

Examining the interplay between mental health indicators and quality of life measures among first-year law students: a quantitative study

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Abstract

This research investigates the intricate relationships between mental health indicators (depression, stress, and anxiety) and various dimensions of quality of life (affective valence, mood states, physical activity assessment, body image perception, and social relations evaluation) among 75 first-year law students (46 females and 29 males). Data were collected using standardized questionnaires including the Depression, Anxiety, and Stress Scale - 21 Items (DASS-21), Feeling Scale (FS), Exercise-Induced Feeling Inventory (EIFI), Modified Baecke Physical Activity Questionnaire (MBPAQ), World Health Organization Quality of Life - BREF (WHOQOL-BREF) questionnaire, and Contour Drawing Rating Scale (CDRS). ~~Analysis involved~~The data was analyzed using descriptive statistics, Pearson correlation, and regression analysis. Findings reveal significant correlations between depression (mean score = 5.97, SD = 4.213), stress (mean score = 7.81, SD = 4.803), and anxiety (mean score = 6.17, SD = 4.577) with affective valence ($p < 0.05$), mood states ($p < 0.05$), physical activity ($p < 0.05$), body image perception ($p < 0.05$), and social relations quality ($p < 0.05$). Moreover, mood states (mean score = 20.73, SD = 10.596), physical activity (mean score = 8.43, SD = 1.351), body image perception (mean score = 4.21, SD = 1.905), and social relations quality (mean score = 12.46, SD = 2.332) emerge as significant predictors of mental health outcomes ($p < 0.05$). The study underscores the importance of holistic approaches to mental health care and highlights the need for tailored interventions to promote well-being among college students.

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Introduction
Method
Result
Conclusion

Introduction

Mental health is a multifaceted construct crucial for the overall well-being of individuals, especially in academic settings (Hammoudi Halat et al., 2023; Iordache et al., 2010). In the context of higher education, students often face unique challenges that can impact their mental health. The transition to university life, academic pressures, financial constraints, and social isolation are just a few of the stressors commonly experienced by students (Bergin & Pakenham, 2015). These challenges can exacerbate feelings of stress, anxiety, and depression, which in turn can adversely affect academic performance, personal relationships, and overall quality of life. Within the spectrum of mental health, three interconnected components play pivotal roles: stress, anxiety, and depression (Lavine et al., 2023).

Stress is a natural response to demands placed on an individual, whether they are physical, emotional, or psychological. It serves as a survival mechanism, triggering the body's fight-or-flight response in the face of perceived threats. However, prolonged or excessive stress can have detrimental effects on both mental and physical health. Chronic stress has been linked to a myriad of health problems, including cardiovascular diseases, gastrointestinal disorders, and, notably, mental health disorders such as anxiety and depression (Salleh, 2008).

~~Anxiety is characterized by persistent feelings of apprehension, uneasiness, or fear.~~ Persistent feelings of apprehension, uneasiness, or fear characterize anxiety. While it is a normal reaction to stressful situations, excessive or irrational anxiety can impair daily functioning and significantly diminish quality of life. Individuals with anxiety disorders may experience symptoms ranging from excessive worry and restlessness to panic attacks and avoidance behaviors (Michael, 2014). The relationship between stress and anxiety is bidirectional, as chronic stress can exacerbate anxiety symptoms, while anxiety can amplify the perception of stressors, leading to a vicious cycle of heightened distress (Putwain, 2007).

Depression is a mood disorder marked by persistent feelings of sadness, hopelessness, and disinterest in activities once enjoyed. It can manifest in varying degrees of severity, from mild to severe, and can significantly impair an individual's ability to function in their daily lives (Hysenbegasi et al., 2005). Like anxiety, depression often coexists with chronic stress, and the interplay between these two conditions is complex. Chronic stress can contribute to the development of depression by dysregulating neurotransmitter systems, altering brain structure and function, and disrupting the body's stress response mechanisms (Andrews & Wilding, 2004).

Understanding the intricate relationship between stress, anxiety, and depression is crucial for developing effective interventions and treatment strategies (Basiri et al., 2023). While each component contributes uniquely to the overall landscape of mental health, they are interconnected in a complex web of causality and mutual influence. Addressing one aspect of mental health often involves addressing others simultaneously, underscoring the importance of a holistic approach to mental health care (Weinberg et al., 2017).

