FACTORS ASSOCIATED WITH MENTAL HEALTH OF STUDENT NURSES AT HAINAN VOCATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, YUNLONG CAMPUS

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摘 要

题目: 海南科技职业大学云龙校区护生心理健康影响因素研究

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本研究旨在评估海南科技职业大学云龙校区一、二年级护理学生心理健康问题的患病率，并分析其相关影响因素。本研究采用横断面研究设计，通过分层抽样方法，从 4773 名护理专业一、二年级学生中抽取 406 名有效样本。使用包含个人基本信息的结构化问卷以及抑郁焦虑压力量表（DASS-21）进行数据收集，应用描述性统计、卡方检验及 Spearman 相关分析方法对数据进行分析。

研究结果显示，海南科技大学云龙校区一、二年级护生的极重度抑郁非常严重占有率为 71.9%，极重度焦虑占有率为 82.0%，极重度压力占有率为 30.8%。DASS-21 各分量表平均得分分别为 28.02（标准差 8.12）、27.85（标准差 8.21）和 27.93（标准差 8.34）。Spearman 相关分析发现，运动频率与抑郁和

焦虑水平均呈微弱正相关（抑郁 r=0.109，焦虑 r=0.113）；饮酒频率与压力（r=0.101），其余个人及社会因素未发现显著相关性。结论：海南科技职业大学云龙校区护理学生心理健康问题普遍且严重。运动频率、饮酒频率及家庭经济状况与心理健康存在一定关联。这一结果提示，学校需制定有针对性的心理健康干预措施、压力管理项目及建设支持性校园环境，以促进护理学生的心理健康与学业成功。

关键词: 心理健康, 护生, 海南科技大学, 因素关联, 抑郁焦虑压力量表-21（DASS-21）

ABSTRACT

Title: Factors Associated with Mental Health of Student Nurses at Hainan Vocational University of Science and Technology, Yunlong Campus

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This study aimed to evaluate the prevalence of mental health problems among first- and second-year nursing students at the Yunlong Campus of Hainan University of Science and Technology, and to analyze the associated factors. This study adopted a cross-sectional study design, and 406 valid samples were selected from 4,773 first- and second-year nursing students by stratified sampling. A structured questionnaire containing basic personal information and the Depression Anxiety Stress Scale (DASS-21) was used to collect data, and descriptive statistics, chi-square tests, and Spearman correlation analysis were used to analyze the data.

The results of this study showed that the rate of extremely severe depression among first- and second-year nursing students at the Yunlong Campus of Hainan University of Science and Technology was 71.9%, the rate of extremely severe anxiety was 82.0%, and the rate of extremely severe stress was 30.8%. The average scores of each subscale of DASS-21 were 28.02 (S.D. = 8.12), 27.85 (S.D. = 8.21), and 27.93 (S.D. = 8.34), respectively. Spearman correlation analysis found that exercise frequency was weakly positively correlated with depression and anxiety (depression r=0.109, anxiety r=0.113); drinking frequency was weakly positively correlated with stress (r=0.101). No significant correlation was found for other personal and social factors.

In conclusion, Mental health problems are common and serious among nursing students in the Yunlong Campus of Hainan University of Science and Technology. Exercise frequency, drinking frequency, and family economic status are associated with mental health. This result suggests that schools need to develop targeted mental health intervention measures, stress management programs, and build a supportive campus environment to promote nursing students' mental health and academic success.

Keywords: Mental health, Nursing students, Hainan University of Science and Technology, Associated factors, Depression Anxiety Stress Scales-21(DASS-21)

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CONTENTS

PAGE

CONTENTS (Continued)

CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

CHAPTER I

INTRODUCTION

Background and rationale

Globally, nursing students face significant mental health challenges due to the strict requirements of education and training. Foreign studies have shown that the main stressors of nursing students include academic requirements, clinical internships, time management, teacher-student relationships, and interpersonal relationships. For example, Labrague, L. J. (2024) pointed out in a systematic review that the main stressors of nursing students include academic requirements, clinical internships, and personal life pressures. Wang, X. et al. (2021) also found that academic pressure and clinical internships are the main stressors for nursing students. The high stress experienced by nursing students has a significant impact on their mental health. Torlak, M. S.et al. (2024) showed that the high-pressure state of nursing students is directly related to anxiety, depression, and burnout. In addition, Soerensen et al. (2023) also found that the high stress state of nursing students is directly related to anxiety, depression, and burnout.Jin et al. (2023) systematically reviewed and analyzed the prevalence and related factors of depression and anxiety among Chinese medical students. (Yu et al 2021) Study shows that childhood adversity and mental distress are positively correlated with students' depression levels. Sonmez, Y. (2023) Research finds that nursing students experience increasing levels of mental distress, depressive symptoms, and anxiety as they progress through their studies. These mental health issues can lead to physical health problems such as fatigue, sleep disturbances, and weakened immune function, affecting their overall health and academic performance.

In China, with the rapid development of social economy, the advancement of urbanization and industrialization, people's living standards are constantly improving, health awareness is strengthened, and the aging process of the population is accelerating. The forecast results show that in 2015, the elderly population in my country has reached 232 million, and the growth rate will accelerate between 2015 and 2030. It will reach 498 million by 2050, among which the elderly will grow fastest (Jun, W. 2021). With the continuous increase in the elderly population, the coexistence of multiple diseases, and the increase in long-term care needs, my country's medical and health care industry faces huge challenges. Therefore, it is crucial to cultivate a group of medical and nursing talents with strong professional qualities and skills. Nursing students in China face a highly competitive and demanding educational environment. Strict academic requirements and extensive clinical training lead to increased mental health among students. Studies have shown that high stress can have an adverse effect on students' academic performance, mental health, and overall well-being, leading to an increase in burnout levels in the nursing profession. A recent national survey found that approximately 70% of Chinese nursing students experienced significant mental health during their studies, primarily due to academic workload, clinical practice pressure, and emotional challenges associated with patient care (Wang et al, 2021). In addition, nursing students' stress levels were closely associated with depressive symptoms, highlighting the importance of stress management in nursing education (Aloufi et al, 2021). Latif et al. (2019) study evidence that first- and second-year nursing students generally experience higher stress levels compared to third- and fourth-year students. One study found that first-year nursing students reported significantly higher levels of stress related to their academic workload compared to second- and third-year students. Zhao Ping et al. (2018) surveyed 2,126 nursing students at Nanjing Health School

to examine grade-level differences in mental health. Freshmen and sophomores scored significantly higher on distress measures than juniors and seniors, and 29.3% (622 students) screened positive for mental-health abnormalities. Factors significantly associated with poorer mental health included age/ grade, parents' education, family structure, peer relationships, romantic experience, urban versus rural origin, participation in school activities, and professional identity.

Hainan Vocational University of Science and Technology, located in Haikou, Hainan Province, is a private undergraduate vocational school under the jurisdiction of the Hainan Provincial Department of Education. Although the institution is committed to providing high-quality education, nursing students may experience mental health problems due to the rigorous curriculum, high clinical rotation requirements, and high expectations of students. Given the lack of systematic research on the physical and mental health status and its influencing factors among nursing students in Hainan Province, this study will employ questionnaire surveys and statistical analyses to comprehensively assess the health status and related determinants of nursing undergraduates at Hainan Vocational University of Science and Technology, with a view to providing a scientific basis for the development of future intervention strategies.

Objective

1. To assess the prevalence of mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

2. To analysis factor associated mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Research question

1.What is the prevalence of first- and second-years mental health of nursing students at Hainan University of Science and Technology in Yunlong campus?

2. What are the factors associated mental health of first- and second-years nursing students at Hainan University of Science and Technology in Yunlong campus?

Hypothesis

The mental health status of first- and second-year nursing students at Yunlong Campus of Hainan University of Science and Technology is at a medium level, which is affected by factors such as study pressure, internship pressure, economic pressure, employment pressure and lack of social support.

Operational definition

1. Nursing students: Refers to students studying nursing at Hainan University of Science and Technology.

2. Mental health: Mental health means being able to face frustration, stress, and anxiety in life positively. Having good self- regulation ability when facing difficulties.

3. Depression: Depression is one of the important signs of impaired mental health. It manifests as persistent low mood, loss of interest and happiness, low energy, etc. These symptoms seriously affect the individual's mental health.

4. Anxiety: Anxiety is excessive worry about potential threats and is one of the most common manifestations of mental health problems. Anxiety affects an individual's emotions and cognition, causing excessive tension, fear, and a persistent feeling of uneasiness.

5. Stress: Moderate stress can be positive and help individuals cope with challenges, but excessive or prolonged stress can have a negative impact on mental health, leading to emotional distress, physical discomfort, and psychological problems.

6. Influencing factors:

Academic pressure: Refers to the psychological burden and tension caused by academic tasks and expectations during the learning process. It involves students' concerns about learning performance, test scores, homework completion, time management, and future academic and career development.

Clinical internship pressure: It refers to the psychological burden and tension that nursing students experience during clinical internship due to the challenges of the actual working environment, academic requirements and career development pressure.

Lack of social support: Refers to the inability of an individual to receive adequate support or assistance when they need help, emotional comfort, or resources. This support usually includes emotional support, practical help, information provision, and a sense of social belonging.

Personal factors: Personal factors include, but are not limited to, an individual's age, gender, health status, personality traits, belief systems, cultural background, education level, and life experiences.

Environmental adaptation: Individuals or groups adjust and change their own characteristics, behaviors, attitudes or strategies according to changes in the external environment in order to survive and develop better.

Economic pressure: Refers to the tension, anxiety and difficulties felt by individuals, families, businesses or societies when faced with insufficient economic resources, excessive financial burdens or economic uncertainty.

Health behavior and lifestyle: Refers to the specific behaviors and activities that individuals take to maintain and promote health, prevent disease, or manage disease. These behaviors directly or indirectly affect an individual's health status.

7. DASS-21: It is a psychometric tool used to assess mental health. It measures depression, anxiety and stress levels of individuals.

Expected Benefits and applications

1. Enhanced Understanding: Provide a comprehensive understanding of the stress factors affecting student nurses in Hainan, contributing to the broader body of knowledge on nursing education and student well-being.

2. Informed Interventions: Inform the development of targeted interventions and support mechanisms to reduce stress and improve the educational experience of student nurses at Hainan Vocational University of Science and Technology.

