e-Bangi Faculty of Social Sciences and Humanities Universiti Kebangsaan Malaysia
Journal of Social Sciences and Humanities

eISSN: 1823-884x

Volume 21, Issue 3, DOI: https://doi.org/10.17576/ebangi.2024.2103.23

Review Paper

A Systematic Review on The Prevalence and Risk Factors of Depression among Chinese Undergraduate Students

Mimi Zhao, Nor Ba`Yah Abdul Kadir* & Muhammad Ajib Abd Razak

Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

*Corresponding Author: p114390@siswa.ukm.edu.my

Received: 09 February 2024
Accepted: 30 July 2024

Abstract: This review focuses on the prevalence of depression and its associated risk factors among Chinese undergraduates, particularly examining the impacts of the COVID-19 pandemic on their mental health. The aim is to deepen the understanding of depression's prevalence and risk factors within this group, providing a robust reference for future studies and interventions. A comprehensive search and review were conducted on 1,198 documents from CNKI, Web of Science, Scopus, and other relevant databases. The selection process involved deduplication, preliminary evaluation, and a thorough full-text review, culminating in 75 documents that adhered to rigorous analytical standards, including the detailed reporting of depression data, the use of standardized depression scale assessments, and focusing on ordinary Chinese undergraduates. The analysis identified 70 risk factors for depression, confirming that the prevalence of depression among these students is influenced by a complex interplay of sociodemographic, psychological, health status, and personal lifestyle factors. The review also highlights several methodological flaws in previous studies, such as simplified research methods and outdated references. The study underscores the need for future research to consider the impact of different cultural backgrounds on depression, to employ longitudinal studies to establish causal relationships, and to use theoretical frameworks to conduct more systematic and detailed analyses. These steps will enhance the understanding and development of effective interventions for improving the mental health of Chinese undergraduates in a post-pandemic context.

Keywords: Depression; Chinese undergraduate students; COVID-19; prevalence; mental health

Introduction

Depression is recognized as a prevalent mental disorder both in China and worldwide, contributing significantly to disability and recurrence rates, and in severe cases, it can detrimentally affect an individual's life (Dwyer et al., 2020; Oyetunji et al., 2023; Santomauro et al., 2021). People suffering from recurrent depression often experience memory or motor dysfunctions, emotional regulation impairment, and cognitive deficits, which can lead to severe disability and a significant economic burden on society (Beurel et al., 2020). The prevalence of depression among Chinese undergraduate students (USs) has increasingly attracted attention, with reports indicating that one in three USs will experience severe symptoms of depression or anxiety that significantly interfere with their everyday life (Akeman et al., 2020). Such symptoms have a substantial negative impact on USs' physical and mental health, and if left untreated, depression can lead to serious functional and developmental consequences and may signal a risk of other illnesses and suicide (X. Liu et al., 2023; Moitra et al., 2021).

Since the outbreak of COVID-19, there have been severe psychopathological effects, with the pandemic significantly accelerating the deterioration of mental health and increasing psychological distress (Çol et al., 2023; Zamberi et al., 2023). Psychoanalysts believe that pandemics affect all areas of people's lives and activate primitive human defences, further complicating mental health challenges (Kwok et al., 2020; O'Reilly, 2023). Moreover, the prevalence of depression is recognized as the fourth-most common mental disorder among adolescents globally, becoming even more prevalent among USs, particularly following the COVID-19 pandemic (Balakrishnan et al., 2022; Dianovinina & Surjaningrum, 2023). This concern is echoed in studies from the University of Washington and the University of Queensland in Australia, which assessed the global influence of COVID-19 on depression and anxiety disorders, estimating that the prevalence of major depressive disorder would increase by 28 percent globally by 2020, with young people and women being especially vulnerable (Pedraz-Petrozzi et al., 2021; Santomauro et al., 2021).

Attention to the mental health challenges faced by Chinese USs has intensified, particularly with a 2020 study reporting a prevalence of 6.3% (95% CI 5.7% to 6.8%) among the entire Chinese sample, and a systematic review indicating an overall prevalence of 28.4% (n = 185,787) with a 95% CI of 25.7% to 31.2% among USs in China (C. Gao et al., 2021; X.-Q. Liu et al., 2022). Despite extensive research, gaps remain, particularly regarding the methodology and recency of the literature cited in previous studies. This study adopts a new perspective, collecting the latest research data to explore the profound impact of COVID-19 on depression among USs, aiming to address these gaps and provide new insights for understanding and managing the prevalence of depression among Chinese USs. The objective of this research is to conclude the risk factors of depression in Chinese USs, and to provide useful references for future research and practice of mental health issues in this population (W. Li et al., 2022; X.-Q. Liu et al., 2022; C. Gao et al., 2021).

Methodology

1. Data Selection

A computer was used to search for the study factors influencing depression in Chinese USs by combining subject words and free words. When searching the Chinese database (CNKI), the keywords "depression" and "student" and "factor" and "China" were combined to search the title, abstract, or literature with this series of keywords. When searching English databases (Pro Quest, Web of Science Core Collection, the Cochrane Library, Wiley Online Library, Scopus), we used the keywords "depress*" and matched "factor "and" Chin*" and "student" to retrieve the title, abstract, or literature with this series of keywords. The search period was from December 1, 2019, to December 21, 2023. Taking Pro Quest Documents as an example, title ("depress*" AND "factor" AND "Chin*" AND "student") OR abstract ("depress*" AND "factor") AND ("Chin*" AND "student") OR main subject ("depress*" AND "factor" AND "Chin*" AND "student"). To be comprehensive, relevant literature found during literature reading and Google Scholar searches are supplemented.

2. Data Analysis

For data analysis, each of the remaining studies was read in full, and relevant data were extracted and catalogued in a structured Excel database. The data extraction focused on capturing comprehensive details such as study demographics, depression assessment methods, and identified risk factors. The qualitative synthesis then involved a thematic analysis, where common themes and patterns were identified across different studies, allowing for a robust synthesis of findings. This methodical approach ensured that the conclusions drawn were based on comprehensive and rigorously analyzed data, providing valuable insights into the factors influencing depression among Chinese undergraduate students.

Findings

1. Literature Screening

In this review, we initially collected 1198 documents from multiple databases such as CNKI, Web of Science, Scopus, Pro Quest, Wiley Online Library, and Cochrane Library. By removing duplicates, we screened 1073 documents for preliminary evaluation. After further screening, the full text of 189 documents was evaluated,

and 75 documents that met the strict screening criteria were finally selected for qualitative synthesis analysis. These standards include that the literature must report depression data in detail, use a depression scale to assess depressive symptoms among college students, the research population is limited to ordinary Chinese undergraduates, the research results focus on factors affecting depression among college students, and the language of the literature is limited to Chinese or English. This process ensured the quality and relevance of the selected literature, providing a solid scientific basis for this review. The literature screening process are shown in Figure 1. After the literatures were eliminated and screened, excel were further used to list the authors, years, risk factors and other information of the 75 literatures that were finally accepted. The literature screening results are shown in Table 1.

The data collection process involved a systematic and comprehensive search of multiple academic databases using a combination of keywords tailored to maximize the retrieval of relevant studies. This approach ensured the inclusion of a wide array of studies, thereby minimizing selection bias. The initial pool of studies was then subjected to a duplicate removal process using both automatic software tools and manual checking to ensure accuracy.