Additionally, mental health encompasses the quality of life, including various aspects such as daily activities (including household chores, exercise, and leisure time), satisfaction with social relationships, and body image. ~~The ability to engage in meaningful activities, maintain fulfilling~~

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~~social connections, and cultivate~~Engaging in meaningful activities, maintaining fulfilling social
~~connections, and cultivating~~a positive body image are integral ~~components of~~ mental well-being
(Beiter et al., 2015).

Engagement in regular physical activity has been associated with numerous mental health benefits,
including stress reduction, improved mood, and enhanced cognitive function (Fox, 2003).
Similarly, ~~maintaining a balance between~~balancing work, leisure, and personal responsibilities
contributes to overall life satisfaction and psychological well-being (Gröpel & Kuhl, 2009).
Furthermore, the quality of social relationships plays a significant role in mental health outcomes.
Strong social support networks have been shown to buffer against the adverse effects of stress,
reduce feelings of loneliness and isolation, and promote resilience in the face of challenges (Bond
et al., 2007). Conversely, social isolation and interpersonal conflicts can exacerbate symptoms of
anxiety and depression, highlighting the importance of nurturing positive social connections
(Hocker & Wilmot, 2018).

Body image, or the perception of one's physical appearance, also influences mental health (Xu &
Liu, 2020). Negative body image can lead to feelings of low self-esteem, ~~and~~ dissatisfaction with
oneself, and, in severe cases, contribute to the development of eating disorders such as anorexia
nervosa or bulimia nervosa (Koushiou et al., 2021). Cultivating a positive body image involves
fostering self-acceptance, ~~practicing~~practising self-care, and challenging societal norms and
unrealistic beauty standards (Kumar, 2023). ~~The aim of this research article is~~ research article
aims to investigate the relationships between mental health indicators (depression, stress, and
anxiety) and various measures of quality of life (affective valence, mood states, physical activity
assessment, body image, and social relations evaluation) among first-year law students.

Research Objectives:

1._To assess the correlations between mental health indicators and quality of life measures. This
objective involves conducting correlation analyses to examine the associations between
depression, stress, and anxiety levels and affective valence, mood states, physical activity, body
image perception, and social relations quality among the study participants.

2._To predict depression, stress, and anxiety levels based on relevant independent variables. This
objective aims to utilize regression analysis to predict levels of depression, stress, and anxiety
based on key independent variables such as mood states, physical activity, body image perception,
and social relations quality. This analysis elucidates the extent to which these variables influence
mental health outcomes.

3._To explore the implications of identified associations for mental health interventions. This
objective involves discussing the implications of the identified correlations and predictors for ~~the~~
~~development of~~developing targeted interventions ~~aimed at improving~~to improve mental health and
overall quality of life among first-year law students. This discussion highlights potential
intervention strategies and areas for future research.

Our research seeks to contribute to a deeper comprehension of the intricate relationship between
negative mental states and different dimensions of quality of life. By shedding light on this

interplay, we provide valuable insights that can inform future interventions and treatment strategies aimed at promoting mental well-being. Mental health is not a singular concept but rather a complex amalgamation of emotional, psychological, social, and physical factors (Curtis, 2016; Cipu & Dragnea, 2007). Recognizing the interconnectedness of stress, anxiety, depression, quality of life, social relationships, and body image is pivotal in fostering holistic approaches to mental health care (Thieme et al., 2015). By addressing these multifaceted components, we can work towards enhancing overall well-being and cultivating resilience in the face of life's adversities (Ring et al., 2016). Through a comprehensive understanding of these dynamics, we can strive to create supportive environments and implement effective interventions that cater to the diverse needs of individuals, ultimately fostering a healthier and more resilient society (Southwick et al., 2011).