3. Policy Development: Assist educational administrators and policymakers in creating policies and programs that address the specific needs and challenges of student nurses in this region.

4. Benchmarking: Serve as a benchmark for similar studies in other regions, allowing for comparative analyses and the identification of best practices in managing student nurse stress.

5. Improved Outcomes: Ultimately, contribute to better academic performance, enhanced clinical skills, and improved mental health and well-being of student nurses, leading to the development of more competent and resilient healthcare professionals.

CHAPTER II

LITERATURE REVIEW

Several concepts were outlined in this chapter provide explanation about the overall conceptual framework into which the research was laid. Below are specific studies which were reviewed to support this research as follows;

1. Mental health
    1.1 Severity of mental health
    1.2 Current situation of mental health abroad
    1.3 Current situation of mental health in China
    1.4 Impact of mental health
    1.5 Association between mental health and depression, anxiety and stress
    1.6 Population involved
    1.7 School situation and curriculum
2. Factors
    2.1 Academic pressure
    2.2 Clinical internship pressure
    2.3 Lack of social support
    2.4 Personal factors
    2.5 Environmental adaptation
    2.6 Economic pressure
    2.7 Health behavior and lifestyle
3. DASS-21 (Depression Anxiety Stress Scales-21)
    3.1 Advantages of DASS-21

Mental health

Severity of mental health

(Patel, V. et al, 2018) In this study, the severity of mental health problems around the world was discussed in detail and the severity of mental health problems was categorized as mild, moderate, and severe, differentiated by the degree of impact on an individual's daily functioning and overall health. Mild mental problems may include mild symptoms of anxiety or depression that do not significantly interfere with daily life but affect mood and productivity. Moderate mental problems typically involve more persistent and impactful symptoms, such as persistent sadness, anxiety, or stress, which begin to impair social, occupational, and personal functioning. Severe mental problems are characterized by severe symptoms, including major depressive episodes, panic attacks, or extreme stress, which significantly disrupt daily functioning and may even include suicidal ideation. These classifications help clinicians and researchers tailor interventions to the needs of individuals based on the severity of symptoms.

Current situation of mental health abroad

Globally, mental health issues have seen a significant rise, particularly in developed countries. (Twenge, J. M.et al, 2019) This study focused on mental health trends in the United States, specifically changes in depression and suicide- related

outcomes. It was found that depression, anxiety and suicidal thoughts increased significantly in all age groups, especially among young people. (McManus et al,2019) The report reflects the current state of mental health among adults in the UK. It shows that the prevalence of depression, anxiety and other mental disorders among adults in the UK continues to rise. In particular, mental health problems are particularly serious among women, young people and low-income groups. Mental health issues have become a major public health challenge in many countries and pose a threat to individuals' quality of life and socio-economic stability.

Current situation of mental health in China

In China, the awareness and understanding of mental health have improved significantly over the past decade. However, mental health problems remain prevalent, particularly among young people, including university students. (Liu, X. et al. 2019) This article investigates the changes in the mental health of Chinese undergraduates during their college years. The study found that as college life progresses, students' mental health generally deteriorates, especially from freshman to sophomore year, when symptoms of anxiety and depression increase significantly. (Guo, C.et al. 2018) This article evaluates the current status of mental health among Chinese teenagers. The results show that mental health problems are relatively common among Chinese teenagers, including high levels of depression and anxiety. The study points out that about 30% of Chinese teenagers show varying degrees of mental distress. This high incidence of mental health problems may be closely related to factors such as academic pressure, family expectations, and social competition.

Impact of mental health

Mental health significantly impacts various aspects of life, including academic performance, occupational success and social relationships. (Karyotaki, E.et al. 2020) Studies have found that persistent stress, anxiety and depression are associated with a range of mental health problems, such as sleep disorders, headaches, gastrointestinal problems and decreased immune function. Especially for college students who are under high stress for a long time, their mental health problems are more prominent. The impact is particularly pronounced in student populations, where mental health issues can hinder academic success and lead to dropout. (Deng, J.et al. 2021) Studies have shown that depression and anxiety not only have a negative impact on mental state, but are also associated with significant sleep disorders and impairment of daily function. The data summarized in the article show that more than 30% of college students report varying degrees of sleep problems, which are closely related to mental health problems.

Association between mental health and depression, anxiety and stress

The interrelationship between mental health and conditions such as depression, anxiety, and stress are well-documented. (Wang, Y.et al. 2020) The study found that high stress levels during the epidemic significantly increased the incidence of anxiety and depression, and these mental problems interacted with each other to significantly affect overall mental health. Depression is often associated with prolonged sadness, lack of motivation, and loss of interest in daily activities, while anxiety is characterized by excessive worry and fear that can be debilitating. Stress, on the other hand, is a response to external pressures that exceed an individual's coping capacity. These conditions frequently co-occur, creating a compounded effect that severely impacts an individual's overall mental health. (Santabárbara, J.et al. 2021) The results

showed that the prevalence of anxiety disorders increased significantly and was closely related to worse mental health. The article highlights the serious negative impact of anxiety on mental health, especially under major stressful events.

Population involved

Mental health problems can affect anyone, but certain populations are at higher risk. These include students, healthcare professionals, the elderly, and those with pre-existing health conditions. Among students, particularly nursing students, the transition to university life, academic pressures, and clinical practice demands make them particularly vulnerable. (Sonmez, Y. et al. 2023) Research has found that nursing students' mental distress, depression, and anxiety levels fluctuate during their studies, and usually increase significantly during the early stages of study and during internship.

School situation and curriculum

Hainan University of Science and Technology was selected as one of the first batch of pilot reform colleges for vocational undergraduates in the country, the second batch of pilot colleges for the "1+X" certificate system, the national pilot school for emergency education, the national demonstration school for the construction of digital campuses for vocational colleges, the "Industry-Education Integration Application Curriculum Reform Experimental School" of the Ministry of Education's Planning and Construction Center, and a high-level vocational college in Hainan Province. The university offers courses that combine theoretical education and clinical practice training to train skilled and competent nurses (Yang, L ,2020). The nursing undergraduate program lasts four years, with eight semesters in total. In the first year, nursing students adapt to college life and learn about their profession. In the second year, students complete professional foundation courses and gradually increase their

understanding of the profession through basic nursing practice in classrooms and laboratories. In the third year, nursing students gain their first clinical experience, and in the fourth year, students prepare for employment, national examinations, and graduation (Lavoie-Tremblay et al ,2022).

Contributing Factors

Academic Pressure

Academic stress is a significant factor in mental health issues, especially among nursing students. This stress can stem from high expectations, heavy workloads, and the competitive nature of the academic environment. (Turner, K., & McCarthy, V. L. 2017). Research has found that the high intensity of nursing courses and high expectations for academic performance led to a general high level of academic stress among nursing students, which in turn leads to anxiety, depression, and other mental health problems. For nursing students, this stress is often exacerbated by a rigorous curriculum and demanding clinical competencies. Stress related to academic achievement can lead to symptoms of burnout, anxiety, and depression, which can negatively impact academic outcomes and overall well-being. (Hamadi et al 2021). The results of the study showed that academic pressure was one of the main sources of mental health problems for nursing students, manifested in high levels of anxiety and depression.

Coming clinical practice pressure

For nursing students, clinical practice is a critical component of their education, but it also presents a significant source of stress. (Ma, H. et al. 2022) This

article uses a cross-sectional study design to analyze the relationship between these factors to understand the impact of the clinical practice stage on the mental health of nursing students. The transition from classroom learning to real-world clinical settings can be daunting, often leading to anxiety and feelings of inadequacy. Factors such as the fear of making mistakes, interactions with patients, and the pressure to perform well in a high-stakes environment contribute to this stress. (Hasson, F.et al. 2021) The study aims to explore the mental adaptability of nursing students in different countries when facing academic and clinical pressure and its impact on overall well-being. Through cross-national comparison, this paper aims to reveal the impact of clinical education environment on the mental health of nursing students.

Lack of Social Support

Social support is a crucial buffer against stress and a determinant of mental health. (Ortiz-Calvo, E.et al. 2022) The study aims to understand how social support and personal resilience can help medical staff cope with stress, anxiety, depression and other mental problems caused by the epidemic. Nursing students who lack adequate social support from family, friends, or peers are more susceptible to anxiety, depression, and stress. (Hou, T.et al. 2021) The study aims to reveal how resilience and social support jointly influence caregivers' anxiety levels and to explore the differences in this process among caregivers at different risk levels. Lack of support can exacerbate feelings of isolation and increase the risk of mental problems.

Personal Factors

Individual personality traits, such as resilience, self-esteem, and coping strategies, play a significant role in mental health. (Feyisa, B. R.et al. 2022) found that students with high levels of resilience were more likely to adopt positive coping

strategies, which further enhanced their mental health when facing challenges. Students with low self-esteem or poor coping skills are more likely to experience severe mental distress. (Lu, J. et al. 2023) This study found explore how social support affects the positive effect of self-efficacy on nurses' mental health and to evaluate the protective effect of such support on nurses' overall mental health. So personal factors have an impact on mental health

Environmental Adaptation

Adapting to new environments, such as moving from home to a university setting, can be a significant stressor. (Gause, G. et al. 2024) Transitioning from basic education to higher education, nursing students face greater academic pressure, including increased course complexity, heavier academic workload, and doubts about their own abilities. Nursing students often face additional challenges, such as adapting to clinical environments that can be fast-paced and high-pressure. The ability to adapt to these new environments is crucial for maintaining mental health. (Hughes, M. et al. 2020) This article explores the experiences of first-year undergraduate nursing students as they transition to higher education. The students experienced a range of emotions during the transition, from anticipation to frustration, stress, and anxiety. These emotional reactions were closely related to doubts about their own abilities and unfamiliarity with the new environment.

Economic Pressure

Economic stress is another critical factor affecting mental health, particularly for students who may face financial challenges such as tuition fees, accommodation costs, and other living expenses. (McCloud, T., & Bann, D. 2019) Research has found that many higher education students face financial difficulties, including tuition fees,

living expenses and debt. This financial pressure is widespread and has a negative impact on students' daily lives and studies. (Frankham et al. 2020). Financial hardship is often associated with mental health issues such as anxiety, depression, stress, and emotional distress. Financial stress can cause or exacerbate these mental issues and affect an individual's overall well-being.