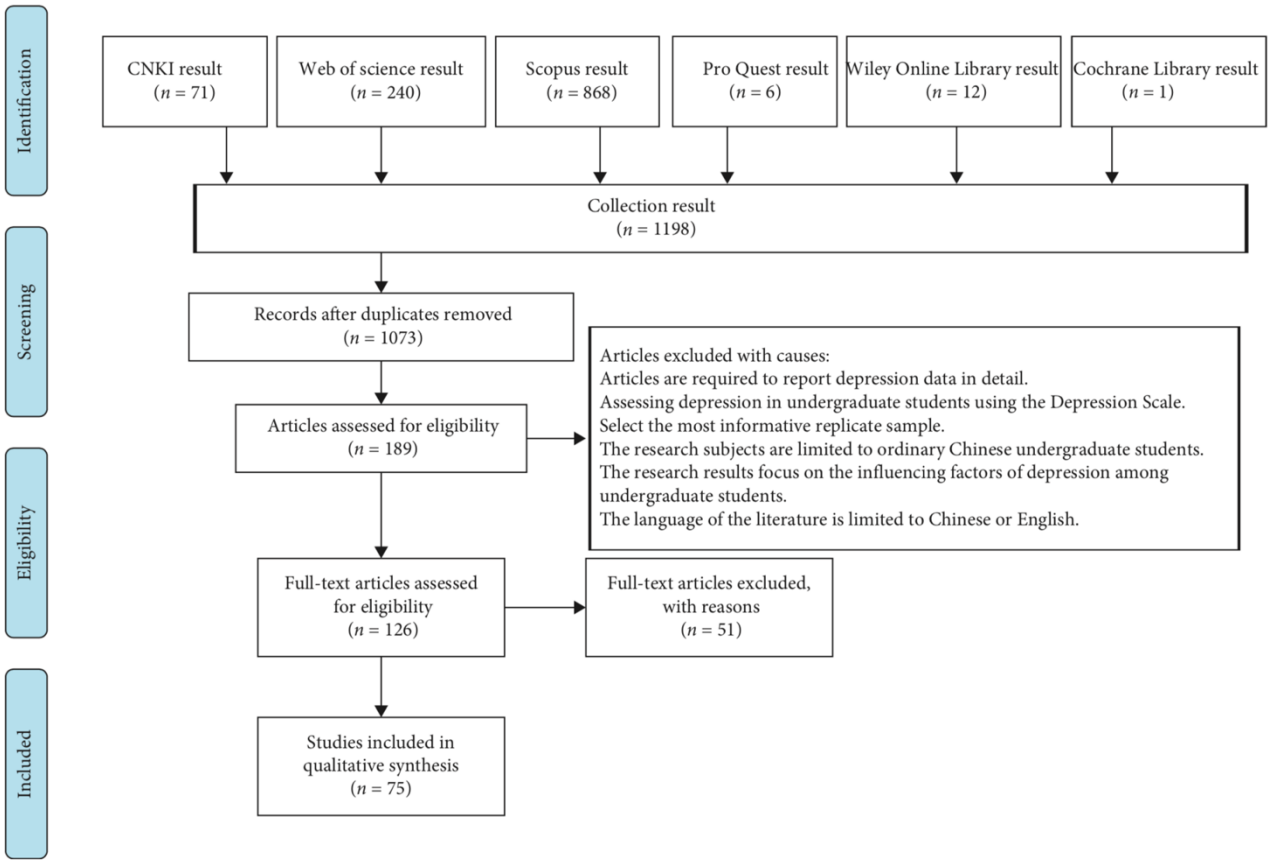

Figure 1. A PRISMA flow diagram of the review and article exclusion process

Table 1. A summary studies examining the prevalence of depression among undergraduates

Author and year	District	Sample Size	Rate of Depression（%）	Instrument	Risk Factors
(X. Yang et al., 2021)		195		20-item CES-D	Boredom, emotionally lonely, socially lonely, and mobile phone addiction
(H. Liu et al., 2021)	Shandong, China	1605		SCL-90	Left-behind experiences

(L. Li et al., 2021)		1635		PHQ-9	Gaming disorder
(Rui et al., 2022)	45 universities	450		Self-Subthreshold Depression Scale (STDS)	Freshmen
(H. Yang et al., 2023)		1602		20-item CES-D	Mobile phone addition
(L. Zhang et al., 2021)	8 universities	881	50.62	PHQ-9	Drinking soda, gender, exercise frequency, overly concerned by mistakes, bad diet, sleep disorder, drinking a lot, static behaviour, pain duration, and sleep on the day
(Qin et al., 2023)	Jiangsu, China	1156		PHQ-9	Low-intensity daily exercise and not being an only-child
(Xiao et al., 2022a)		3951		PHQ-9	Living in urban areas, coming from a financially stable family, and undergoing psychological counselling
(J. Huang & Liu, 2023)		1176		PHQ-9	Living in rural areas , low monthly living expenses
(Guo et al., 2021)	Shanxi, China	1278		DASS-21	Male, low social support
(H. Liu et al., 2020)	2 universities in Hunan	1301		PHQ-9	Experiencing laryngopharyngeal reflux symptoms
(Cheng et al., 2021)	Shandong, China	600	31.2	DASS-21	Having low-levels of mental health knowledge
(H. Yang et al., 2022)		222009		PHQ-9	More food shops near the place of residence that offer takeout, candies, and fast food
(Z. Zhang et al., 2019)	Shenyang, China	3461	20.7	Zung Self-rating Depression Scale (Z-SDS)	Lower standard of living related to oral health
(W. Li et al., 2020)		9515		Z-SDS	Sleep disorder and short sleep duration
(Y. Zhang et al., 2021)	16 cities	11787	25.9	PHQ-9	High screen time and low physical activity
(Meng et al., 2021)		3351	10.5	GAD-7	Married, higher levels of education, non-medical students, urban students

(Q. Zhang et al., 2023)	Several universities in Sichuan Province, China	1105		DASS-21	Experienced abuse during childhood
(Zou et al., 2020)		200		Beck's Depression Inventory (BDI-II)	Being less extraverted, open, or agreeable
(Tang et al., 2021)	Changsha, Hunan, South China	541	29.8	Z-SDS	Woman, lacking social support, poor nutrition, lack of self-actualisation
(J. Wang et al., 2023)	Yunnan Province	1180		20-item CES-D	Lack of cohesion in the family
(Zhu et al., 2019)		10174		Z-SDS	Less frequent breakfast consumption
(W. Gao et al., 2020)	15 universities in China	1892		DASS-21	Male
(J. Shi et al., 2022a)	10 cities	30733		20-item CES-D	LGB and unsure students
(Y. Zhang et al., 2023)	Anqing cities in Anhui Province, China	7623		SDS	Male, maltreated during childhood, problematic mobile phone usage
(J. Wang et al., 2021)	Guangzhou, China	648		BDI-II	Lack of basic psychological needs and low self-control and having helicopter parents
(Lin et al., 2021)		1022		Z-SDS	Low physical test scores
(Song et al., 2020)		235		20-item CES-D	High levels of baseline anxiety, Eysenck Personality Questionnaire-Neuroticism, overly concerned by mistakes, daytime sleepiness, mild not moderate exercise
(Wu et al., 2021)		14769		Z-SDS	Female
(X. Shi et al., 2023)		3827		PHQ-9	Smartphone addiction
(Cui et al., 2021)		1181		PHQ-9	Problematic mobile phone usage and procrastinating going to bed
(Ma et al., 2020)		746 217	21.1	PHQ-9	Low perception of receiving social support, senior student, and having a history of mental health issues.
(H. Wang, Si, et al., 2022)		3641	10.49	DASS-21	Female, medical students

(M. Liu & Lu, 2022)	Western China	973		PHQ9	Mobile phone addiction
(Jing et al., 2021)		17876		Z-SDS	Female, partially introverted, junior college students, affected by the epidemic, feeling at moderate or higher risk of infection, and eager to return to school
(Cheng et al., 2020)	Jinan, Shandong, China	645	22.2	Z-SDS	Only-child
(Y. Yu et al., 2022)		6032		DASS-21	Anxious, senior students, males, higher grades, have parents with low education levels, irrational eating habits, and low physical activity levels
(C. Gao et al., 2021)		1017	45.3	GAD-7	Family income, eating regular meals, frequently consuming breakfast, having a chronic disease, and consuming nocturnal snacks
(M. Yu et al., 2021)		1681	56.8	20-item CES-D	Sleep issues, family members' going out, finding online education more stressful, fearing COVID-19, influenced by social interactions, and having higher grades
(Chi, Becker, et al., 2020)	180 universities	2500	23.3	PHQ-9	Older, have experienced more adverse childhood experiences, severe unsafe attachment, especially anxiety attachment, and low-level resilience
(X. Luo et al., 2022)	Henan Province, China	140259	21.12	PHQ-9	Living in rural areas
(Xu et al., 2021)	30 universities in Wuhan, China	11254	41.5	PHQ-9	Having high levels of stress
(J. Yu et al., 2021)	Wuhan, China	9383	15.8	PHQ-9	Under quarantine observation or treatment, losing family members to coronavirus, rarely or never asked for assist, just little support from others in the past one month, bad relationship with parents, spent long hours on electronic devices that did not include network education, and felt anxious about going back to school

(Z.-H. Wang et al., 2020)	Guangzhou, China	44447	12.2	20-item CES-D	Having confirmed cases of family members or relatives afflicted by coronavirus
(H. Li, Qian, et al., 2023)	Qiqihar city, Heilongjiang Province, China	2152		SDS	Female
(Y. Chen et al., 2022)	Shaanxi province, China	21000		CESD-20	Problematic social media usage
(Zhou et al., 2023)		685		DASS-21	Problematic social media usage
(Yao et al., 2023)		1438		20-item CES-D	Male
(G. Chen et al., 2023)		703		20-item CES-D	Having a habit of ruminating
(Xiang et al., 2020)		1396	41.8	Z-SDS	Insufficient physical activity
(Wei et al., 2021)	3 universities in Nanjing and Xi'an	540		SDS	Maladaptive perfectionism
(Geng et al., 2021)		355		DASS-21	Smartphone addiction
(Ren et al., 2021)	2 colleges in Shandong and Chongqing in China	831		20-item CES-D	Male and feeling lonely
(Hao et al., 2023)		1258		Z-SDS	Female and having body dissatisfaction
(B. Chen et al., 2023)	Anhui Province, China	2033		Z-SDS	Malfunctioning family dynamic
(J. Wang, Liu, et al., 2022)		8079		CIDI 3.0	Having high level of general self-efficacy
(J. Wang, Guan, et al., 2022)	Yunnan Province, China	1164		20-item CES-D	Investing less time in the body