Materials & Methods

2.1. Study Design

The study was an observational, descriptive, experimental, and cross-sectional design, conducted between April 17 and June 2, 2023 (Indu & Vidhukumar, 2019), focusing on quantitative measures. In the first stage, participant recruitment, selection, and signing of participation agreement, occurring between April 17 and April 24, 2023, we recruited participants from university Physical Education and Sports classes without providing any incentives. We adopted a conventional sampling approach, considering the participants were university students, assuming they have had more free time (Simkus, 2022). This contributed to reducing variations in assessing the effects of physical activity on mental health. Inclusion criteria involved age between 19 and 30 years and student status. Exclusions targeted severe medical or psychological conditions, use of psychoactive medications, previous participation in similar programs, medical contraindications for physical exercise, non-participation in a maximum of two sessions, and lack of written consent. In the second stage, initial assessment, occurring between April 25 and April 29, 2023, participants completed six comprehensive questionnaires: WHOQOL-BREF, CDRS, MBPAQ, EIFI, FS, and DASS-21, covering various domains including quality of life, depression, physical activity, emotional intelligence, and stress levels. In the third stage, data centralization from initial assessments, between April 28 and April 29, 2023, the collected information was centralized into a database, applying quality control measures to verify data accuracy and ensure confidentiality. In the fourth stage, analysis of initial data, between April 30 and May 30, 2023, we used SPSS version 23, including descriptive statistics, Person correlation "r," and regression analysis highlighting unstandardized coefficients - B.

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2.2. Subjects

A total of 75 subjects (46 females and 29 males) were included in this study, all of whom were first-year law students at the 1 Decembrie 1918 University of Alba Iulia, Faculty of Law and Social Sciences.

~~Prior to~~Before participation, each student provided written consent to be included in the study. The consent of the participants was required and signed before starting the research according to the Declaration of Helsinki. It was approved by the Ethics Committee of the Doctoral School of Physical Education and Sport Science (ID: 08/21.03.2023), West University of Timisoara.

2.3. Research Tools

~~In this study, we~~This study utilized six measures commonly used in academic student populations.

2.3.1. Depression, Anxiety, and Stress Scale – 21 Items (DASS-21)

The DASS-21 is a self-report questionnaire aimed at measuring depression, anxiety, and stress. Participants rated the frequency and severity of symptoms over the past week on a four-point Likert scale (Lovibond & Lovibond, 1995)

2.3.2. Feeling Scale (FS)

The FS is a single-item scale measuring affective valence on an 11-point continuum from "Very bad" to "Very good", providing a quantitative assessment of emotional well-being (Hardy & Rejeski, 1989).

2.3.3. Exercise-Induced Feeling Inventory (EIFI)

The EIFI assesses emotional states experienced during or after exercise, including revitalization, tranquility, positive engagement, and physical exhaustion. ~~It's~~It is validated for measuring emotional responses to exercise interventions (Gauvin & Rejeski, 1993).

2.3.4. Modified Baecked Physical Activity Questionnaire (MBPAQ)

The MBPAQ evaluates typical physical activities across household, sports, and leisure-time categories, providing a composite score indicating the overall level of physical activity (Chukhlantseva, 2023).

2.3.5. WHOQOL-BREF

The WHOQOL-BREF assesses quality of life across physical, psychological, social, and environmental domains. We focused ~~specifically on~~ participants' perceptions of social relationships (Gholami et al., 2013).

2.3.6. Contour Drawing Rating Scale (CDRS)

The CDRS evaluates body image perception by comparing participants' current and ideal body images, providing insights into their perceptions of physical appearance.

2.4. Data Analysis

~~In our data analysis, we employed several statistical operations~~We employed several statistical operations in our data analysis to gain insights into our study variables.

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201 2.4.1.Descriptive ~~statistics~~ Statistics (Mean and Standard Deviation)
202 We calculated the mean and standard deviation to understand ~~the central tendency and variability~~
203 ~~of our data~~ our data's central tendency and variability. This allowed us to grasp the average value
204 of the measured variables and the spread of data points around the mean, aiding in identifying any
205 outliers or patterns (Mishra et al., 2019).

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206 2.4.2. Pearson Correlation (r) with significance (2-tailed)
207 The Pearson correlation coefficient (r) helped us assess the strength and direction of the linear
208 relationship between continuous variables. By highlighting significance (Sig.) with a 2-tailed test,
209 we determined whether the observed correlation was statistically significant, indicating a true
210 association rather than chance. This analysis allowed us to explore potential associations between
211 variables of interest (Obilor & Amadi, 2018).