Health Behaviors and Lifestyle

Unhealthy behaviors and lifestyle choices, such as poor diet, lack of exercise, and insufficient sleep, are associated with poorer mental health outcomes. (Kharroubi et al 2024) Good physical health, including adequate sleep, a balanced diet, and moderate exercise, is positively correlated with students' academic success. (Boccia et al 2022) Studies have found that mental health problems (such as anxiety and depression) significantly affect students' academic performance, leading to inattention and decreased learning efficiency. Physical health has a direct impact on students' attention, learning efficiency, and overall academic performance. Nursing students, due to their demanding schedules, may neglect self-care, leading to increased stress and decreased overall well-being.

Depression Anxiety Stress Scales-21 (DASS-21)

Advantages of DASS-21

The DASS-21 is a widely used tool for assessing depression, anxiety, and stress levels. (Wittayapun, Y. et al. 2023) This study evaluated the accuracy and reliability of DASS-21 in assessing the mental health status of Thai nursing students through multicenter data collection. Its advantages include its brevity, ease of use, and

ability to provide a comprehensive overview of an individual's mental health. Internal consistency: Depression: Cronbach's alpha coefficients are usually between 0.80 and 0.90 Anxiety: Cronbach's alpha coefficients are usually between 0.80 and 0.90 Stress: Cronbach's alpha coefficients are usually between 0.80 and 0.90. These coefficients indicate that all three subscales of the DASS-21 have good internal consistency.

Relationship between DASS-21 and mental health

The DASS-21 is designed so that it can accurately measure the severity of mental health problems. By categorizing the results into normal, mild, moderate, severe, and extremely severe, the DASS-21 can clearly reflect the mental state of an individual. (Kakemam.et al 2022) Study to validate the applicability of the DASS-21 in a population of health professionals and to ensure its measurement quality and accuracy in this population. The study evaluated the internal consistency (such as Cronbach's alpha coefficient) and test-retest reliability of the Persian version of DASS-21. The results showed that this version had good internal consistency and stability. The scale is particularly useful in educational settings to identify students at risk for serious mental problems early on. The correlation of the DASS-21 with other mental health indicators further supports its use in assessing the interconnectedness between depression, anxiety, and stress. For instance, Lovibond and Lovibond (1995), who originally developed the scale, found that the three subscales are moderately to highly intercorrelated, supporting the theoretical premise that depression, anxiety, and stress often co-occur. More recent validation studies, such as Henry et al (2005), also confirmed high internal consistency (Cronbach's alpha > 0.90 for each subscale) and strong factor structure using confirmatory factor analysis in both clinical and non-clinical populations.

Therefore, the DASS-21 is particularly valuable for both research and clinical applications, offering a concise yet psychometrically robust tool for assessing multidimensional psychological distress.

Related Research

Patel,V.et al (2018) The Lancet Commission on global mental health and sustainable development. The Lancet Commission report discusses in detail the severity of mental health problems worldwide and classifies various mental disorders. Help clinical practice and public health policy makers better understand and respond to mental health problems of varying severity.

Twenge.et al. (2019) Age, period, and cohort trends in mood disorder indicators and suicide-related outcomes in a nationally representative dataset, 2005–2017.Understand Influencing Factors: The goal is to understand the potential influence of societal, economic, and environmental changes on mood disorders and suicide-related outcomes. Age-Related Trends: The study found significant age-related differences, indicating that younger individuals (particularly adolescents and young adults) showed higher rates of mood disorders and suicide-related outcomes compared to older age groups.

McManus et al (2019) Data Resource Profile: Adult Psychiatric Morbidity Survey (APMS). The main aims of the survey series are: To estimate the prevalence of different mental disorders in the general population of England. Rates of depression, anxiety and other psychological disorders continue to rise among adults in the UK.

Guo,C.et al (2018). Psychometric evaluation of the Mental Health Continuum-Short Form (MHC-SF) in Chinese adolescents—a methodological study. The current status of mental health among Chinese adolescents was assessed, and the Mental Health Continuum Short Form (MHC-SF) was used to quantitatively analyze the mental health of adolescents. The results showed that mental health problems are relatively common among Chinese teenagers, including higher levels of depression and anxiety.

Liu,X.et al (2019) Changes in undergraduate students' psychological well-being as they experience university life. This study investigated changes in the mental health of Chinese undergraduates during their college years. The study found that as college life progresses, students' mental health generally deteriorates, especially from freshman to sophomore year, when symptoms of anxiety and depression increase significantly.

Karyotaki, E. et al (2020). Sources of stress and their associations with mental disorders among college students: Results of the World Health Organization World Mental Health Surveys International College Student Initiative. Using data from the World Health Organization's International College Students' Mental Health Survey, this paper explores the relationship between college students' mental health problems and physical health. Studies have found that persistent psychological stress, anxiety and depression are associated with a range of physical health problems, such as sleep disturbances, headaches, gastrointestinal problems and reduced immune function.

Deng, J.et al (2021). The prevalence of depressive symptoms, anxiety symptoms and sleep disturbance in higher education students during the COVID-19 pandemic: A systematic review and meta-analysis. The analysis of the impact of college students' mental health problems on their physical health has broad applicability. Studies have shown that depression and anxiety not only have a negative impact on psychological

state, but are also associated with significant sleep disturbances and impairment of daily functioning.

Wang, Y.et al (2020). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. The psychological state of the public during the COVID-19 epidemic was investigated, especially the interactive effects of depression, anxiety, and stress. The study found that high stress levels during the epidemic significantly increased the incidence of anxiety and depression, and these psychological problems interacted with each other to significantly affect overall mental health.

Santabárbara, J.et al (2021). Prevalence of anxiety in the COVID-19 pandemic: An updated meta-analysis of community-based studies. The aim was to conduct a meta-analysis of the prevalence of anxiety disorders during the COVID-19 pandemic, and the results showed that the prevalence of anxiety disorders increased significantly and was closely associated with worse mental health.

Sonmez, Y.et al (2023, February). Psychological distress, depression, and anxiety in nursing students: A longitudinal study. The aim was to examine changes in psychological distress, depression, and anxiety experienced by nursing students during their academic studies, particularly the dynamics of these mental health problems over time.The study found that nursing students generally have high levels of psychological distress, depression and anxiety during their studies.

Turner, K., & McCarthy, V. L. (2017). Stress and anxiety among nursing students: A review of intervention strategies in literature between 2009 and 2015. To evaluate studies published between 2009 and 2015 on intervention strategies to reduce stress and anxiety in nursing students. Most intervention strategies showed some

effectiveness in reducing stress and anxiety in nursing students. In particular, mindfulness practice and cognitive behavioral therapy were found to be among the most effective interventions.

Hamadi, H. Y., Zakari, N. M., Jibreel, E., Al Nami, F. N., Smida, J. A., & Ben Haddad, H. H. (2021). Stress and coping strategies among nursing students in clinical practice during COVID-19. Research has found a reliable and accurate relationship between stress and coping strategies, and nursing students are struggling to achieve healthy stress coping strategies. There is a need to introduce stress management programs to help develop healthy coping skills.

Ma, H.et al.(2022). Perceived stress, coping style and burnout of Chinese nursing students in late-stage clinical practice: a cross-sectional study. This study aimed to investigate the relationship between perceived stress, coping style, and burnout among Chinese nursing students in the late stage of clinical internship. The study found that Chinese nursing students generally face higher perceived stress in the later stages of clinical internship.

Hasson, F (2021). Resilience, stress and well-being in undergraduate nursing students in China and the UK. To compare the differences in resilience, stress and well-being between undergraduate nursing students in China and the UK, and to explore the interrelationships between these factors. In both countries, resilience was negatively correlated with stress and positively correlated with well-being, suggesting that promoting resilience in students may help reduce stress and increase well-being.

Ortiz-Calvo, E.et al. (2022). The role of social support and resilience in the mental health impact of the COVID-19 pandemic among healthcare workers in Spain. To understand whether high levels of social support and psychological resilience can

mitigate the negative impact of the epidemic on the mental health of medical staff. Social support and psychological resilience have a significant protective effect on the mental health of medical staff.

Hou, T.et al. (2021). The mediating role of perceived social support between resilience and anxiety 1 year after the COVID-19 pandemic: disparity between high-risk and low-risk nurses in China. The purpose of this study was to explore the mediating role of perceived social support between nurses' psychological resilience and anxiety. Perceived social support has a significant mediating effect on the relationship between resilience and anxiety.

Feyisa, B. R.et al.(2022). Psychological resilience and coping strategies among undergraduate students in Ethiopia: a cross-sectional study. Understand students' levels of resilience and the coping strategies they adopt when faced with stress and challenges. Psychological resilience and coping strategies are influenced by many factors, including personal background, academic pressure, social support, etc.

Lu, J.et al.(2023). Moderating effects of perceived social support on self-efficacy and psychological well-being of Chinese nurses: a cross-sectional study. The objective was to explore the moderating effect of perceived social support on self-efficacy and psychological well-being among Chinese nurses. Perceived social support has a significant moderating effect on the relationship between self-efficacy and mental health.

Gause, G.et al. (2024) Coping strategies used by undergraduate first-year nursing students during transition from basic to higher education: a qualitative study. To understand the difficulties and stresses faced by nursing students during the transition from basic to higher education. Students reported difficulties related to

increased academic load, complexity of course content, time management issues, and psychological stress.

Hughes, M.et al.(2020). Exploring the transitional experience of first-year undergraduate nursing students. Explore the common difficulties and stresses first-year nursing students experience as they transition from high school or other fields to nursing education. As a result, students often experience stress related to increased academic workload, clinical practice requirements, and balancing personal and professional responsibilities.

McCloud, T., & Bann, D. (2019). Financial stress and mental health among higher education students in the UK up to 2018: rapid review of evidence. The goal was to understand how financial stress affects the mental health of higher education students. Many students are under considerable financial pressure due to tuition fees, living expenses and other costs.

Frankham et al. (2020). Psychological factors associated with financial hardship and mental health: A systematic review. Objective To identify the main psychological factors associated with financial difficulties, such as anxiety, depression, and stress. Research has found that financial hardship is often associated with a variety of psychological factors, including high levels of anxiety, depressive symptoms, low self-esteem and social isolation.