(Y. Luo et al., 2023)		3123		PHQ-9	Low levels of gratitude or psychological capital.
(Y. Wang et al., 2023)		6652		CIDI 3.0	Punishment denial and helicopter parents.
(X. Li et al., 2021)		23206		PHQ-9	Experienced adversities in childhood.
(Tao et al., 2021)	1 university in Hebei Province, China	4189		Z-SDS	Emotional, sexual, physical childhood abuse and neglect.
(Ge et al., 2023)		421		20-item CES-D	Smartphone addiction.
(Q. Li et al., 2021)	60 universities from 10 provinces in China	30374		20-item CES-D	Experienced emotional abuse in childhood.
(L. Liu et al., 2023)		1865		20-item CES-D	Negative perfectionism.
(M. Wang, Li, et al., 2022)		1493		Z-SDS	Low levels of resilience, high neuroticism, and negative attention bias.
(H. Li, Zhao, et al., 2023)	5 universities in Shandong Province	2948		DASS-21	Senior student, medical student, wearing a mask outdoors, practicing standard handwashing, and keeping one meter in queues.
(Mei et al., 2020)		466		Z-SDS	Reduced morning activities, increased night-time activities, failed exams, decreased social activities, and poor dietary habits
(H. Huang et al., 2022)		2108		BDI-II	Having experienced maltreatment in childhood
(Mu et al., 2020)	1 university in Fujian	1128		PHQ-9	Social media addiction and neuroticism
(Z. Liu, 2020)	6 universities in Shanghai	2110	34.9	SDS	Senior, female, not physically active, and not an only-child
(Dong, 2023)	Shenyang, China	1275	36.5	SDS	Poor sleep quality
(X. Huang, 2023)		7527		20-item CES-D	Lacking physical activity and mental health literacy

(Y. Li et al., 2021)	Guangdong, China	68685	PHQ-9	Senior student, having confirmed or suspected COVID-19 cases nearby, and having COVID-19-related concerns
(L. Liu et al., 2021)		8118	PHQ-9	Female, experiencing mental health issues due to the use of psychotropic drugs, have been to or currently undergoing counselling, consuming alcohol, irregular diet, and having negative perceptions and behaviours about COVID-19
(Ding et al., 2023)	Liaoning, China	850	SCL-90	Mobile phone addiction

2. Depression Risk Factors of Chinese Undergraduate Students (USs)

The included studies involved 70 risk factors related to depression in USs, which were mainly divided into 7 aspects. It included sociodemographic factors (10), psychological factors (18), COVID-19-related factors (12), and health-related factors (7), personal lifestyle (6), and other factors (5).

Sociodemographic Factors:

- Grade ("Freshmen “,"senior students ")
- Low monthly living expenses (some said "good family economic levels")
- Married
- Higher education (some said "junior college educational level")
- Non-medical major
- Female (some said "males")
- Only-child (some said "not only-child")
- Low parents’ education
- LGB and unsure USs
- Living in rural areas (some said "urban areas")

Psychological Factors:

i. Boredom

- Rumination
- Perfectionism (maladaptive perfectionism, negative perfectionism)
- Loneliness (emotionally lonely, socially lonely)
- High level of general self-efficacy
- Low levels of gratitude
- Low levels of psychological capital
- Punishment denial
- Parental rearing styles
- Childhood adversities (helicopter parents; left-behind experience; emotional, physical, or sexual abuse; emotionally and physically neglected)
- Low levels of resilience
- Negative attention bias (overly concerned by mistakes, body dissatisfaction)
- Lacking basic psychological needs
- Low levels of self-control

- High levels of baseline anxiety
- Lacking adequate social support
- Character (neurotic; less extraverted)
- Bad family dynamics

COVID-19-related factors:

- Perceived "moderate" or higher risk of infection
- "Moderately" or above affected by the COVID-19
- Willing to go back to college
- Fear of COVID-19
- Higher perceived stress regarding online education
- Influence on social interactions
- COVID-19-related concerns
- People with infection or suspected cases in their residential communities
- Family members' going out
- Family members or friends have died from COVID-19
- Definited COVID-19 cases among family members and relatives
- Been quarantined for observation or treatment

Health-Related Factors:

- Laryngopharyngeal reflux symptoms
- Low standard of living related to oral health
- Prior mental health problems (use of psychotropic drugs, experience of counselling)
- Sleep problems (sleep during the day, bad sleep quality and inadequate sleep duration)
- Chronic disease
- Poor nutrition
- Pain duration

Personal Lifestyle:

- Irrational eating habits (preference for fried food, soda, addiction to drinking, irregular diet, consumption of nocturnal snacks, poor meal habits)
- Low levels of physical activity
- High screen time (gaming disorder, addictive use of social media)
- Sedentary behaviour
- Increased night activities
- Decreased morning activities

Others:

- Helicopter parents
- Failing exams
- Low levels of engagement in social activities (avoiding mealtimes with friends)
- Low level of mental health knowledge
- Living near places with denser fast food and take-away

Discussion

1. Prevalence of Depression among Chinese Undergraduate Students (USs)

In our review, 19 articles reported depression rates, including the minimal quantity of participants which was 600, and the maximum was 746,217. We counted 8,238,954 participants. According to the literature data, the mean prevalence of depression was 21.21% (SD = 4.47%), the lowest prevalence was 10.49%, and the highest prevalence was 56%. These data suggests that pandemic up the rate of depression among USs (K. Lee, 2020).

2. Factors Affecting Depression of Chinese Undergraduate Students (USs)

Through a comprehensive review of sociodemographic, psychological, COVID-19-related, health-related, personal lifestyle, and other factors, this study delves into the impact of these factors on depression among USs and provides a deeper understanding in conjunction with relevant theoretical frameworks.

Sociodemographic Factors

Sociodemographic factors play a key role in depression among USs. The study found that freshmen (Rui et al., 2022), married (Meng et al., 2021), low economic (J. Huang & Liu, 2023; Xiao et al., 2022b), highly educated (Meng et al., 2021), non-medical majors (Meng et al., 2021), female (Hao et al., 2023; Jing et al., 2021; H. Li, Qian, et al., 2023; L. Liu et al., 2021; Z. Liu, 2020; H. Wang, Si, et al., 2022; Wu et al., 2021), only child (Cheng et al., 2020), low parents' education (Cheng et al., 2020), LGB and uncertain status USs (J. Shi et al., 2022b) are aspects more likely to face depression risk. These findings are consistent with the idea of the "quality-stress" model, which suggests that individual qualities may render people more prone to depression under certain environmental stresses (R. Wang et al., 2023).

The study found a link between the school year and depression (Ma et al., 2020; Y. Yu et al., 2022). Perhaps because senior students have greater employment pressure (Shao et al., 2020), especially non-medical USs are more possible to suffer from depression, that may due to factors such as academic pressure and career prospects of non-medical majors (Stornæs, 2023).Meanwhile, freshmen face many challenges, such as academic adaptation and social pressure (Akeman et al., 2020), with attendant challenges associated with developing a new identity (van Herpen et al., 2020).In addition, the cost of living puts financial stress on the involved USs in their daily routine (Jamri & Ishak, 2023) because the acute financial well-being will lead inability to meet basic needs, including housing, food, healthcare, and education (Che Mohamed et al., 2023). This also explains why women ,low parental education are associated with an increased risk of depression, because they tend to be associated with lower economic attainment (Flor et al., 2022). Married USs are more likely to face depression (Meng et al., 2021). This may be related to USs have difficulty balancing academic expectations and marital responsibilities (Fakhari et al., 2020). LGB and uncertain status USs have higher rates of depression may because of minority stress such as stigma, discrimination, and victimization (Le, 2022). In addition, if the family function is poor, the teenager must fully bear the pressure of family conflict, resulting in the only-child teenager is more likely to suffer from depression. However, for non-only children, siblings can buffer the negative effects of family conflicts (Chi, Huang, et al., 2020).

Psychological Factors

Mental health problems are often the result of multifaceted, multi-factor interactions. Studies have found that psychological factors such as boredom (X. Yang et al., 2021), rumination (G. Chen et al., 2023), perfectionism (L. Liu et al., 2023; Wei et al., 2021), loneliness (Ren et al., 2021; X. Yang et al., 2021), and reduced self-efficacy (Tang et al., 2021; J. Wang, Liu, et al., 2022) are closely related to depression. Loneliness can affect an individual's quality of life (Kuczynski et al., 2020), thereby increasing the risk of depression (P. Gao et al., 2023). Boredom and rumination are important variables involved in negative emotions and can easily induce problematic smartphone use, while smartphone dependence can increase depression (Y. Wang, Yang, et al., 2022). Both adaptive and maladaptive perfectionists may have depression when they have narrow health focus (Kozlowska & Kuty-Pachecka, 2022). In addition, school failure is often associated with low self-efficacy, which in turn is related to depression (Cattelino et al., 2021).

Inadequate social support may make these above psychological factors more likely to lead to depression (Guo et al., 2021; Ma et al., 2020; Tang et al., 2021). The stress buffer model of social support theory indicates that social support can reduce the negative impact of stress on mental health. For example, a study showed that during the epidemic, young people are more likely to reduce the incidence of depression by accepting financial support from family or friends, rather than by receiving financial support from the government (Coulaud et al., 2023). Moreover, parental care and warmth in adolescent would promote better emotion regulation (Rosharudin et al., 2023).