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212 2.4.3.Regression analysis with unstandardized coefficients (B)
213 Regression analysis enabled us to examine the predictive relationship between independent
214 variables and a dependent variable. By focusing on Unstandardized Coefficients (B), we assessed
215 the strength and direction of this relationship while controlling for other factors. These coefficients
216 indicate the change in the dependent variable for a one-unit change in the independent variable,
217 offering valuable insights into the effect of each predictor variable on the outcome variable
218 (Menard, 2011).

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219 Each statistical operation was selected to provide a comprehensive understanding of our data,
220 explore relationships between variables, and identify factors influencing our outcome of interest.
221 Statistical analysis was conducted using SPSS, version 23.0 (Murana & Rahimin, 2021) |

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222
223 **Results**

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224 3.1. Descriptive Statistics
225 Table 1 presents the descriptive statistics for various items, including depression, stress, anxiety,
226 affective valence (FS), mood states (EIFI), total physical activity assessment (MBPAQ), actual
227 mood states assessment (CDRS), and social relations evaluation (WHOD3). Mean values indicate
228 the average score for each item, while SD (Standard Deviation) represents the variability or spread
229 of scores around the mean.

230
231 ~~Table~~ Table 1. Descriptive Statistics

232
233 3.2. Correlation analysis between mental health variables and quality of life measures
234 Table 2 illustrates the correlations between mental health variables and other measures of quality
235 of life, including affective valence (FS), mood states (EIFI), physical activity assessment
236 (MBPAQ), body image (CDRS), and social relations evaluation (WHOD3). The table displays
237 Pearson correlation coefficients for each pair of variables, ~~accompanied by their respective and~~
238 their significance levels (Sig2). The correlations are based on data from a sample size of 75
239 participants. Significance levels are indicated by asterisks, with ** denoting significance at the
240 0.01 level and * denoting significance at the 0.05 level, both two-tailed.

Table 2. Calculation of correlations between mental health variables and other measures of quality of life (affective valence, mood states, physical activity assessment, body image, and social relations evaluation)

3.3. Prediction of depression, stress, and anxiety levels based on relevant independent variables

Table 3 presents the results of regression analyses focusing on stress, anxiety, and depression. The table displays unstandardized coefficients (B) for each independent variable with a significance level of $p < 0.05$. The regression coefficients indicate the change in stress, anxiety, or depression levels for a one-unit increase in the respective independent variable. The variables included in the regression analysis are depression, anxiety, mood states (EIFI), physical activity assessment (MBPAQ), body image (CDRS), and social relations evaluation (WHOD3). These results provide insights into the predictive relationships between these mental health indicators and the examined independent variables.

Table 3. Regression Analysis of Stress, Anxiety, and Depression

1. Depression correlates significantly with stress and anxiety (Sig. 2 = 0.000), as well as with mood states (EIFI, Sig. 2 = 0.021), physical activity assessment (MBPAQ, Sig. 2 = 0.006), and social relations evaluation (WHOD3, Sig. 2 = 0.000).
2. Stress correlates significantly with depression and anxiety (Sig. 2 = 0.000), as well as with mood states (EIFI, Sig. 2 = 0.000), physical activity assessment (MBPAQ, Sig. 2 = 0.005), body image (CDRS, Sig. 2 = 0.030), and social relations evaluation (WHOD3, Sig. 2 = 0.000).
3. Anxiety correlates significantly with depression and stress (Sig. 2 = 0.000), as well as with mood states (EIFI, Sig. 2 = 0.000), physical activity assessment (MBPAQ, Sig. 2 = 0.012), body image (CDRS, Sig. 2 = 0.013), and social relations evaluation (WHOD3, Sig. 2 = 0.000).
4. Affective valence (FS) does not significantly correlate with any measured indicators ($p > 0.05$), indicating that emotional state is not strongly associated with other measures in the study.
5. Mood states (EIFI) significantly correlate with all negative mental states (depression, stress, anxiety), as well as with body image (Sig. 2 = 0.000) and the level of social relations (Sig. 2 = 0.07) of the research subjects.
6. Physical activity (MBPAQ) significantly correlates with all negative mental states (depression, stress, anxiety), as well as with the social relations of the research subjects.
7. Body image (CDRS) significantly correlates with stress (Sig. 2 = 0.30) and anxiety (Sig. 2 = 0.13), as well as with mood states (EIFI, Sig. 2 = 0.000). T
8. Social relations significantly correlate with all negative mental states (depression, stress, anxiety, Sig. 2 = 0.000), as well as with mood states (Sig. 2 = 0.07) and the level of physical activity (Sig. 2 = 0.06) of the research subjects.