Kharroubi, S. A.et al.(2024). Assessing the Relationship between Physical Health, Mental Health and Students Success among Universities in Lebanon: A Cross-Sectional Study. Studying the interconnections between students' physical health, mental health and academic performance. As a result, the study may have found a correlation between good physical and mental health and greater academic success.

Boccia, G.et al.(2022). Relationship between health, lifestyle, psychosocial factors and academic performance: A cross-sectional study at the University of Salerno. To explore the role of psychosocial factors (e.g., stress, social support, and mental health) on academic performance. The study found a positive correlation between better health and higher academic performance.

Wittayapun, Y.et al.(2023). Validation of depression, anxiety, and stress scales (DASS-21) among Thai nursing students in an online learning environment during the COVID-19 outbreak: A multi-center study. The aim was to validate the validity of DASS-21 (Depression, Anxiety and Stress Self-Rating Scale) among Thai nursing students, especially in an online learning environment during the COVID-19 pandemic. The DASS-21 was found to have good reliability and validity in Thai nursing students and could effectively assess depression, anxiety, and stress levels.

Kakemam, E.et al.(2022). Psychometric properties of the Persian version of Depression Anxiety Stress Scale-21 Items (DASS-21) in a sample of health professionals: a cross-sectional study. The aim was to evaluate the psychometric properties of the Depression, Anxiety and Stress Scale-21 Items (DASS-21) in a sample of Iranian health professionals. The study showed that the DASS-21 had good internal consistency in this sample, that is, there was a high correlation between the items in each dimension.

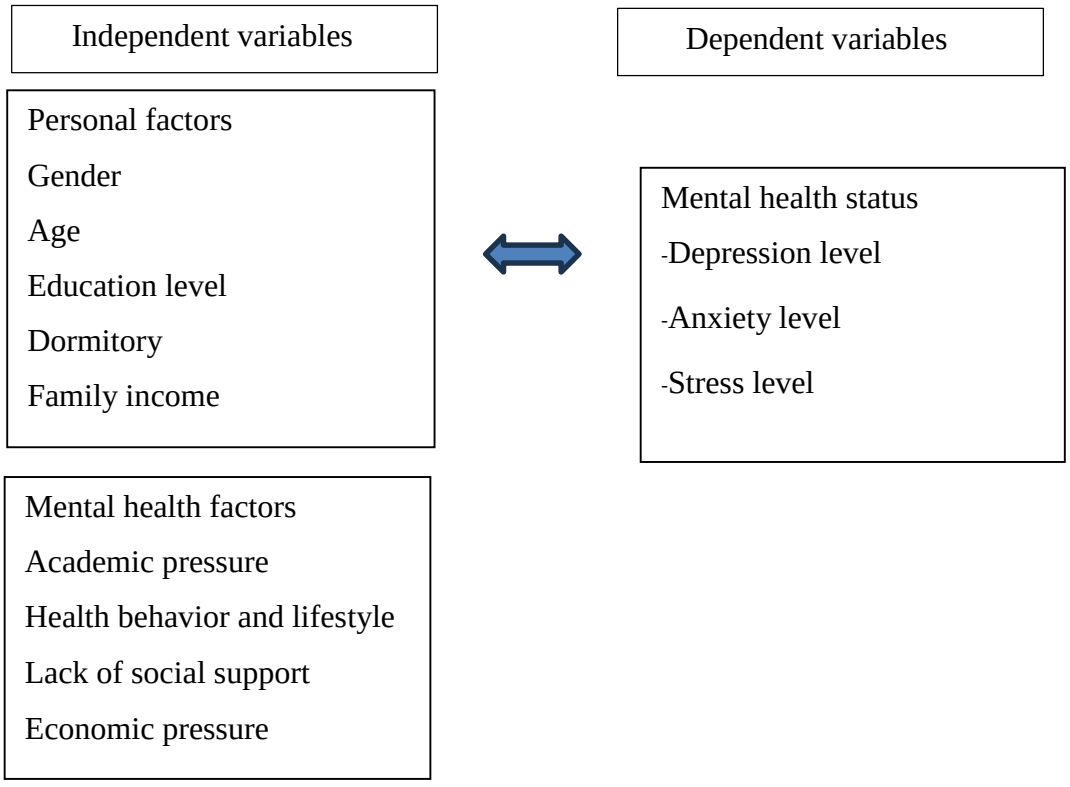
Conceptual Framework

Independent variables

Personal factors: gender, education level, age, family income, dormitory Mental health factors: Academic pressure, Health behavior and lifestyle, Lack of social support, Economic pressure.

Dependent variables: mental health

Conceptual Framework



CHAPTER III

RESEARCH METHODOLOGY

This chapter mainly studies the research methods of the analysis the factors associate of mental health status of nursing students in Hainan University of Science and Technology. The research is divided into the following parts:

1. Research design
2. Population and sample size
   2.1 Population
   2.2 Inclusion criteria
   2.3 Elimination criteria
   2.4 Sample size
3. Study area
4. Research time
5. Research methods
6. Measurement tools
   6.1 Personal information form
   6.2 The DASS-21 scale
7. Data collection
8. Data analysis

Research design

This study was a cross-sectional analytical study design.

Population and sample size

Population

The participants of this study are all first- year and second- year nursing students from Hainan University of Science and Technology, including a total of 4,773 undergraduate and junior college nursing students.

Table 1 Number of first- and second-year nursing students at the School of Nursing, Hainan University of Science and Technology

Grade	Number of Nursing Students
First-year nursing students	2562
Second-year nursing students	2211
Total	**4773**

Source: Hainan University of Science and Technology Nursing College Teaching Secretary Office, 2024

Inclusion criteria

1. First- year and second- year nursing students at the School of Nursing, Hainan University of Science and Technology.

2. Study in nursing Faculty of Hainan University of Science and Technology more than 6 months.

3. Participants are aged 18 years.

4. Participants are able to complete the questionnaire independently.

5. Participants are mentally alert, free from intellectual disabilities, and possess normal cognitive and behavioral abilities.

Exclusion criteria

Not willing to participate in research.

Sample size

This study included 4773 first-year and second-year nursing students from the College of Nursing at Hainan University of Science and Technology. Subjects will be identified based on inclusion and exclusion criteria, but the proportion of researchers who withdraw from the study due to illness or unavoidable accidents is expected to be no more than 10%. Sample size was calculated using Yamane Taro's formula.

$$n = \frac{N}{1 + N_{e^2}}$$

$$n = \frac{4773}{1+4773*(0.05)\text{^}2} \qquad n\approx369$$

Error level=369×10%≈37 Sample size=369 + 37=406

n = sample size (sample size of 369 subjects)

N = population (4773 first-year and second-year nursing students from the International Nursing School of Hainan University of Science and Technology)

e = acceptable error level (0.05)

Then consider 10% sample loss: 369×10%=36.9≈37

Sample size: 369 + 37=406

Sampling first- year and second- year nursing students of the School of Nursing, Hainan University of Science and Technology adopted a stratified sampling method to select a certain number of samples in each grade.

Table 2 Population and sample size

Grade	Population (N)	Sample size (n)
First-year nursing students	2562	218
Second-year nursing students	2211	188
Total	**4773**	**406**

Table 2 shows the sample size of 406 randomly by accidental selected from first-year and second-year nursing students. The students completed the questionnaire voluntarily. All 406 questionnaires are available.

Study area

Hainan University of Science and Technology is located in Hainan Province, China, a unique geographical environment known for its warm climate and island characteristics. Studying the stress levels of nursing students in such an environment is of particular significance because Hainan's geographical isolation may have unique psychological and physiological effects on students compared to the mainland. By studying nursing students in Hainan, it can be revealed how the geographical environment affects students' stress levels and coping mechanisms. Hainan University of Science and Technology is well-known for its vocational education, especially in nursing education, which has rich experience and unique methods. Studying nursing students at this university can reveal the unique stressors faced by students under the vocational education model and provide reference and guidance for other similar institutions.

Study period

Preparation phase (1-2 months): including project establishment, determination of research objectives and problems, formulation of research plan, literature review, etc.

Design phase (1 month): including research method design, questionnaire design, sample selection, etc., to ensure the rationality and feasibility of the research design.

Data collection phase (2 months): implementing questionnaire surveys to collect psychological stress data of nursing students.

Data analysis phase (1 month): including statistical analysis, correlation analysis, factor analysis, etc. of the collected data to find the main influencing factors of psychological stress.

Report and paper writing phase (1 month): including writing research reports or papers, summarizing the research process, discussing the research results, and proposing suggestions and countermeasures.

Research method

1. Literature research method: After determining the research direction, relevant literature on the factors affecting psychological stress is collected through databases such as CNKI and Google Scholar, and a large number of literature is read and classified. In-depth research is conducted around the research topic to lay a solid foundation for the implementation of this study.

2. Questionnaire survey method: Standardized questionnaires are issued to nursing students of Hainan University of Science and Technology, and interviews are conducted to understand the sources of psychological stress that nursing students may face in terms of family, school, social interaction, and academic pressure. The content of the questionnaire can include psychological stress level assessment, basic information of the research subjects, sources of stress, etc.

3. Factor analysis method: This article analyzes various factors that affect mental health, mainly including career choice pressure, family pressure, economic pressure, internship pressure, social pressure, certification pressure, academic pressure, etc.

Measurement instruments

Personal information form

Collecting basic information of nursing students, such as gender, age, education level, address, ethnicity, average monthly family income, parental work type, etc., is helpful to analyze the impact of personal factors on psychological stress.

The DASS-21 scale

DASS-21 (Depression Anxiety Stress Scale-21) is a psychometric tool developed by Lovibond and Lovibond (1995) to assess an individual's level of depression, anxiety, and stress in the past week. The scale consists of 21 items, divided into three dimensions, with 7 items in each dimension, and a 4-point scoring method (0 = not at all, 3 = very obvious or most of the time). This study used the Chinese version of DASS-21 that has been translated and validated by Gong Xu et al. (2010) and validated in a Chinese college student population, with good reliability and validity. The pre-test results showed that the Cronbach's α coefficient of the scale in the sample of this study was 0.959, indicating high internal consistency.

The DASS-21 scale was used to investigate the mental health status of nursing students during college. The scale consists of 21 items, measuring three negative psychological emotions: depression, anxiety, and stress. Each subscale (depression, anxiety, and stress) contains 7 items, scored on a 4-point scale from "0" (not in line) to "3" (always in line). The score of each subscale is multiplied by 2, resulting in a range of 0-42 points. Higher scores indicate a greater likelihood of experiencing the respective emotion.