COVID-19-Related Factors

COVID-19 is related to mental health of USs (Idris et al., 2023). The link between perceived infection risk and depression suggests that an individual's health concerns may directly affect their psychological state (Jing et al., 2021). The correlation between pandemic exposure and depression further underscores the overall impact of the pandemic on USs' lives (H. Li, Zhao, et al., 2023; M. Yu et al., 2021). The desire to go back school and fear of the pandemic may lead to uncertainty about the future among USs, increasing mental health problems (Jing et al., 2021). In addition, USs faced many challenges during lockdown, such as elevated online academic stress and mental health issues, internet limitations, and poor network connectivity (Phiriepa et al., 2023).

Health-Related Factors

The relationship between physical health problems and depression may be a two-way process. The correlation between sleep problems and depression shows that depressive symptoms may affect sleep quality (W. Li et al., 2020; Z. Liu, 2020). Meanwhile, life quality can decrease because of long-term symptoms of throat reflux and oral health problems (H. Liu et al., 2020), leading worsen symptoms of depression. In addition, bad eating habits and insufficient physical exercise affect nutrition, hormones, metabolism, microbes, and other levels, which can affect individual physical and mental health (Nota et al., 2023; St-Amour et al., 2023). This proves the importance of the interaction between physical and mental health.

Personal Lifestyle

Personal lifestyle factors such as eating habits (L. Zhang et al., 2021; Zhu et al., 2019), physical activity frequency (X. Huang, 2023; Lin et al., 2021; Qin et al., 2023; Xiang et al., 2020), and screen time (Y. Chen et al., 2022; Ge et al., 2023; Geng et al., 2021; L. Li et al., 2021; Mu et al., 2020; H. Yang et al., 2023; Y. Zhang et al., 2021, 2023; Zhou et al., 2023) are also associated with depression in USs. Screen time may be a significant factor because internet and smartphone addiction can exacerbate loneliness (Jiang et al., 2018), and loneliness and depressive symptoms are antecedents of internet addiction (Tian et al., 2023), that is, there is a two-way relationship between loneliness and depressive symptoms (L. Luo et al., 2023). Furthermore, social media addiction is positively associated with online victimisation, which doubles the tendency to develop depression. Social media addiction is associated with depression tendency (M. H. L. Lee et al., 2023). This may be related to USs' family, for example, research has shown that with higher educated parents and richer families, USs are more likely to have healthy lifestyles like more reading and less internet addiction (Manap et al., 2023).

Other Factors

USs' depression is also caused by other factors, such as excessive interference in the family environment (B. Chen et al., 2023), exam failure (Mei et al., 2020), and less participation in social activities (Song et al., 2020). Good family functioning can improve the effect of perceived stress levels on psychopathic experiences in USs (Wu et al., 2021). Poor grades may damage individuals' social media reputations and make students less participate in organised activities (Grossberg & Rice, 2023). In addition, less participation in social activities can lead to social support, higher risk of loneliness, and higher possibility of depression. Because social support is a valuable management mechanism, such as food and housing, to reduce depressive symptoms (Broton et al., 2022). Moreover, research demonstrates that support from family and close friends is important when activities and social opportunities are limited (Nurdiyanto et al., 2023).

3. Limitations

Although this study conducted a comprehensive analysis of the factors affecting USs' depression, there are still some limitations. (1) Due to the limitation of literature, some relevant factors may not have been included in the analysis; (2) due to the inclusion of Chinese and English literature, cultural background may impact the study results; (3) this study mainly focuses on cross-sectional studies, and the interpretation of causality needs to be cautious; (4) there is no difference in the influencing factors of USs with different degrees of depression; and (5) all included studies in China, affecting the generalisability of the results.

Conclusion

Depressive symptoms can affect USs 's physiology, cognition, emotions, and behaviours (Affendi et al., 2021). Thus, through a comprehensive study of depression among Chinese USs, this study explored the influencing aspects: sociodemographic factors, psychological factors, COVID-19-related factors, health-related factors, personal lifestyle and other factors. The study found that these factors interweave with each other, forming a complex network which jointly affects the mental health of USs.

The review is significant for the intervention and prevention of depression in USs. Future mental health intervention and prevention works should comprehensively consider the construction of social support system, education for strengthening mental health, and cultivating individual ability to cope with pressure. For example, at home, positive communication and the promotion of healthy habits can help USs reduce alcohol abuse and lower the incidence of depression (Sasser et al., 2022; Vasquez et al., 2023). In schools, high quality interactions with schools, colleges, teachers, and counsellors in mental health services can prevent adjustment disorders in USs (Alhussain et al., 2023). In addition, carrying out campus support group programs will also benefit students' mental health (Copeland et al., 2021). We hope this study's conclusion can provide a valuable reference for future research and practice regarding USs' mental health. Future studies can further explore the influencing factors considering different cultural backgrounds, conduct more longitudinal studies to verify causality, and conduct more systematic and in-depth analyses using theoretical frameworks.

Acknowledgements: The Centre for Research in Psychology and Human Well-Being in Universiti Kebangsaan Malaysia is acknowledged for their support towards this manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

References

Affendi, N. D. D. A. H., Khalid, N. F., & Baharudin, S. M. (2021). Kesan teknik tazkiyatun an-nafs untuk menangani kemurungan pelajar universiti. *E-Bangi: Journal of Social Sciences & Humanities*, *18*(10). http://ejournal.ukm.my/ebangi/article/view/52722

Akeman, E., Kirlic, N., Clausen, A. N., Cosgrove, K. T., McDermott, T. J., Cromer, L. D., Paulus, M. P., Yeh, H., & Aupperle, R. L. (2020). A pragmatic clinical trial examining the impact of a resilience program on college student mental health. *Depression and Anxiety*, *37*(3), 202–213. https://doi.org/10.1002/da.22969

Alhussain, F. A., Onayq, A. I. B., Ismail, D. H., Alduayj, M. A., Alawbathani, T. A., & Aljaffer, M. A. (2023). Adjustment disorder among first year medical students at King Saud University, Riyadh, Saudi Arabia, in 2020. *Journal of Family and Community Medicine*, *30*(1), 59. https://doi.org/10.4103/jfcm.jfcm_227_22

Balakrishnan, V., Ng, K. S., Kaur, W., Govaichelvan, K., & Lee, Z. L. (2022). COVID-19 depression and its risk factors in Asia Pacific – A systematic review and meta-analysis. *Journal of Affective Disorders*, *298*, 47–56. https://doi.org/10.1016/j.jad.2021.11.048

Beurel, E., Toups, M., & Nemeroff, C. B. (2020). The bidirectional relationship of depression and inflammation: double trouble. *Neuron*, *107*(2), 234–256. https://doi.org/10.1016/j.neuron.2020.06.002

Broton, K. M., Mohebali, M., & Lingo, M. D. (2022). Basic needs insecurity and mental health: community college students' dual challenges and use of social support. *Community College Review*, *50*(4), 456–482. https://doi.org/10.1177/00915521221111460

Cattelino, E., Chirumbolo, A., Baiocco, R., Calandri, E., & Morelli, M. (2021). School achievement and depressive symptoms in adolescence: the role of self-efficacy and peer relationships at school. *Child Psychiatry & Human Development*, *52*(4), 571–578. https://doi.org/10.1007/s10578-020-01043-z

Che Mohamed, C. N., Ahmad Nasharuddin, N. I., Mohamed Yussof, N. A., & Mohd Basir, N. (2023). Malaysian financial well-being during covid-19 pandemic: does income classification make a difference? *E-Bangi Journal of Social Science and Humanities*, *20*(4), Article 4. https://doi.org/10.17576/ebangi.2023.2004.06

Chen, B., Wang, W., & Yang, S. (2023). The impact of family functioning on depression in college students: A moderated mediation model. *Journal of Affective Disorders*, *340*, 448–455. https://doi.org/10.1016/j.jad.2023.08.047

Chen, G., Zhang, G., Yang, Y., Zhang, J., & Hu, Y. (2023). Relationship between negative life events and depressive symptoms for Chinese college students: the mediating role of rumination and moderating role of perceived social support and psychological capital. *Psychology Research and Behavior Management*, *16*, 271–282. https://doi.org/10.2147/PRBM.S395551

Chen, Y., Liu, X., Chiu, D. T., Li, Y., Mi, B., Zhang, Y., Ma, L., & Yan, H. (2022). Problematic social media use and depressive outcomes among college students in China: observational and experimental findings. *International Journal of Environmental Research and Public Health*, *19*(9). https://doi.org/10.3390/ijerph19094937

Cheng, S., An, D., Yao, Z., Liu, J. J.-W., Ning, X., Wong, J. P.-H., Fung, K. P.-L., Vahabi, M., Poon, M. K.-L., Yamada, J., Cheng, S., Gao, J., Cong, X., Sun, G., Li, A. T.-W., Wang, X., & Jia, C. (2021). Association between mental health knowledge level and depressive symptoms among Chinese college students. *International Journal of Environmental Research and Public Health*, *18*(4), 1–10. https://doi.org/10.3390/ijerph18041850

Cheng, S., Jia, C., & Wang, Y. (2020). Only children were associated with anxiety and depressive symptoms among college students in China. *International Journal of Environmental Research and Public Health*, *17*(11), 1–15. https://doi.org/10.3390/ijerph17114035

