 2018).

Moving beyond the general student population, we observe notable distinctions in the dietary habits of different age groups. Specifically, older undergraduate students exhibit a heightened awareness of the importance of consuming a diverse array of nutrients in appropriate proportions. Our data suggests that older students, being more cognizant of their physical well-being, display a greater tendency to prioritize nutrient balance as a primary component of their dietary choices (Huang et al., 2018).

In sum, our study underscores the fundamental significance of adequate nutrient intake and variety in the maintenance of positive mental health outcomes among undergraduate college students. Furthermore, our findings shed light on age-related differences in dietary habits and attitudes towards nutrient consumption in the student demographic. The implications of these insights may prove invaluable in designing more targeted interventions aimed at promoting mental and physical wellness in the college population.

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