Subscale Details:

Depression Factor (Items 3, 5, 10, 13, 16, 17, 21)

Related to pathological bad mood, inferiority, and low levels of positive emotions.

Scoring:

≤9 points: Normal

10-13 points: Mild

14-20 points: Moderate

21-27 points: Severe

≥28 points: Very severe

Anxiety Factor (Items 2, 4, 7, 9, 15, 19, 20)

Related to the somatic and subjective experience of anxiety arousal.

Scoring:

≤7 points: Normal

8-9 points: Mild

10-14 points: Moderate

15-19 points: Severe

≥20 points: Very severe

Stress Factor (Items 1, 6, 8, 11, 12, 14, 18)

Related to negative emotions such as tension, worry, and contradiction.

Scoring:

≤14 points: Normal

15-18 points: Mild

19-25 points: Moderate

26-33 points: Severe

≥34 points: Very severe

Reliability and Validity:

Reliability Coefficients:

Depression: 0.82

Anxiety: 0.82

Stress: 0.79

Internal Consistency Validity of the Total Scale: 0.89

Scoring Method:

A 4-level scoring method is used:

0 = Completely inconsistent

1 = Partially consistent

2 = Mostly consistent

3 = Completely consistent

According to the standard practice recommended by Lovibond and Lovibond (1995), the scores of each subscale of DASS-21 were multiplied by 2 to make them consistent with the original DASS-42 scoring system. According to the multiplied scores and the cutoff values provided in the DASS manual, the subjects' depression, anxiety and stress levels were divided into normal, mild, moderate, severe and extremely severe.

Data collection

1. Online questionnaire platform: Use modern online questionnaire tools (such as Questionnaire Star) to facilitate nursing students to fill in the questionnaire anytime and anywhere.

2. Questionnaire distribution: Questionnaires are distributed through WeChat, class groups or directly in the School of Nursing to ensure that as many nursing students as possible are covered.

Data analysis

1. Descriptive Statistics: Frequencies and percentages for categorical variables; mean ± standard deviation for continuous measures (e.g., DASS-21 scores).

2. Correlation Analysis: Spearman's rank correlation to explore relationships between potential predictors (e.g., family income, study time, exercise frequency) and DASS-21 subscale scores. Variables with $p < 0.05$ in univariate analyses were considered for further modeling.

CHAPTER IV

RESULTS

This chapter collects the results of the analysis of mental health of nursing students at Hainan University of Science and Technology and the analysis of factors affecting mental health of nursing students at Hainan University of Science and Technology, proving that nursing students may increase the incidence of mental health due to personal factors, family factors, and social factors. The subjects of this study are first-year and second-year nursing students of the International Nursing School of Hainan University of Science and Technology in Haikou, Hainan Province. The results include the following 3 parts:

Part I: Personal factors

Part II: Analysis the prevalence of mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Part III : Analysis factor associated mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Part I: General Information of the Respondents

Table 3 Number and Percentage of sample groups by Gender

Gender	Frequency	Percentage
Male	25	6.2
Female	381	93.8
Total	**406**	**100.0**

Table 3 shows the frequency and percentage of gender distribution. There are more females than males. There are 381 females, accounting for 93.8% of the total number, and 25 males, accounting for 6.2% of the total number.

Table 4 Number and Percentage of sample groups by Age

Age	Frequency	Percentage
18-20 years old	221	54.4
21-23 years old	185	45.6
Total	**406**	**100.0**

Table 4 shows the frequency and percentage of age distribution, with students aged 18-20 accounting for a higher proportion. There are 221 students aged 18-20, accounting for 54.4% of the total number, and 185 students aged 21-23, accounting for 45.6% of the total number.

Table 5 Number and Percentage of sample groups by Education level

Education level	Frequency	Percentage
College	12	3.0
Undergraduate	394	97.0
Total	**406**	**100.0**

Table 5 shows the frequency and percentage of education level distribution. Undergraduate students are the absolute majority. There are 394 undergraduate students, accounting for 97.0% of the total number; there are 12 junior college students, accounting for 3.0% of the total number.

Table 6 Number and Percentage of sample groups by Living on dormitory

Living on dormitory	Frequency	Percentage
yes	356	87.7
no	50	12.3
Total	**406**	**100.0**

Table 6 shows the frequency and percentage of accommodation. Most students live in dormitories. There are 356 dormitories, accounting for 87.7% of the total number of students, and 50 non-dormitory students, accounting for 12.3% of the total number of students.

Table 7 Number and Percentage of sample groups by Family income per mouth

Family income per mouth	Frequency	Percentage
≤2000yuan	46	11.3
2000yuan-5000yuan	114	28.1
5000yuan-10000yuan	203	50.0
≥10000yuan	43	10.6
Total	**406**	**100.0**

Table 7 shows the frequency and percentage of the distribution of family monthly income, with middle-income families dominating. There are 203 students with a monthly family income of 5,000-10,000 yuan, accounting for 50.0% of the total number; 114 students with a monthly family income of 2,000-5,000 yuan, accounting for 28.1%; 46 students with a family income of ≤2,000 yuan, accounting for 11.3%; and 43 students with a family income of ≥10,000 yuan, accounting for 10.6%.

Table 8 Number and Percentage of sample groups by study time per week

Study time per week	Frequency	Percentage
Less than 10 hours	75	18.5
10-20 hours	207	51.0
21-30 hours	81	20.0
31 hours and above	43	10.5
Total	**406**	**100.0**

Table 8 shows the frequency and percentage of weekly study time distribution. Most students study moderately. There are 207 students who study 10-20 hours per week, accounting for 51.0%; 75 students who study less than 10 hours per week, accounting for 18.5%; 81 students who study 21-30 hours per week, accounting for 20.0%; and 43 students who study 31 hours or more per week, accounting for 10.5%.

Table 9 Number and Percentage of sample groups by Participation internship

Participation internship	**Frequency**	**Percentage**
yes	351	86.5
no	55	13.5
Total	**406**	**100.0**

Table 9 shows the frequency and percentage of students participating in internships. The vast majority of students participated in internships. 351 students participated in internships, accounting for 86.5%, while 55 students did not participate, accounting for 13.5%.

Table 10 Number and Percentage of sample groups by weekly internship time

Weekly internship time	Frequency	Percentage
Less than 10 hours	58	14.3
10-20 hours	220	54.2
21-30 hours	98	24.1
31 hours and above	30	7.4
Total	**406**	**100.0**

Table 10 shows the frequency and percentage of the distribution of weekly internship hours. Most students have a moderate internship time. There are 220 students who have an internship of 10-20 hours per week, accounting for 54.2%; 58 students who have less than 10 hours per week, accounting for 14.3%; 98 students who have an internship of 21-30 hours, accounting for 24.1%; and 30 students who have an internship of 31 hours or more per week, accounting for 7.4%.

Table 11 Number and Percentage of sample groups by interest in nursing

Interest in nursing	Frequency	Percentage
Very interested	45	11.1
Somewhat interested	77	19.0
Average	237	58.4
Not interested	47	11.5
Total	**406**	**100.0**

Table 11 shows the frequency and percentage of interest distribution in the nursing major. Most students have average interest. There are 237 students with "average" interest, accounting for 58.4%; 45 students with "very interested" interest, accounting for 11.1%; 77 students with "relatively interested" interest, accounting for 19.0%; and 47 students with "not interested" interest, accounting for 11.5%.

Table 12 Number and Percentage of sample groups by Sleep status

Sleep status	Frequency	Percentage
Average sleep less than 5 hours per night	54	13.3
Average sleep 5-7 hours per night	227	55.9
Average sleep 7-9 hours per night	83	20.4
Average sleep per night is more than 9 hours	42	10.4
Total	**406**	**100.0**

Table 12 shows the frequency and percentage of sleep status distribution. Most students do not get enough sleep. 227 students sleep 5-7 hours per night, accounting for 55.9%; 54 students sleep less than 5 hours, accounting for 13.4%; 83 students sleep 7-9 hours, accounting for 20.4%; 42 students sleep more than 9 hours, accounting for 10.3%.

Table 13 Number and Percentage of sample groups by Exercise frequency

Exercise frequency	Frequency	Percentage
No exercise per week	106	26.1
1-2 times per week	173	42.6
3-4 times per week	86	21.2
5 times per week or more	41	10.1
Total	**406**	**100.0**

Table 13 shows the frequency and percentage of the distribution of exercise frequency. Nearly half of the students have a low exercise frequency. There are 173 students who exercise 1-2 times a week, accounting for 42.6%; 106 students who do not exercise, accounting for 26.1%; 86 students who exercise 3-4 times, accounting for 21.2%; and 41 students who exercise 5 times or more, accounting for 10.1%.

Table 14 Number and Percentage of sample groups by Smoking status

Smoking status	Frequency	Percentage
Never smoke	369	90.9
Occasionally smoke	23	5.7
Regularly smoke	14	3.4
Total	**406**	**100.0**

Table 14 shows the frequency and percentage of smoking status. The vast majority of students do not smoke. There are 369 students who never smoke, accounting for 90.9%; 23 students who occasionally smoke, accounting for 5.7%; and 14 students who regularly smoke, accounting for 3.4%.

Table 15 Number and Percentage of sample groups by Drinking status

Drinking status	Frequency	Percentage
Never drink	250	61.6
Occasionally drink	141	34.7
Regularly drink	15	3.7
Total	**406**	**100.0**

Table 15 shows the frequency and percentage of drinking status. Most students do not drink. There are 250 students who never drink, accounting for 61.6%; 141 students who drink occasionally, accounting for 34.7%; and 15 students who drink regularly, accounting for 3.7%.

Table 16 Number and Percentage of sample groups by social support

Social support	Frequency	Percentage
Feeling of having sufficient social support (family, friends, classmates)	220	54.2
Feeling of average social support	144	35.5
Feeling of lack of social support	42	10.3
Total	**406**	**100.0**

Table 16 shows the frequency and percentage of perceived social support. Most students felt that they had adequate support. 220 students, accounting for 54.2%, felt that they had adequate support; 144 students, accounting for 35.5%, felt that they had average support; and 42 students, accounting for 10.3%, felt that they lacked support.

Table 17 Number and Percentage of sample groups by Personal financial situation.