Chi, X., Becker, B., Yu, Q., Willeit, P., Jiao, C., Huang, L., Hossain, M. M., Grabovac, I., Yeung, A., Lin, J., Veronese, N., Wang, J., Zhou, X., Doig, S. R., Liu, X., Carvalho, A. F., Yang, L., Xiao, T., Zou, L., … Solmi, M. (2020). Prevalence and psychosocial correlates of mental health outcomes among Chinese college students during the coronavirus disease (covid-19) pandemic. *Frontiers in Psychiatry*, *11*. https://doi.org/10.3389/fpsyt.2020.00803

Chi, X., Huang, L., Wang, J., & Zhang, P. (2020). The prevalence and socio-demographic correlates of depressive symptoms in early adolescents in China: differences in only child and non-only child groups. *International Journal of Environmental Research and Public Health*, *17*(2), Article 2. https://doi.org/10.3390/ijerph17020438

Çol, B. K., Başaran, A. G., & Pekmezci, H. (2023). COVID-19 pandemic: Evaluating its psychological impact and individuals' depression, anxiety, and stress levels. *AIMS Public Health*, *10*(3), 507–523. https://doi.org/10.3934/publichealth.2023036

Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., Rettew, J., & Hudziak, J. J. (2021). Impact of COVID-19 Pandemic on College Student Mental Health and Wellness. *Journal of the American Academy of Child & Adolescent Psychiatry*, *60*(1), 134-141.e2. https://doi.org/10.1016/j.jaac.2020.08.466

Coulaud, P., Salway, T., Jesson, J., Bolduc, N., Ferlatte, O., Bertrand, K., Desgrées Du Loû, A., Jenkins, E., Jauffret-Roustide, M., & Knight, R. (2023). Moderation of the association between COVID-19-related income loss and depression by receipt of financial support: Repeated cross-sectional surveys of young adults in Canada and France (2020–2021). *SSM - Population Health*, *21*, 101340. https://doi.org/10.1016/j.ssmph.2023.101340

Cui, G., Yin, Y., Li, S., Chen, L., Liu, X., Tang, K., & Li, Y. (2021). Longitudinal relationships among problematic mobile phone use, bedtime procrastination, sleep quality and depressive symptoms in Chinese college students: A cross-lagged panel analysis. *BMC Psychiatry*, *21*(1). https://doi.org/10.1186/s12888-021-03451-4

Dianovinina, K., & Surjaningrum, E. R. (2023). Psychosocial factors related to adolescent depressive symptom: Systematic literature review. *International Journal of Public Health Science*, *12*(1), 417–426. https://doi.org/10.11591/ijphs.v12i1.22413

Ding, X., Jin, X., Tang, Y.-Y., & Yang, Z. (2023). Associations between mobile phone addiction and depressive symptoms in college students: A conditional process model. *Annales Médico-Psychologiques, Revue Psychiatrique*, S0003448723002809. https://doi.org/10.1016/j.amp.2023.09.012

Dong, X. (2023). *Analysis on the Factors of Depression in College Freshmen—CNKI*. http://www.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFDTEMP&filename=1023624957.nh&uniplatform=OVERSEA&v=o69egYUoZ6NwjHG83GQ0lySv3GKrhFikyUYPfim8oVSrftCqyfWzPyIZ910IoaJr

Dwyer, J. B., Aftab, A., Radhakrishnan, R., Widge, A., Rodriguez, C. I., Carpenter, L. L., Nemeroff, C. B., McDonald, W. M., Kalin, N. H., & APA Council of Research Task Force on Novel Biomarkers and Treatments. (2020). Hormonal treatments for major depressive disorder: state of the art. *American Journal of Psychiatry*, *177*(8), 686–705. https://doi.org/10.1176/appi.ajp.2020.19080848

Fakhari, A., Farahbakhsh, M., Azizi, H., Esmaeili, E. D., Mirzapour, M., Rahimi, V. A., Hashemi, L., & Gaffarifam, S. (2020). Early marriage and negative life events affect on depression in young adults and adolescents. *Archives of Iranian Medicine*, *23*(2), Article 2. https://journalaim.com/Article/aim-7990

Flor, L. S., Friedman, J., Spencer, C. N., Cagney, J., Arrieta, A., Herbert, M. E., Stein, C., Mullany, E. C., Hon, J., Patwardhan, V., Barber, R. M., Collins, J. K., Hay, S. I., Lim, S. S., Lozano, R., Mokdad, A. H., Murray, C. J. L., Reiner, R. C., Sorensen, R. J. D., … Gakidou, E. (2022). Quantifying the effects of the COVID-19 pandemic on gender equality on health, social, and economic indicators: A comprehensive review of data from March, 2020, to September, 2021. *The Lancet*, *399*(10344), 2381–2397. https://doi.org/10.1016/S0140-6736(22)00008-3

Gao, C., Sun, Y., Zhang, F., Zhou, F., Dong, C., Ke, Z., Wang, Q., Yang, Y., & Sun, H. (2021). Prevalence and correlates of lifestyle behavior, anxiety and depression in Chinese college freshman: A cross-sectional survey. *International Journal of Nursing Sciences*, *8*(3), 347–353. https://doi.org/10.1016/j.ijnss.2021.05.013

Gao, P., Mosazadeh, H., & Nazari, N. (2023). The Buffering Role of Self-compassion in the Association Between Loneliness with Depressive Symptoms: A Cross-Sectional Survey Study Among Older Adults Living in Residential Care Homes During COVID-19. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-023-01014-0

Gao, W., Ping, S., & Liu, X. (2020). Gender differences in depression, anxiety, and stress among college students: A longitudinal study from China. *Journal of Affective Disorders*, *263*, 292–300. https://doi.org/10.1016/j.jad.2019.11.121

Ge, J., Liu, Y., Cao, W., & Zhou, S. (2023). The relationship between anxiety and depression with smartphone addiction among college students: The mediating effect of executive dysfunction. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1033304

Geng, Y., Gu, J., Wang, J., & Zhang, R. (2021). Smartphone addiction and depression, anxiety: The role of bedtime procrastination and self-control. *Journal of Affective Disorders*, *293*, 415–421. https://doi.org/10.1016/j.jad.2021.06.062

Grossberg, A., & Rice, T. (2023). Depression and suicidal behavior in adolescents. *Medical Clinics of North America*, *107*(1), 169–182. https://doi.org/10.1016/j.mcna.2022.04.005

Guo, K., Zhang, X., Bai, S., Minhat, H. S., Nazan, A. I. N. M., Feng, J., Li, X., Luo, G., Zhang, X., Feng, J., Li, Y., Si, M., Qiao, Y., Ouyang, J., & Saliluddin, S. (2021). Assessing social support impact on depression, anxiety, and stress among undergraduate students in Shaanxi province during the COVID-19 pandemic of China. *PLoS ONE*, *16*(July). https://doi.org/10.1371/journal.pone.0253891

Hao, M., Liu, X., Wang, Y., Wu, Q., Yan, W., & Hao, Y. (2023). The associations between body dissatisfaction, exercise intensity, sleep quality, and depression in university students in southern China. *Frontiers in Psychiatry*, *14*, 1118855. https://doi.org/10.3389/fpsyt.2023.1118855

Huang, H., Song, Q., Chen, J., Zeng, Y., Wang, W., Jiao, B., Lin, J., Li, Y., Zhang, R., Ma, L., Pan, H., & Shi, Y. (2022). The role of qi-stagnation constitution and emotion regulation in the association between

childhood maltreatment and depression in Chinese college students. *Frontiers in Psychiatry*, *13*. https://doi.org/10.3389/fpsyt.2022.825198

Huang, J., & Liu, X. (2023). Anxiety, depression, and their comorbidity among Chinese college students during the COVID-19 lockdown in the post-epidemic era: An online cross-sectional survey. *BMC Psychiatry*, *23*(1), 923. https://doi.org/10.1186/s12888-023-05442-z

Huang, X. (2023). *Association of Mental Health Literacy and Physical Activity with Symptoms of Depressive and Anxiety in College Students*.