Discussion

This study delves into predicting levels of depression, stress, and anxiety among college students while exploring correlations between these negative mental states and various aspects of quality of life.

Descriptive statistics

The descriptive statistics shed light on the central tendencies and variabilities of the data. Participants displayed moderate levels of depressive symptoms and stress, with varying degrees of severity. Similarly, anxiety levels were moderate among participants, also exhibiting variability. Emotional valence leaned slightly positive, indicating a generally stable emotional state. Emotional experiences during or after exercise were moderate, with individual responses varying. Physical activity levels were moderate and relatively consistent. Body image perceptions were moderately positive, though with variability among participants. Social relationships were perceived moderately positively, yet with differences in social interaction experiences.

These observations underscore the need for personalized approaches ~~in addressing mental health concerns and promoting~~ to address mental health concerns and promote well-being among individuals, recognizing the diverse range of experiences within the sample.

Correlation analysis

Interpreting significant correlations between negative mental states and quality ~~of~~ of-life measures revealed crucial insights. Higher depression levels correlated significantly with increased stress and anxiety, poorer mood states, lower physical activity levels, and poorer social relationships. Elevated stress levels correlated significantly with increased depression and anxiety, poorer mood states, lower physical activity levels, poorer body image perception, and poorer social relationships. Higher anxiety levels correlated significantly with increased depression and stress, poorer mood states, lower physical activity levels, poorer body image perception, and poorer social relationships. Emotional state did not significantly correlate with measured indicators, suggesting emotional state is not strongly associated with other measures. Mood states during or after exercise correlated significantly with all negative mental states and social factors, indicating a close relationship between mood states and mental health indicators. Higher physical activity levels correlated significantly with lower ~~levels of~~ negative mental states and better social relationships. More positive body image perceptions correlated significantly with lower ~~levels of stress and anxiety, as well as~~ stress and anxiety levels and better mood states. Better social relationships correlated significantly with lower levels of negative mental states, better mood states, and higher levels of physical activity.

These correlations highlight the importance of evaluating various well-being facets comprehensively, emphasizing the interplay between mental health and overall well-being.

Prediction of mental health levels

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Regression analyses offer insights into predictive relationships between mental health indicators and independent variables. Depression, anxiety, mood states, physical activity, body image, and social relations significantly predicted stress levels. Stress, mood states, physical activity, body image, and social relations significantly predicted anxiety levels. Stress, anxiety, mood states, physical activity, and social relations significantly predicted depression levels.

These findings underscore the complex interplay between mental health indicators and independent variables, emphasizing the importance of addressing multiple factors in interventions aimed at reducing depression, stress, and anxiety levels. Personalized approaches considering individual coping mechanisms and social support networks may be beneficial in managing mental health outcomes. Mukta et al. (2023) investigated the relationship between students' mental health, psychological attributes inferred from social media interactions, and academic performance. They employed a classification model to predict students' psychological attributes and mental health issues from ~~their~~ social media interactions, and then used these predictions to identify academic performance. The study utilized judgmental sampling to collect textual content from students' Facebook news feeds and derived feature vectors using the MPNet model. Correlations were found between social media usage and psychological attributes/mental health, as well as between psychological attributes/mental health and academic performance. A two-level hybrid model was built to predict academic performance, achieving strong performance with a microaverage f-score of 0.94 and an AUC-ROC score of 0.95.