Personal financial situation	Frequency	Percentage
Feel that the financial situation is good	51	12.6
Feel that the financial situation is average	318	78.3
Feel that the financial situation is not good	37	9.1
Total	**406**	**100.0**

Table 17 shows the frequency and percentage of personal financial status. Most students have average financial status. 318 students, accounting for 78.3%, think their financial status is "average"; 51 students, accounting for 12.6%, think their financial status is "good"; and 37 students, accounting for 9.1%, think their financial status is "not good".

Table 18 Number and Percentage of sample groups by biggest factor affecting.

biggest factor affecting	Frequency	Percentage
Academic pressure	145	35.6
Internship pressure	90	22.2
Interpersonal relationship problems	22	5.4
Family problems	4	1.0
Financial problems	22	5.4
Health problems	6	1.5
Future career planning	104	25.5
Other	14	3.4
Total	**406**	**100.0**

Table 18 shows the frequency and percentage of the main sources of stress, with academic stress accounting for the highest proportion. 145 students, accounting for 35.6%, felt that academic stress was the greatest, 90 students, accounting for 22.2%, stress from internships, 104 students, accounting for 25.5%, and interpersonal relationship problems, accounting for 5.4%.

Part II: Analysis the prevalence of mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Table 19 Descriptive statistics for the DASS-21 subscales (depression, anxiety, and stress)

	n	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
DASS21-Depression Scores	406	8.00	40.0	28.0246	8.12309
DASS21-Anxiety Scores	406	8.00	40.0	27.8473	8.21479
DASS21-Stress Scores	406	4.00	40.0	27.9261	8.33523
n	**406**				

Table 19 shows the descriptive statistics of depression, anxiety, and stress scores in the DASS-21 scale. The mean score for depression was 28.02 (standard deviation 8.12), the mean score for anxiety was 27.85 (standard deviation 8.21), and the mean score for stress was 27.93 (standard deviation 8.34).

Table 20 Frequency distribution of depression levels

	Depression Level	Frequency	Percent
Valid	Normal (≤9 points)	5	1.2
	Mild (10-13 points)	40	9.9
	Moderate (14-20 points)	40	9.9
	Severe (21-27 points)	29	7.1
	Very severe (≥28 points)	292	71.9
	Total	**406**	**100**

Table 20 shows the distribution of depression levels, where 71.9% of students have very severe depression and only 1.2% have normal levels.

Table 21 Frequency distribution of anxiety levels

	Anxiety Level	Frequency	Percent
Valid	Mild（8-9 points）	10	2.5
	Moderate（10-14 points）	46	11.3
	Severe（15-19 points）	17	4.2
	Very severe（≥20 points）	333	82.0
	Total	**406**	**100**

Table 21 shows the distribution of anxiety levels, where 82.0% of students have very severe anxiety. Only 2.5% have mild anxiety.

Table 22 Frequency distribution of stress levels

	Stress Level	Frequency	Percent
Valid	Normal（≤14points）	55	13.5
	Mild （15-18 points）	16	3.9
	Moderate	36	8.9
	Severe (26-33 points)	174	42.9
	Very severe (≥34 points)	125	30.8
	Total	**406**	**100**

Table 22 shows the distribution of stress levels, where 42.9% of students have severe stress and 30.8% have very severe stress. Only 13.5% have normal stress.

Part III Analysis factor associated mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Table 23 Family Income per Month and DASS21-Depression Scores

Correlations	Family Income per Month	
	r	**p- value**
DASS21-Depression Scores	.036	.470

Table 23 shows the correlation between monthly family income and depression scores. Monthly family income is slightly positively correlated with depression scores (r=0.036), but the correlation is not significant (p=0.470).

Table 24 Average Study Time per Week and DASS21-Depression Scores

Correlations	Average Study Time per Week	
	r	**p- value**
DASS21-Depression Scores	-.032	.514

Table 24 shows the correlation between weekly study time and depression scores. There was no significant correlation between weekly study time and depression scores (r=-0.032, p=0. 514).

Table 25 Weekly Internship Time and DASS21-Depression Scores

Correlations	Weekly Internship Time	
	r	**p-value**
DASS21-Depression Scores	.032	.517

Table 25 shows the correlation between weekly internship hours and depression scores. There is no significant correlation between weekly internship hours and depression scores (r=0. 032, p=0. 517).

Table 26 Interest in Nursing Courses and DASS21-Depression Scores

Correlations	Interest in Nursing Courses	
	r	**p-value**
DASS21-Depression Scores	.010	.837

Table 26 shows the correlation between nursing course interest and depression scores. There was no significant correlation between nursing course interest and depression scores (r=0.010, p=0.837).

Table 27 Sleep Status and DASS21-Depression Scores

Correlations	Sleep Status	
	r	**p-value**
DASS21-Depression Scores	.022	.664

Table 27 shows the correlation between sleep status and depression scores. There was no significant correlation between sleep status and depression scores (r=0.022, p=0.664).

Table 28 Exercise Frequency and DASS21-Depression Scores

Correlations	Exercise Frequency	
	r	**p-value**
DASS21-Depression Scores	.109	.028*

Table 28 shows the correlation between exercise frequency and depression score. Exercise frequency and depression score are slightly positively correlated (r=0.109), and the correlation is significant (p=0. 028).

Table 29 Smoking Status and DASS21-Depression Scores

Correlations	Smoking Status	
	r	**p-value**
DASS21-Depression Scores	.000	.996

Table 29 shows the correlation between smoking status and depression scores. There was no significant correlation between smoking status and depression scores (r=0. 000, p=0. 996).

Table 30 Drinking Status and DASS21-Depression Scores

Correlations	Drinking Status	
	r	**p-value**
DASS21-Depression Scores	.060	.231

Table 30 shows the correlation between drinking status and depression scores. There was no significant correlation between drinking status and depression scores (r=0. 060, p=0. 231).

Table 31 Social Support and DASS21-Depression Scores

Correlations	Social Support	
	r	**p-value**
DASS21-Depression Scores	.007	.889

Table 31 shows the correlation between social support and depression scores. There was no significant correlation between social support and depression scores (r=0. 007, p=0. 889).

Table 32 Personal Financial Situation and DASS21-Depression Scores

Correlations	Personal Financial Situation	
	r	**p-value**
DASS21-Depression Scores	.069	.163

Table 32 shows the correlation between personal financial status and depression scores. There is no significant correlation between personal financial status and depression scores (r=0. 069, p=0. 163).

Table 33 Family Income per Month and DASS21-Anxiety Scores

Correlations	Family Income per Month	
	r	**p-value**
DASS21-Anxiety Scores	.077	.122

Table 33 shows the correlation between monthly household income and anxiety scores. Monthly household income and anxiety scores are slightly positively correlated (r=0. 077), and the correlation is significant (p=0. 122).

Table 34 Average Study Time per Week and DASS21-Anxiety Scores

Correlations	Average Study Time per Week	
	r	**p-value**
DASS21-Anxiety Scores	.021	.675

Table 34 shows the correlation between weekly study time and anxiety scores. There is no significant correlation between weekly study time and anxiety scores (r=0. 021, p=0. 675).

Table35 Weekly Internship Time and DASS21-Anxiety Scores

Correlations	Weekly Internship Time	
	r	**p-value**
DASS21-Anxiety Scores	−.005	.912

Table 35 shows the correlation between weekly internship hours and anxiety scores. There is no significant correlation between weekly internship hours and anxiety scores (r=−0.005, p=0. 912).

Table36 Interest in Nursing Courses and DASS21-Anxiety Scores

Correlations	Interest in Nursing Courses	
	r	**p-value**
DASS21-Anxiety Scores	.060	.225

Table 36 shows the correlation between nursing course interest and anxiety scores. There was no significant correlation between nursing course interest and anxiety scores (r=0. 060, p=0. 225).

Table 37 Sleep Status and DASS21-Anxiety Scores

Correlations	Sleep Status	
	r	**p-value**
DASS21-Anxiety Scores	-.003	.954

Table 37 shows the correlation between sleep status and anxiety scores. There was no significant correlation between sleep status and anxiety scores (r=-0.003, p=0. 954).

Table 38 Exercise Frequency and DASS21-Anxiety Scores

Correlations	Exercise Frequency	
	r	**p-value**
DASS21-Anxiety Scores	.113	.023*

Table 38 shows the correlation between exercise frequency and anxiety score. Exercise frequency and anxiety score are slightly positively correlated (r=0. 113), and the correlation is significant (p=0. 023).

Table 39 Smoking Status and DASS21-Anxiety Scores

Correlations	Smoking Status	
	r	**p-value**
DASS21-Anxiety Scores	-.012	.811

Table 39 shows the correlation between smoking status and anxiety scores. There was no significant correlation between smoking status and anxiety scores (r=-0.012, p=0. 811).

Table 40 Drinking Status and DASS21-Anxiety Scores

Correlations	Drinking Status	
	r	**p-value**
DASS21-Anxiety Scores	.050	.316

Table 40 shows the correlation between drinking status and anxiety scores. There was no significant correlation between drinking status and anxiety scores (r=.050, p=.316).

Table 41 Social Support and DASS21-Anxiety Scores

Correlations	Social Support	
	r	**p-value**
DASS21-Anxiety Scores	−.015	.770

Table 41 shows the correlation between social support and anxiety scores. There was no significant correlation between social support and anxiety scores ($r=-0.015$, p=.770).

Table 42 Personal Financial Situation and DASS21-Anxiety Scores

Correlations	Personal Financial Situation	
	r	**p-value**
DASS21-Anxiety Scores	.046	.356

Table 42 shows the correlation between personal financial status and anxiety scores. There is no significant correlation between personal financial status and anxiety scores (r=0. 046, p=0. 356).

Table 43 Family Income per Month and DASS21-Stress Scores

Correlations	Family Income per Month	
	r	**p-value**
DASS21-Stress Scores	.037	.458

Table 43 shows the correlation between monthly household income and stress score. There is no significant correlation between monthly household income and stress score (r=0. 037, p=0. 458).

Table 44 Average Study Time per Week (Excluding Class Time) and DASS21-Stress Scores

Correlations	Average Study Time per Week	
	r	**p-value**
DASS21-Stress Scores	.017	.728

Table 44 shows the correlation between weekly study time and stress score. There is no significant correlation between weekly study time and stress score (r=0. 017, p=0. 728).