Idris, M. F., Saini, S. M., Sharip, S., Idris, N. F., & Ab Aziz, N. F. (2023). Association between the Internet Gaming Disorder and Anxiety and Depression among University Students during COVID-19 Pandemic. *Healthcare*, *11*(8), 1103. https://doi.org/10.3390/healthcare11081103

Jamri, A. A., & Ishak, S. (2023). Tekanan kewangan dan pengurusan tekanan kewangan dalam kalangan pelajar institusi pengajian tinggi berasaskan status sosioekonomi. *E-Bangi Journal of Social Science and Humanities*, *20*(4), Article 4. https://doi.org/10.17576/ebangi.2023.2004.14

Jiang, Q., Li, Y., & Shypenka, V. (2018). Loneliness, individualism, and smartphone addiction among international students in China. *Cyberpsychology, Behavior, and Social Networking*, *21*(11), 711–718. https://doi.org/10.1089/cyber.2018.0115

Jing, Y., Han, W., Wang, Y., Zhang, J., Qin, W., Jing, X., Niu, A., & Xu, L. (2021). Network-based online survey exploring self-reported depression among university and college students during the early days of the covid-19 outbreak. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.658388

Kozlowska, M., & Kuty-Pachecka, M. (2022). When perfectionists adopt health behaviors: Perfectionism and self-efficacy as determinants of health behavior, anxiety and depression. *Current Issues in Personality Psychology*. https://doi.org/10.5114/cipp/156145

Kuczynski, A. M., Kanter, J. W., & Robinaugh, D. J. (2020). Differential associations between interpersonal variables and quality-of-life in a sample of college students. *Quality of Life Research*, *29*(1), 127–139. https://doi.org/10.1007/s11136-019-02298-3

Kwok, S. Y. C. L., Gu, M., Synchaisuksawat, P., & Wong, W. W. K. (2020). The relationship between parent-child triangulation and early adolescent depression in Hong Kong: The mediating roles of self-acceptance, positive relations and personal growth. *Children and Youth Services Review*, *109*. https://doi.org/10.1016/j.childyouth.2019.104676

Le, M. K. (2022). *A LITERATURE REVIEW OF THE INTERSECTION OF COMMUNITY CONNECTEDNESS AND DEPRESSION FOR LESBIAN, GAY, AND BISEXUAL PEOPLE*. https://repository.arizona.edu/handle/10150/665813

Lee, K. (2020). A relationship between the social support, emotional intelligence, depression, and health promotion behaviors of nursing college students. *Journal of The Korean Society of Integrative Medicine*, *8*(4), 231–239. https://doi.org/10.15268/KSIM.2020.8.4.231

Lee, M. H. L., Kaur, M., Shaker, V., Yee, A., Sham, R., & Siau, C. S. (2023). Cyberbullying, social media addiction and associations with depression, anxiety, and stress among medical students in malaysia. *International Journal of Environmental Research and Public Health*, *20*(4), 3136. https://doi.org/10.3390/ijerph20043136

Li, H., Qian, X., Gong, J., Dong, H., Chai, X., Chao, H., & Yang, X. (2023). Previous school bullying-associated depression in Chinese college students: the mediation of personality. *Behavioral Sciences*, *13*(1). https://doi.org/10.3390/bs13010014

Li, H., Zhao, J., Chen, R., Liu, H., Xu, X., Xu, J., Jiang, X., Pang, M., Wang, J., Li, S., Hou, J., & Kong, F. (2023). The relationships of preventive behaviors and psychological resilience with depression, anxiety, and stress among university students during the COVID-19 pandemic: A two-wave longitudinal study in Shandong Province, China. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1078744

Li, L., Niu, Z., Griffiths, M. D., Wang, W., Chang, C., & Mei, S. (2021). A network perspective on the relationship between gaming disorder, depression, alexithymia, boredom, and loneliness among a sample of Chinese university students. *Technology in Society*, *67*. https://doi.org/10.1016/j.techsoc.2021.101740

Li, Q., Guo, L., Zhang, S., Wang, W., Li, W., Chen, X., Shi, J., Lu, C., & McIntyre, R. S. (2021). The relationship between childhood emotional abuse and depressive symptoms among Chinese college

students: The multiple mediating effects of emotional and behavioral problems. *Journal of Affective Disorders*, *288*, 129–135. https://doi.org/10.1016/j.jad.2021.03.074

Li, W., Cai, X., Cheng, X., & Wang, Y. (2020). Association between sleep duration and quality and depressive symptoms among university students: A cross-sectional study. *PLoS ONE*, *15*(9 September). https://doi.org/10.1371/journal.pone.0238811

Li, X., Guo, W., Tang, W., Lv, Q., Zhang, Y., Yu, H., Wang, Q., Deng, W., Zhao, L., Ma, X., Meng, Y., Li, M., Wang, H., Chen, T., Liu, Y.-S., Tang, Z., Du, X.-D., Greenshaw, A. J., & Li, T. (2021). The interactions between childhood adversities and recent stress were associated with early-adulthood depression among Chinese undergraduate students. *Depression and Anxiety*, *38*(9), 961–971. https://doi.org/10.1002/da.23201

Li, Y., Zhao, J., & Ma, Z. (2021). Trajectories of depressive symptom and anxiety of college students in China during the covid-19 pandemic:a 16 month follow up study. *Summary of the 23rd National Conference on Psychology (Part 1)*, 2.

Lin, Z., Zhang, X., Chen, L., Feng, D., Liu, N., & Chen, Z. (2021). Impact of middle- and long-distance running on mental health in college students in Guangzhou during COVID-19 outbreak. *Nan fang yi ke da xue xue bao = Journal of Southern Medical University*, *41*(12), 1864–1869. https://doi.org/10.12122/j.issn.1673-4254.2021.12.16

Liu, H., Yang, Q., Luo, J., Ouyang, Y., Sun, M., Xi, Y., Yong, C., Xiang, C., & Lin, Q. (2020). Association between emotional eating, depressive symptoms and laryngopharyngeal reflux symptoms in college students: A cross-sectional study in hunan. *Nutrients*, *12*(6). https://doi.org/10.3390/nu12061595

Liu, H., Zhou, Z., Fan, X., Luo, H., Wang, D., Wang, J., Shen, C., & Nawaz, R. (2021). A mixed method study to examine the mental health problems of college students who had left-behind experiences. *Journal of Affective Disorders*, *292*, 149–160. https://doi.org/10.1016/j.jad.2021.04.087

Liu, L., Han, Y., Lu, Z., Cao, C., & Wang, W. (2023). The relationship between perfectionism and depressive symptoms among Chinese college students: The mediating roles of self-compassion and impostor syndrome. *Current Psychology*, *42*(22), 18823–18831. Https://doi.org/10.1007/s12144-022-03036-8

Liu, l., liang, s., & peng, x. (2021). Trajectories of depressive symptom and anxiety of college students in China during the covid-19 pandemic:a 16 month follow up study. Summary of the 23rd National Conference on Psychology (Part 1), 2.

Liu, M., & Lu, C. (2022). Mobile phone addiction and depressive symptoms among Chinese University students: The mediating role of sleep disturbances and the moderating role of gender. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.965135

Liu, X., Feng, Z., Galling, B., Qi, N., Zhu, X.-Q., Xiao, L., & Wang, G. (2023). Gender specific sexual dysfunction in patients with depression. *Frontiers in Psychiatry*, *14*. https://doi.org/10.3389/fpsyt.2023.1194228

Liu, X.-Q., Guo, Y.-X., Zhang, W.-J., & Gao, W.-J. (2022). Influencing factors, prediction and prevention of depression in college students: A literature review. *World Journal of Psychiatry*, *12*(7), 860–873. https://doi.org/10.5498/wjp.v12.i7.860

Liu, Z. (2020). *The Effects of Physical Exercise on Sleep Quality, Anxiety and Depression of College Students*.

Luo, L., Zhang, Y., Huang, T., Zhou, F., Xiong, C., Liu, Y., Zhai, P., Wang, G., Tan, J., Jiao, C., Chen, X., Yu, J., Qiao, Y., Ren, S., Hu, X., Zhan, J., & Cheng, J. (2023). A description of the current status of chronic fatigue syndrome and associated factors among university students in Wuhan, China. *Frontiers in Psychiatry*, *13*, 1047014. https://doi.org/10.3389/fpsyt.2022.1047014

Luo, X., Xu, Q., Fan, K., Wang, J., Wei, D., Wang, X., Lou, X., Lin, H., Wang, C., Wu, C., & Mao, Z. (2022). Prevalence and risk factors of depressive symptoms among 140,259 college students during the COVID-19 epidemic normalization in China: A cross-sectional survey. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.936700

Luo, Y., Deng, Y., Ma, T., & Jiang, Y. (2023). The influence of gratitude on depressive symptoms among Chinese college students during the COVID-19 pandemic: The moderating effect of psychological capital. *Psychology in the Schools*, *60*(7), 2447–2459. https://doi.org/10.1002/pits.22867

Ma, Z., Zhao, J., Li, Y., Chen, D., Wang, T., Zhang, Z., Chen, Z., Yu, Q., Jiang, J., Fan, F., & Liu, X. (2020). Mental health problems and correlates among 746 217 college students during the coronavirus disease 2019 outbreak in China. *Epidemiology and Psychiatric Sciences*. https://doi.org/10.1017/S2045796020000931

Manap, J., Saim, N. J., Che Kasim, A., Sarnon, N. H., Tambi, N., Amin, A. S., Hamjah, S. H., & Nen, S. (2023). Faktor yang mempengaruhi gaya hidup sihat remaja generasi z di malaysia. *E-Bangi Journal of Social Science and Humanities*, *20*(1), Article 1. https://doi.org/10.17576/ebangi.2023.2001.21

Mei, G., Xu, W., Li, L., Zhao, Z., Li, H., Liu, W., & Jiao, Y. (2020). The Role of Campus Data in Representing Depression Among College Students: Exploratory Research. *JMIR Mental Health*, *7*(1), e12503. https://doi.org/10.2196/12503

Meng, N., Liu, Z., Wang, Y., Feng, Y., Liu, Q., Huang, J., & Li, X. (2021). Beyond sociodemographic and COVID-19- related factors: The association between the need for psychological and information support from school and anxiety and depression. *Medical Science Monitor*, *27*. https://doi.org/10.12659/MSM.929280