Additionally, an ensemble model combining psychological attributes and mental health models showed improved performance compared to independent models. Baba and Bunji (2023) aimed to develop a machine learning (ML) model to predict students' mental health problems over one year using health survey data, including response time. They analyzed data from 3561 undergraduate students from University A in Japan who completed the health survey in 2020 and 2021. Two analyses were conducted: predicting mental health problems in 2020 and 2021. Various ML models were compared, with the LightGBM model showing the best performance. Results indicated that demographic and behavioral data, along with response time, were effective predictors of mental health issues. Surprisingly, while the inclusion of answering time-related variables did not substantially improve predictions, certain variables derived from response time were helpful. The study highlights the potential of ML models in predicting mental health issues using health survey data, which could lead to improvements in survey items and calling criteria for counseling services. Eisenberg et al. (2009) conducted the first study examining how mental health affects academic success in college. They analyzed a random longitudinal sample of students and found that depression was a significant predictor of lower GPA and higher dropout rates, especially among students with co-occurring anxiety disorders. Further analysis within the longitudinal sample confirmed that depression and anxiety together were associated with lower GPA, along with symptoms of eating disorders. These findings suggest the potential for significant economic benefits from programs aimed at preventing and treating mental health issues among college students. Additionally, the study emphasizes the importance of evaluating such programs' impact on academic outcomes using randomized trials.

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Limitations

Despite its contributions, this study has several limitations that should be acknowledged:

1. sample characteristics -the study focused exclusively on first-year law students, which limits the generalizability of the findings to other student populations or demographic groups. Future research should consider diverse samples to enhance the external validity of the results.

2. cross-sectional design -the ~~cross-sectional design of the study~~ study's cross-sectional design precludes the establishment of causal relationships between variables. Longitudinal studies are needed to ~~better understand~~ understand better the temporal dynamics and potential causal pathways between mental health indicators and quality of life measures.

3. self-report measures -the reliance on self-report measures, such as questionnaires assessing mental health and quality of life, introduces the possibility of response bias and social desirability effects. Future research could incorporate objective measures or multi-method approaches to enhance the reliability and validity of the findings.

4. potential confounders -the study did not account for ~~potential~~ confounding variables, such as socio-economic status, prior mental health history, or academic stressors, which could influence the relationships between mental health indicators and quality of life measures. Future research should consider controlling for these factors to ~~obtain a more accurate estimation of the associations under investigation~~ estimate the associations under investigation more accurately.

5. single-institution setting -the study was conducted in a single institution, which may limit the generalizability of the findings to other educational contexts. Replication ~~of the~~ the study in multiple institutions or across different cultural contexts would enhance the robustness and external validity of the results.

Acknowledging these limitations is essential for contextualizing the findings and guiding future research efforts ~~aimed at advancing~~ to advance our understanding of the complex interplay between mental health and quality of life among college students.

Conclusions

The study revealed significant correlations between depression, stress, and anxiety levels, and various dimensions of quality of life, including affective valence, mood states, physical activity, body image perception, and social relations quality. These findings underscore the interconnectedness between mental health and overall well-being, highlighting the importance of adopting a comprehensive ~~approach to mental health assessment and support~~ mental health assessment and support approach.

Regression analysis further demonstrated that mood states, physical activity, body image perception, and social relations quality significantly predict levels of depression, stress, and anxiety among college students. Higher levels of physical activity, positive mood states, and favourable perceptions of body image and social relations were associated with lower levels of negative mental states, suggesting the potential of these factors in mitigating mental health issues.

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The identified correlations and predictors offer valuable insights for ~~the development of targeted interventions aimed at enhancing~~ developing targeted interventions to enhance mental health and overall quality of life among college students. Strategies focusing on enhancing mood, increasing physical activity, fostering positive body image perceptions, and improving social relationships may ~~prove effective in promoting~~ note well-being and resilience among students.

Moving forward, future research should delve deeper into understanding the underlying mechanisms of these associations and explore innovative intervention approaches tailored to the specific needs of college students. By addressing these gaps, we can better support ~~the mental health and well-being of individuals~~ individuals' mental health and well-being within educational settings.

This study contributes to the existing literature by elucidating the complex relationships between mental health indicators and quality of life measures among first-year law students. By addressing the established research objectives, the findings underscore the importance of holistic approaches to mental health care and provide valuable insights for ~~the development of~~ developing targeted interventions to support the well-being of college students.

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