Table 45 Weekly Internship Time and DASS21-Stress Scores

Correlations	Weekly Internship Time	
	r	**p-value**
DASS21-Stress Scores	.071	.154

Table 45 shows the correlation between weekly internship hours and stress scores. There is no significant correlation between weekly internship hours and stress scores (r=0. 071, p=0. 154).

Table 46 Interest in Nursing Courses and DASS21-Stress Scores

Correlations	Degree of Interest in Nursing Courses	
	r	**p-value**
DASS21-Stress Scores	.014	.782

Table 46 shows the correlation between nursing course interest and stress scores. There was no significant correlation between nursing course interest and stress scores (r=0. 014, p=0. 782).

Table 47 Sleep status and DASS21-Stress Scores

Correlations	Sleep status	
	r	**p-value**
DASS21-Stress Scores	-.017	.735

Table 47 shows the correlation between sleep status and stress score. There was no significant correlation between sleep status and stress score (r=-0.017, p=0. 735).

Table 48 Exercise Frequency and DASS21-Stress Scores

Correlations	Exercise Frequency	
	r	**p-value**
DASS21-Stress Scores	.064	.201

Table 48 shows the correlation between exercise frequency and stress score. Exercise frequency and stress score are slightly positively correlated (r=0. 064), and the correlation is significant (p=0. 201).

Table 49 Smoking Status and DASS21-Stress Scores

Correlations	Smoking Status	
	r	**p-value**
DASS21-Stress Scores	.018	.725

Table 49 shows the correlation between smoking status and stress score. There was no significant correlation between smoking status and stress score (r=0. 018, p=0. 725).

Table 50 Drinking Status and DASS21-Stress Scores

Correlations	Drinking Status	
	r	**p-value**
DASS21-Stress Scores	.101	.041*

Table 50 shows the correlation between drinking status and stress score. Drinking status and stress score are slightly positively correlated (r=0. 101), and the correlation is significant (p=0. 041).

Table 51 Social Support and DASS21-Stress Scores

Correlations	Social Support	
	r	**p-value**
DASS21-Stress Scores	.030	.545

Table 51 shows the correlation between social support and stress scores. There was no significant correlation between social support and stress scores (r=0. 030, p=0. 545).

Table 52 Personal Financial Situation and DASS21-Stress Scores

Correlations	Personal Financial Situation	
	r	**p-value**
DASS21-Stress Scores	-.008	.865

Table 52 shows the correlation between personal financial status and stress score. There is no significant correlation between personal financial status and stress score (r=-0.008, p=0. 865).

CHAPTER V

DISCUSSION AND CONCLUSION

This study aims to assess the prevalence of mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus. The study population consists of 4773 individuals. The sample size 406 individuals were determined using Taro Yamane's formula, selected through stratified sampling method. The study employed a structured questionnaire as the primary research instrument, comprising the following sections:

Section 1: Personal Factors

Section 2: Analysis the prevalence of mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

Section 3: Analysis factor associated mental health among first- and second-years student nurse at Hainan Vocational University of Science and Technology in Yunlong campus.

The collected data were analyzed using statistical software, employing the Descriptive analysis, Chi-square analysis and Correlation analysis method for data processing. The study findings are structured as follows:

1. Summary of Research Findings

2. Discussion of Results

3. Research limitations

4. Research generalization

5. Research Recommendations

Summary of Research Findings

Part 1: General Information of Respondents

This study took first-year and second-year nursing students at the International Nursing College of Yunlong Campus, Hainan University of Science and Technology as the research subjects, and collected a total of 406 valid questionnaires. Among the respondents, 93.8% (381 people) were female, and 6.2% (25 people) were male; the ages were concentrated between 18-20 years old (54.4%) and 21-23 years old (45.6%); undergraduates accounted for 97.0% (394 people), and junior college students accounted for 3.0% (12 people). Most students lived in dormitories (87.7%), and their monthly family income was concentrated between 5,000 and 10,000 yuan (50.0%). Academic pressure (35.7%) and internship pressure (22.2%) were the main sources of stress.

Part 2: Mental Health Prevalence

The incidence of mental health problems is high: most students have varying degrees of depression, anxiety and stress problems. The average scores for depression, anxiety, and stress were 28.02 (SD=8.12), 27.85 (SD=8.21), and 27.93 (SD=8.34), respectively. In terms of depression (Table 20), a total of 291 students were classified as "extremely severe", accounting for 71.9%; in terms of anxiety (Table 21), there were 333 students with "extremely severe" anxiety, accounting for 82.0%; and in terms of stress (Table 22), 174 students were at the "extremely severe" level, accounting for 30.8%. These findings clearly show that most students face serious mental health problems.

Part 3: Factors Associated with Mental Health

Spearman correlation analysis showed: Exercise frequency was weakly positively correlated with depression scores ($r = 0.109$, $p = 0.028$) and anxiety scores ($r = 0.113$, $p = 0.023$), but not significantly correlated with stress scores ($r = 0.064$, $p = 0.201$). Drinking frequency was weakly positively correlated with stress scores ($r = 0.101$, $p = 0.041$). No significant correlations were found for family monthly income (depression: $r = 0.036$, $p = 0.470$; anxiety: $r = 0.077$, $p = 0.122$; stress: $r = 0.037$, $p = 0.458$), sleep status ($p > 0.05$), smoking status ($p > 0.05$), personal financial status ($p > 0.05$), social support ($p > 0.05$), study time, internship time, and interest in nursing courses ($p > 0.05$).

Variables with $p < 0.05$ were considered significant and thus retained for further discussion.

Discussion of Results

From objective1：The results of this study showed that the rate of extremely severe depression among first- and second- year nursing students at the Yunlong Campus of Hainan University of Science and Technology was 71.9%, the rate of extremely severe anxiety was 82.0%, and the rate of extremely severe stress was 30.8%. This conclusion is obviously opposite to the results of Deng et al. (2021)'s systematic review of higher education students during COVID-19 (34% depression, 32% anxiety, and 30% sleep disorders), but Deng et al. did not focus on the specific stressors of nursing students, especially the impact of clinical internship stress (Deng et al., 2021). This conclusion is also consistent with the moderate to high levels of stress reported by Labrague (2024) among nursing students, but Labrague's umbrella review did not

provide specific prevalence rates of depression and anxiety, especially lacking stratified data for the second-year student group (Labrague, 2024).

From objective2 : The results of this study showed that exercise frequency was slightly positively correlated with depression ($r=0.109$, $p=0.028$) and anxiety ($r=0.113$, $p=0.023$). This conclusion is consistent with the findings of Feyisa et al. (2022) that active coping strategies (such as physical exercise) are positively correlated with higher psychological resilience, but Feyisa et al. did not explore the differential effects of exercise gradients on depression or anxiety, especially did not distinguish between "regular exercise" and "occasional exercise" (Feyisa, Merdassa, & Biru, 2022). This conclusion is contrary to the findings of Biddle and Asare (2011) that physical activity can reduce the risk of depression and anxiety in the general college population, but Biddle and Asare's study did not focus on nursing students under clinical internship stress situations, especially lacking consideration of cultural and educational system differences (Biddle & Asare, 2011).

The results of this study showed that drinking frequency was slightly positively correlated with stress scores ($r=0.101$, $p=0.041$). This conclusion is consistent with the "significant association between drinking behavior and mental health problems" reported by McCloud and Bann (2019) among British higher education students, but McCloud et al. did not conduct a special stratified analysis of nursing students, especially did not distinguish the difference in stress between occasional drinking and regular drinking (McCloud & Bann, 2019). This conclusion is contrary to Santabárbara et al. (2021)'s study on the prevalence of anxiety in community populations during COVID-19, which did not find a direct association between drinking

behavior and stress levels in the general population, especially without focusing on high-risk professional groups (Santabárbara et al., 2021).

The results of this study show that 35.7% of first-year and second-year nursing students ranked academic stress as the biggest influencing factor. This conclusion is consistent with the finding of Karyotaki et al. (2020) in an international college student survey that "academic stress is the most commonly reported major stressor", but Karyotaki et al. did not focus on nursing students, nor did they provide specific proportion data for each stressor, especially lacking stratified analysis of middle and lower grade groups (Karyotaki et al., 2020). However, Hughes, Kenmir, Innis et al. (2020) described the subjective experience of academic stress in a qualitative study of the transition experience of freshman nursing students, but did not quantify its relative weight among all stressors, especially did not distinguish between first-year and second-year nursing students (Hughes et al., 2020).

The results of this study showed that 22.2% of students regarded internship stress as the main stressor. This conclusion is consistent with the study of Chinese nurses by Hou et al. (2021) - the anxiety level of nurses in high-risk positions increased significantly after the first year of clinical practice, but Hou et al. used in-service nurses as the subjects and did not conduct a cross-sectional comparison of the transition group of "internships", especially lacking detailed data divided by academic year (Hou et al., 2021). However, in a qualitative study of nursing freshmen from basic to higher education, Gause, Sehularo, and Matsipane (2024) revealed a variety of coping strategies during the internship process, but did not quantify the ranking and proportion of "internship stress" in the overall stressor, especially did not compare the impact of different internship environments (such as remote versus on-site) (Gause et al., 2024).

The results of this study show that 25.6% of students listed future career planning as the biggest source of stress. This conclusion is consistent with the "uncertainty about future careers can significantly affect student motivation" mentioned by Sangoleye et al. (2023) in the study of nursing undergraduate persistence and academic success. However, Sangoleye et al. focused on the improvement of persistence rate through intervention programs, and did not focus on analyzing the specific proportion and intensity of career planning pressure, especially lacking a quantitative description of students' subjective anxiety level (Sangoleye et al., 2023). However, Twenge, Cooper, Joiner et al. (2019) found in a longitudinal study of American youth groups that "contemporary young people's concerns about career prospects continue to rise", but the research subjects were general youth groups, and no differentiated analysis was conducted on the career characteristics and education system background of nursing students (Twenge et al., 2019).

Research limitations

1. The participants were only first- and second-year nursing students at Hainan Vocational University of Science and Technology, which limits generalizability.

2. The study used a cross-sectional design and cannot determine causality.

3. Most variables were measured using self-reported Likert scales, which may introduce response bias.

4. Although DASS-21 is a validated tool, the analysis lacked multivariate regression, which could further explore complex relationships.