Moitra, M., Santomauro, D., Degenhardt, L., Collins, P. Y., Whiteford, H., Vos, T., & Ferrari, A. (2021). Estimating the risk of suicide associated with mental disorders: A systematic review and meta-regression analysis. *Journal of Psychiatric Research*, *137*, 242–249. https://doi.org/10.1016/j.jpsychires.2021.02.053

Mu, W., Zhu, D., Wang, Y., Li, F., Ye, L., Wang, K., & Zhou, M. (2020). Three-wave longitudinal survey on the relationship between neuroticism and depressive symptoms of first-year college students: Addictive use of social media as a moderated mediator. *International Journal of Environmental Research and Public Health*, *17*(17), 1–13. https://doi.org/10.3390/ijerph17176074

Nota, M. H. C., Nicolas, S., O'Leary, O. F., & Nolan, Y. M. (2023). Outrunning a bad diet: Interactions between exercise and a Western-style diet for adolescent mental health, metabolism and microbes. *Neuroscience & Biobehavioral Reviews*, *149*, 105147. https://doi.org/10.1016/j.neubiorev.2023.105147

Nurdiyanto, F. A., Goszal, I. M. P., & Harjanti, E. P. (2023). University students' barriers to managing mental health during the COVID-19 pandemic: A qualitative exploration. *Humanitas: Indonesian Psychological Journal*, 136–148. https://doi.org/10.26555/humanitas.v20i2.341

O'Reilly, J. (2023). Fear, loss and disconnection: The emotional impact of the Covid-19 pandemic upon staff working in mental health services and how the organization can help – a psychoanalytic perspective. *The International Journal of Psychoanalysis*, *104*(4), 628–656. https://doi.org/10.1080/00207578.2023.2221717

Oyetunji, A., Huelga, C., Bunte, K., Tao, R., & Bellman, V. (2023). Use of ketamine for depression and suicidality in cancer and terminal patients: Review of current data. *AIMS Public Health*, *10*(3), 610–626. https://doi.org/10.3934/publichealth.2023043

Pedraz-Petrozzi, B., Krüger-Malpartida, H., Arevalo-Flores, M., Salmavides-Cuba, F., Anculle-Arauco, V., & Dancuart-Mendoza, M. (2021). Emotional impact on health personnel, medical students, and general population samples during the covid-19 pandemic in Lima, Peru. *Revista Colombiana De Psiquiatria (English Ed.)*, *50*(3), 189–198. https://doi.org/10.1016/j.rcpeng.2021.04.002

Phiriepa, A., Mapaling, C., Matlakala, F. K., & Tsabedze, W. (2023). Covid-19 and online learning: a scoping review of the challenges faced by students in higher institutions during lockdown. *E-Bangi Journal of Social Science and Humanities*, *20*(4), Article 4. https://doi.org/10.17576/ebangi.2023.2004.23

Qin, B., Hu, Z., Liu, W., Sun, Y., Wang, Y., Zhang, H., Yang, F., & He, Y. (2023). Anxiety and depression among college students during the covid-19 lockdown: a cross-sectional survey in Jiangsu, China. *Risk Management and Healthcare Policy*, *Volume 16*, 711–723. https://doi.org/10.2147/RMHP.S404478

Ren, L., Han, X., Li, D., Hu, F., Mo, B., & Liu, J. (2021). The association between loneliness and depression among Chinese college students: Affinity for aloneness and gender as moderators. *European Journal of Developmental Psychology*, *18*(3), 382–395. https://doi.org/10.1080/17405629.2020.1789861

Rosharudin, N. A., Mohd Hoesni, S., Muhammad, N. A., & Mohd Ali, M. (2023). The effects of parental care and autonomy on adolescents' emotion dysregulation in Peninsular Malaysia. *E-Bangi Journal of Social Science and Humanities*, *20*(3), Article 3. https://doi.org/10.17576/ebangi.2023.2003.19

Rui, Z., Wentao, L., Nan, W., & Jiahui, J. (2022). A study on the status quo and influencing factors of subthreshold depression of students in comprehensive universities. *Chinese Journal of Practical Nursing*, *38*(1), 67–72. https://doi.org/10.3760/cma.j.cn211501-20210311-00720

Santomauro, D. F., Mantilla Herrera, A. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., Abbafati, C., Adolph, C., Amlag, J. O., Aravkin, A. Y., Bang-Jensen, B. L., Bertolacci, G. J., Bloom, S. S., Castellano, R., Castro, E., Chakrabarti, S., Chattopadhyay, J., Cogen, R. M., Collins, J. K., … Ferrari, A. J. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, *398*(10312), 1700–1712. https://doi.org/10.1016/S0140-6736(21)02143-7

Sasser, J., Waddell, J. T., & Doane, L. D. (2022). Family dynamics and adjustment across Latino/a students' transition to college: Disentangling within- and between-person reciprocal associations. *Developmental Psychology*. https://doi.org/10.1037/dev0001474

Shao, R., He, P., Ling, B., Tan, L., Xu, L., Hou, Y., Kong, L., & Yang, Y. (2020). Prevalence of depression and anxiety and correlations between depression, anxiety, family functioning, social support and coping styles among Chinese medical students. *BMC Psychology*, *8*(1), 38. https://doi.org/10.1186/s40359-020-00402-8

Shi, J., Dewaele, A., Lai, W., Lin, Z., Chen, X., Li, Q., Wang, H., Guo, L., Lu, C., & Zhang, W. (2022a). Gender differences in the association of sexual orientation with depressive symptoms: A national cross-sectional study among Chinese college students. *Journal of Affective Disorders*, *302*, 1–6. https://doi.org/10.1016/j.jad.2022.01.072

Shi, X., Wang, A., & Zhu, Y. (2023). Longitudinal associations among smartphone addiction, loneliness, and depressive symptoms in college students: Disentangling between– And within–person associations. *Addictive Behaviors*, *142*, 107676. https://doi.org/10.1016/j.addbeh.2023.107676

Song, Y., Liu, Z., Chen, H., Guo, Q., & Huang, Y. (2020). Incidence and risk factors of depressive symptoms in Chinese college students. *Neuropsychiatric Disease and Treatment*, *16*, 2449–2457. https://doi.org/10.2147/NDT.S264775

St-Amour, S., Bérubé, F., Cailhol, L., & Le Corff, C. (2023). Are physical activity and nutrition linked to personality disorders? Health habits and personality disorders: A scoping review. *Personality and Mental Health*, *17*(2), 147–156. https://doi.org/10.1002/pmh.1568

Stornæs, A. V. (2023). *Too perfect to be healthy?: A quantitative and qualitative study of perfectionism, expectations, and mental health among students aged 13-16 in specialized sports, performing arts and regular lower secondary school* [Doctoral thesis]. https://nih.brage.unit.no/nih-xmlui/handle/11250/3096752

Tang, Z., Feng, S., & Lin, J. (2021). Depression and its correlation with social support and health-promoting lifestyles among Chinese university students: A cross-sectional study. *BMJ Open*, *11*(7). https://doi.org/10.1136/bmjopen-2020-044236

Tao, J., He, K., & Xu, J. (2021). The mediating effect of self-compassion on the relationship between childhood maltreatment and depression. *Journal of Affective Disorders*, *291*, 288–293. https://doi.org/10.1016/j.jad.2021.05.019

Tian, L., Huang, J., & Huebner, E. S. (2023). Profiles and transitions of cyberbullying perpetration and victimization from childhood to early adolescence: multi-contextual risk and protective factors. *Journal of Youth and Adolescence*, *52*(2), 434–448. https://doi.org/10.1007/s10964-022-01633-1

van Herpen, S. G. A., Meeuwisse, M., Hofman, W. H. A., & Severiens, S. E. (2020). A head start in higher education: The effect of a transition intervention on interaction, sense of belonging, and academic performance. *Studies in Higher Education*, *45*(4), 862–877. https://doi.org/10.1080/03075079.2019.1572088

Vasquez, M. A. A., Salgado, A. V. M., Moreano, C. M. R., Barrientos, L. M. P., & Infanson, R. E. P. (2023). Behavioral changes in students due to the pandemic. *HIV Nursing*, *23*(1), 1095–1102. https://hivnursing.net/index.php/hiv/article/view/1267

Wang, H., Si, M., Su, X., Huang, Y., Xiao, W., Wang, W., Gu, X., Ma, L., Li, J., Zhang, S., Ren, Z., & Qiao, Y. (2022). Mental Health Status and Its Influencing Factors among College Students during the Epidemic

of Coronavirus Disease 2019: A Multi-center Cross-sectional Study. *Acta Academiae Medicinae Sinicae*, *44*(1), 30–39. https://doi.org/10.3881/j.issn.1000-503X.14144

Wang, J., Guan, X., Yin, S., Shen, S., Li, X., Ahmed, M. Z., Jobe, M. C., & Ahmed, O. (2022). The influence of body investment on depression in Chinese college students: a moderated mediating effect. *International Journal of Mental Health Promotion*, *24*(1), 39–50. https://doi.org/10.32604/ijmhp.2022.019635

Wang, J., Guan, X., Zhang, Y., Li, Y., Ahmed, M. Z., Jobe, M. C., & Ahmed, O. (2023). Effect of family cohesion on depression of Chinese college students in the covid-19 pandemic: chain mediation effect of perceived social support and intentional self-regulation. *International Journal of Mental Health Promotion*, *25*(2), 223–235. https://doi.org/10.32604/ijmhp.2022.025570