5. Some subgroups (e.g., smokers, high-income students) had very small sample sizes, affecting statistical power.

Research generalization

1. The findings can guide early psychological support services for nursing students in similar university settings.

2. Curriculum planners may use this data to address the academic and career-related concerns of junior students.

3. Results can inform campus-wide initiatives on stress management and mental health promotion.

4. Families and instructors can use these findings to better understand the mental health struggles faced by nursing students.

5. The results offer a basis for improving future student mental health monitoring systems.

Research Recommendations

1. Future research should include intervention studies to test the effects of counseling, mindfulness, or peer support programs.

2. Studies should incorporate longitudinal designs to track mental health trends over academic years.

3. Further research could expand to multiple universities across regions to improve generalizability.

4. Qualitative studies (e.g., interviews or focus groups) can help understand students' lived experiences behind the statistics.

5. Regression and mediation analysis can help identify indirect and moderating effects among influencing factors.

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APPENDIX

Appendix A

Interview forms

Factors Associated with Mental Health of Student Nurses at Hainan Vocational University of Science and Technology, Yunlong Campus

Consent day Date.....Month.....Year.....

I am Mr. / Mrs. / Miss. . . . . .

address.....

Read the details from the information sheet for participants in the research project and I agree to voluntarily participate in the research project.

I have received a copy of the consent form that I signed and dated, along with an information sheet for research participants. This is before signing the consent form to conduct this research. I was explained by the researcher about the purpose of the research. The duration of the research, research methods, dangers or symptoms that may arise from the research. or from the medicine used Including the benefits that will arise from the research and guidelines for treatment by other methods in detail I have had enough time and opportunity to ask questions until I have a good understanding. The researcher answered various questions willingly and without concealment until I was satisfied.

I have the right to terminate my participation in the research project at any time. There is no need to inform the reason. and termination of participation in this research It will not affect treatment or other rights that I will continue to receive. The

researcher guarantees that my personal information will be kept secret. and will be disclosed only with my consent. Other persons on behalf of the research sponsoring company Human Research Ethics Committee the Food and Drug Administration may be permitted to inspect and process my information. This must be done for the purpose of verifying the accuracy of the information only. By agreeing to participate in this study, I am giving consent to have my medical history reviewed.

I have read the above and have a complete understanding of it. Willing to participate in research willingly. Therefore, signed this consent document.

.....Sign the person giving consent.

(.....) Name of person giving consent

Date .....Month.....Year.....

I have explained the purpose of the research, the research methods, dangers or adverse reactions or risks that may arise from the research. or from the medicine used Including the benefits that will arise from thorough research. Let the participants in the research project named above know and have a good understanding. Ready to sign the consent document willingly

.....

Signed by the researcher

(.....)

Name of researcher in detail

Date .....Month……. Year…….

....

Witness signature Witness signature

(.....) (.....)

Name of witness in detail Name of witness in detail

Date .....Month…. Year……. Date .....Month……. Year…….

Hainan University of Science and Technology Nursing Students' Mental Health Survey

Dear Participants

This study aims to investigate the mental health levels of nursing students in Hainan University of Science and Technology.

Your participation is essential to this study. We hope that you can fill in the questionnaire truthfully and in detail. Your valuable opinions and suggestions will help us better understand the current situation and improve the learning and quality of life of nursing students. Participation in this study is voluntary and the information you provide will be kept confidential, which means that your name will not be mentioned anywhere and the information you provide will only be presented in summary form.

Please carefully select the answer and possible answers for each question. Select and check (√) the answer option that best represents your views, knowledge, attitudes and practices. If you have any concerns about a question or other questions, please inform the interviewer.

Hainan University of Science and Technology Nursing Intern Needlestick Injury Incidence and Causes Questionnaire

Part I: Personal Factors

Part II: Mental health Level Test

The researchers are very eager to have your cooperation and thank you very much for this opportunity.

Zhao Runze

Master of Public Health Chiang Rai Rajabhat University

Part I: Personal Factors

Instructions: Please read the following terms carefully and select the answer for each question by ticking（√） the answer option that best represents your answer.

1.Gender

（） 1. Male

（） 2. Female

2. Age

（） 1. Under 18 years old

（） 2. 18-20 years old

（） 3. 21-23 years old

（） 4. Over 23 years old

3.Education level

（） 1. High school

（） 2. College

（） 3. Undergraduate

（） 4. Master's degree

4.Living on dormitory

（） 1. Yes

（） 2. No

5.Family income per mouth

（） 1. ≤2000yuan

（） 2.2000yuan-5000yuan

（） 3.5000yuan-10000yuan

（） 4. ≥10000yuan

6. Average study time per week (excluding class time)

（） 1. Less than 10 hours

（） 2. 10-20 hours

（） 3. 21-30 hours

（） 4. 31 hours and above

7. Participation Add internship

（） 1. Yes

（） 2. No

8. If you participate in internship, the weekly internship time

（） 1. Less than 10 hours

（） 2. 10-20 hours

（） 3. 21-30 hours

（） 4. 31 hours and above

9. Degree of interest in nursing courses

（） 1. Very interested

（） 2. Somewhat interested

（） 3. Average （） 4. Not interested

10. Sleep status

（） 1. Average sleep less than 5 hours per night

（） 2. Average sleep 5-7 hours per night

（） 3. Average sleep 7-9 hours per night

（） 4. Average sleep per night is more than 9 hours

11. Exercise frequency

（） 1. No exercise per week

（） 2. 1-2 times per week

（） 3. 3-4 times per week

（） 4. 5 times per week or more

12. Smoking status

（） 1. Never smoke

（） 2. Occasionally smoke

（） 3. Regularly smoke

13. Drinking status

（） 1. No drink

（） 2. Occasionally drink

（） 3. Regularly drink

14. Social support

（） 1. Feeling of having sufficient social support (family, friends, classmates)

（） 2. Feeling of average social support

（） 3. Feeling of lack of social support

15. Personal financial situation

（） 1. Feel that the financial situation is good

（） 2. Feel that the financial situation is average

（） 3. Feel that the financial situation is not good

16. What do you think is the biggest factor affecting your stress at present?

（）1. Academic pressure

（）2. Internship pressure

（）3. Interpersonal relationship problems (such as classmates, roommates, mentors, etc.)

（）4. Family problems

（）5. Financial problems

（）6. Health problems

（）7. Future career planning

（）8. Other

Part II: DASS-21 (Depression, Anxiety and Stress Scale)

Instructions: Please read each statement and put a check mark (√) under the number 0, 1, 2, or 3 in the table to indicate how much the statement applied to you in the past week. There are no right or wrong answers. Do not spend too much time on any one statement. The rating scale is as follows:

0 does not apply to me at all

1 applies to me to some extent or sometimes

2 applies to me to a great extent or most of the time

3 applies to me very much or most of the time

statement	**(0point)**	**(1point)**	**(2point)**	**(3point)**
I found it hard to wind down				
I was aware of dryness of my mouth				
I couldn't seem to experience any positive feeling at all				
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)				
I found it difficult to work up the initiative to do things				

statement	**(0point)**	**(1point)**	**(2point)**	**(3point)**
I tended to over-react to situations				
I experienced trembling (e.g. in the hands)				
I felt that I was using a lot of nervous energy				
I was worried about situations in which I might panic and make a fool of myself				
I felt that I had nothing to look forward to				
I found myself getting agitated				
I found it difficult to relax				
I felt down-hearted and blue				
I was intolerant of anything that kept me from getting on with what I was doing				
I felt I was close to panic				
I was unable to become enthusiastic about anything				

statement	**(0point)**	**(1point)**	**(2point)**	**(3point)**
I felt I wasn’ t worth much as a person				
I felt that I was rather touchy				
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)				
I felt scared without any good reason				
I felt that life was meaningless				

Appendix B

Validity and Reliability

Reliability analysis

Internal consistency reliability reflects the degree of relevance of the individual questions in the questionnaire. Internal consistency credibility is usually measured with the Cronbach's α coefficient in the spss software. The Cronbach's α values is between0arrive1Between, the larger the α coefficient value is. It indicates that the better the correlation between the questionnaire items, that is, the higher the credibility of its internal consistency. In general, the α coefficient is greater than0.8Represents an excellent internal consistency,0.7~0.8Between indicates better, α coefficient0.6~0.7Is general and acceptable. And below0.6To indicate poor internal consistency, modifying the questionnaire scale was considered.

Overall reliability analysis

Reliability simplified format		
Cronbach Alpha	sample capacity	number of terms
0.959	50	21

According to the reliability coefficient of the population, the reliability coefficient after standardization is0. 959, Show that the overall credibility of the questionnaire is excellent.

Analysis of validity

Validity refers to the consistency of the measurement, the higher the validity; otherwise, the lower the validity. The validity test needs to see the significance of the KMO coefficient and the Bartlett spherical test, where the KMO coefficient ranges from0~1Between, the closer1It means that the better the structure validity of the questionnaire, if the significance of the Bartlett sphere test is less than0.05, We can also consider that the questionnaire has good construct validity.

KMO and Bartlett tests		
Number of KMO sampling suitability quantities		0.874
Bartlett sphericity test	Approximate chi square	859.792
	free degree	210
	conspicuousness	0.000

Validity was verified using the KMO and Bartlett tests, and the coefficient results of the KMO test were0.874, Bartlett test card square value are859.792, conspicuousness =0.000<0.01, Show that the overall validity of the questionnaire is excellent.

Attached: Screenshot of the analysis results

1.Reliability analysis

[Data set1]

Scale: all variables

Case Processing Summary

		N	%
Cases	Valid	50	100.0
	Excluded[a]	0	.0
	Total	50	100.0

a. Listwise deletion based on all variables in the process.

Reliability Statistics

Cronbach's Alpha	N of Items
.959	21

2. Validity analysis

[Data Set1]

KMO and Bartlett’s Test

KMO sampling suitability measure		.874
Bartlett's test of sphericity	Approx. Chi-Square	859.792
	df	210
	Sig.	.000

BIOGRAPHY

Name - Surname Mr. Zhao Runze

Date of birth 18/November 2000

Current address

Shanhuhai Community, Yunlong Town, Haikou City, Hainan Province, China

Educational record

September 2019-June 2023 Hainan Vocational University of Science and Technology

studying

Bachelor's degree

Hainan Vocational University of Science and Technology

Work experience

July 1, 2023 Hainan Vocational University of Science and Technology