Wang, J., Lai, R., Yang, A., Yang, M., & Guo, Y. (2021). Helicopter parenting and depressive level among non-clinical Chinese college students: A moderated mediation model. *Journal of Affective Disorders*, *295*, 522–529. https://doi.org/10.1016/j.jad.2021.08.078

Wang, J., Liu, D., Li, G., Zhu, J., Yue, S., Li, X., Li, Y., Wu, Y., Wang, B., & Liu, Y. (2022). The impact of self-efficacy on first onset and prognosis of major depressive disorder: Findings from a longitudinal study in a sample of Chinese first-year university students. *Psychological Medicine*, *52*(1), 178–183. https://doi.org/10.1017/S0033291721003238

Wang, M., Li, J., Yan, G., Lei, T., Rong, W., & Sun, L. (2022). The relationship between psychological resilience, neuroticism, attentional bias, and depressive symptoms in college Chinese students. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.884016

Wang, R., Hartman, C. A., & Snieder, H. (2023). Stress-related exposures amplify the effects of genetic susceptibility on depression and anxiety. *Translational Psychiatry*, *13*(1), Article 1. https://doi.org/10.1038/s41398-023-02327-3

Wang, Y., Yang, H., Montag, C., & Elhai, J. D. (2022). Boredom proneness and rumination mediate relationships between depression and anxiety with problematic smartphone use severity. *Current Psychology*, *41*(8), 5287–5297. https://doi.org/10.1007/s12144-020-01052-0

Wang, Y., Zhang, X., Liu, Y., Jiang, F., Liu, Y., Xu, F., Duan, X., Li, Q., Zhao, W., Xu, R., Wang, J., Liu, C., & Liu, Y. (2023). The influence of parental rearing style on the incidence of panic disorder, major depressive disorder and the comorbidity among Chinese college students. *Journal of Affective Disorders*, *338*, 100–106. https://doi.org/10.1016/j.jad.2023.06.019

Wang, Z.-H., Yang, H.-L., Yang, Y.-Q., Liu, D., Li, Z.-H., Zhang, X.-R., Zhang, Y.-J., Shen, D., Chen, P.-L., Song, W.-Q., Wang, X.-M., Wu, X.-B., Yang, X.-F., & Mao, C. (2020). Prevalence of anxiety and depression symptom, and the demands for psychological knowledge and interventions in college students during COVID-19 epidemic: A large cross-sectional study. *Journal of Affective Disorders*, *275*, 188–193. https://doi.org/10.1016/j.jad.2020.06.034

Wei, S., Li, L., Shi, J., Liang, H., & Yang, X. (2021). Self-compassion mediates the perfectionism and depression link on Chinese undergraduates. *Annals of Palliative Medicine*, *10*(2), 1950–1960. https://doi.org/10.21037/apm-20-1582

Wu, S., Zhang, K., Parks-Stamm, E. J., Hu, Z., Ji, Y., & Cui, X. (2021). Increases in anxiety and depression during covid-19: a large longitudinal study from China. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.706601

Xiang, M.-Q., Tan, X.-M., Sun, J., Yang, H.-Y., Zhao, X.-P., Liu, L., Hou, X.-H., & Hu, M. (2020). Relationship of physical activity with anxiety and depression symptoms in Chinese college students during the COVID-19 outbreak. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.582436

Xiao, P., Chen, L., Dong, X., Zhao, Z., Yu, J., Wang, D., & Li, W. (2022a). Anxiety, Depression, and Satisfaction With Life Among College Students in China: Nine Months After Initiation of the Outbreak of COVID-19. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.777190

Xu, Y., Su, S., Jiang, Z., Guo, S., Lu, Q., Liu, L., Zhao, Y., Wu, P., Que, J., Shi, L., Deng, J., Meng, S., Yan, W., Sun, Y., Yuan, K., Lin, X., Sun, S., Ravindran, A. V., Chen, S., … Lu, L. (2021). Prevalence and risk factors of mental health symptoms and suicidal behavior among university students in Wuhan, China during the COVID-19 pandemic. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.695017

Yang, H., Cui, X., Dijst, M., Tian, S., Chen, J., & Huang, J. (2022). Association between natural/built campus environment and depression among Chinese undergraduates: multiscale evidence for the moderating role of socioeconomic factors after controlling for residential self-selection. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.844541

Yang, H., Wang, Z., Jiang, Y., & Tang, J. (2023). Absolute and relative preferences for mobile phone internet content, mobile phone dependence, and depressive symptoms: A study of Chinese university students in the post-pandemic era. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1247438

Yang, X., Hu, H., Zhao, C., Xu, H., Tu, X., & Zhang, G. (2021). A longitudinal study of changes in smart phone addiction and depressive symptoms and potential risk factors among Chinese college students. *BMC Psychiatry*, *21*(1). https://doi.org/10.1186/s12888-021-03265-4

Yao, Y., Yao, J., Chen, S., Zhang, X., Meng, H., Li, Y., & Lu, L. (2023). Psychological capital and self-acceptance modified the association of depressive tendency with self-rated health of college students in China during the COVID-19 pandemic. *Behavioral Sciences*, *13*(7), 552. https://doi.org/10.3390/bs13070552

Yu, J., Yang, Z., Wu, Y., Ge, M., Tang, X., & Jiang, H. (2021). Prevalence of and factors associated with depressive symptoms among college students in Wuhan, China during the normalization stage of COVID-19 prevention and control. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.742950

Yu, M., Tian, F., Cui, Q., & Wu, H. (2021). Prevalence and its associated factors of depressive symptoms among Chinese college students during the COVID-19 pandemic. *BMC Psychiatry*, *21*(1). https://doi.org/10.1186/s12888-021-03066-9

Yu, Y., Yan, W., Yu, J., Xu, Y., Wang, D., & Wang, Y. (2022). Prevalence and Associated Factors of Complains on Depression, Anxiety, and Stress in University Students: An Extensive Population-Based Survey in China. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.842378

Zamberi, M. Z., Abdul Razak, M. I. F., Sapawi, A. A., Hamzah, K. Q. A., Dr Rahmat Dapari, Dom, N. C., Hassan, M. R., & Syed Abdul Rahim, S. S. (2023). Factors associated with depression, anxiety, and stress among food industry workers: a systematic review. *Malaysian Journal of Public Health Medicine*, *23*(2), 312–323. https://doi.org/10.37268/mjphm/vol.23/no.2/art.2146

Zhang, L., Zhao, S., Lin, Q., Song, M., Wu, S., & Zheng, H. (2021). Algorithms to predict anxiety and depression among university students in China after analyzing lifestyles and sport habits. *Neuropsychiatric Disease and Treatment*, *17*, 2011–2025. https://doi.org/10.2147/NDT.S315148

Zhang, Q., Zhang, Q., Ran, G., & Liang, Y. (2023). Childhood abuse and depression in emerging adults: the mediating role of regulatory emotional self-efficacy and the moderating role of subjective social status. *Journal of Adult Development*. https://doi.org/10.1007/s10804-023-09463-6

Zhang, Y., Li, S., Xu, H., Jin, Z., Li, R., Zhang, Y., & Wan, Y. (2023). Gender-based differences in interaction effects between childhood maltreatment and problematic mobile phone use on college students' depression and anxiety symptoms. *BMC Psychiatry*, *23*(1), 286. https://doi.org/10.1186/s12888-023-04777-x

Zhang, Y., Wu, X., Tao, S., Li, S., Ma, L., Yu, Y., Sun, G., Li, T., & Tao, F. (2021). Associations between screen time, physical activity, and depressive symptoms during the 2019 coronavirus disease (COVID-19) outbreak among Chinese college students. *Environmental Health and Preventive Medicine*, *26*(1). https://doi.org/10.1186/s12199-021-01025-0

Zhang, Z., Tian, Y., Zhong, F., Li, C.-F., Dong, S.-M., Huang, Y., Liu, X.-E., & Huang, C. (2019). Association between oral health-related quality of life and depressive symptoms in Chinese college students: Fitness Improvement Tactics in Youths (FITYou) project. *Health and Quality of Life Outcomes*, *17*(1). https://doi.org/10.1186/s12955-019-1163-4

Zhou, W., Yan, Z., Yang, Z., & Hussain, Z. (2023). Problematic social media use and mental health risks among first-year Chinese undergraduates: A three-wave longitudinal study. *Frontiers in Psychiatry*, *14*. https://doi.org/10.3389/fpsyt.2023.1237924

Zhu, Z., Cui, Y., Gong, Q., Huang, C., Guo, F., Li, W., Zhang, W., Chen, Y., Cheng, X., & Wang, Y. (2019). Frequency of breakfast consumption is inversely associated with the risk of depressive symptoms among

Chinese university students: A cross-sectional study. *PLoS ONE, 14*(8). https://doi.org/10.1371/journal.pone.0222014

Zou, M. L., Li, M. X., & Cho, V. (2020). Depression and disclosure behavior via social media: A study of university students in China. *Heliyon*, *6*(2). https://doi.org/10.1016/j.heliyon.2020.e03368