

CHAPTER TWENTY SEVEN

Student Mental Health in Asia: Burden, Help-seeking Patterns, and Cultural Aspects

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ABSTRACT

College and university students often suffer from common mental health problems including depression, anxiety, stress-related disorders, and burnout syndrome. Further, suicidal behaviours remain a significant cause of mortality among this group. They also suffer from various addictive disorders and cyber-psychiatric disorders like internet addiction, social media addiction, and online gaming disorder. While personality characteristics and family history are most strongly associated with developing mental illness among college and university students, various academic and curriculum-related factors, psychosocial factors, exposure to adverse life events, diet, and sleep habits are also related. For international students, acculturative stress, discrimination and social support appear to be key determinants of mental well-being. Compounding these issues are reluctance to seek formal mental health care and preference for informal consultations from family and friends. Stigma and concerns about confidentiality appear to be prominent barriers that prevent students from utilizing counselling services. On the intervention side, cognitive-behavioural strategies and mindfulness training have been widely used to improve the mental health of college and university students. Positive mental health interventions have shown initial promise in alleviating mental health issues for this group, including other programs incorporating physical activity and internet-based programs.

Keywords: Mental Health, University Students, Internet Addiction.

INTRODUCTION

Adolescence represents a period of dramatic social, economic, and emotional transition to young adulthood, which can be a burden on mental health. In addition to this, the period when youths enter postsecondary higher education is characterized by novel challenges such as new academic demands, making independent life decisions, and socializing with an entirely new group of people. Facing and adapting to these challenges can be a source of stress impacting the mental health of this group; indeed, evidence suggests that about 20-40% of postsecondary students consider their academic life as stressful, and in some cases this may be causally linked to developing a psychiatric illness (Nerdrum et al., 2009).

Recent years have seen a growing research focus on student mental health, and it has been positioned as a major public issue. Many studies have pointed to an increase in mental health issues and service utilization patterns among postsecondary students across the world (Lipson et al., 2019; Wong et al., 2006). Several contributory factors have been identified, including lower levels of academic progress and self-efficacy, prior psychological and emotional difficulties in childhood, and economic reasons such as reduced income. Concerns have also been expressed regarding a lack of expansion of mental health support services for students commensurate with the expansion of academic facilities (Dobson et al., 2013).

Another factor that may affect mental health in this group is acculturative stress. Acculturation refers to the cultural adaptation that takes place people when coming into contact with another culture, and this can cause stress. Sources of acculturative stress among students include culture shock, language difficulties, homesickness, racial prejudice and discrimination, and loss of the social support they had at home. While some of these stressors can affect domestic students (for example, one study showed that cultural and ethnic-related stressors were among the strongest predictors of perceived stress and academic performance among African American students (Greer, 2008), it follows that foreign students are likely to

experience higher levels of acculturative stress and, consequently, increased rates of psychological distress—and research has shown this to be the case (Ramanaidu, 1991).

Asia represents a unique context within the global education systems. Beginning with educational models borrowed from the West, recent decades have seen significant reforms in many fields in Asian academia to meet the unique cultural demands of the local community (Lam & Lam, 2009; Maksutova, n.d.). Hence, there is reason to speculate that the prevalence and determinants of mental health issues among students in Asian colleges and universities may differ from those in the West. In this chapter, we briefly review these considerations, and discuss the cultural aspects, health seeking behaviours, and interventions for student mental health in the Asian context. Finally, we end with a look at the ongoing impact of the COVID-19 pandemic on student mental health.

EPIDEMIOLOGICAL ASPECTS

Prevalence and Incidence of Psychological Distress and Mental Disorders

Psychiatric Illness

Most studies exploring student mental health problems in Asia are from China, the Indian subcontinent, and Southeast Asian countries. But there are also important findings from Arab nations and Turkey that have on the various factors influencing student mental health.

Depression

Studies have reported that depression is the most common psychiatric illness among medical undergraduates in China, followed by anxiety and suicidal ideations (W. Zeng et al., 2019). Major meta-analyses and systematic reviews from China and Arab nations report that the consolidated prevalence rates of depression is around 30% (ranging between 11% and 51.5%) (AlJaber, 2020; Cuttilan et al., 2016; Lei et al., 2016; Mao et al., 2019; W. Zeng et al., 2019).

In the Indian sub-continent, the prevalence rates range from 9% to 47%, though such findings do not include small-sample studies among individual countries of the region (Amarasuriya et al., 2015; Deb et al., 2016; Desai et al., 2021; Koly et al., 2021; Pokhrel et al., 2020). Most of the studies have found that a majority of students diagnosed with depression had mild to moderate severity (Table 1).

Anxiety

Major meta-analyses and systematic reviews report anxiety prevalence rates ranging between 21% to 27% in Asian students (Mao et al., 2019; W. Zeng et al., 2019), with higher rates in individual studies with smaller samples (35% to 45%) (Bayram & Bilgel, 2008; Cheung et al., 2016; Gulec Oyekcin et al., 2017; Kronfol et al., 2018; Paudel et al., 2020; Pokhrel et al., 2020; Tayefi et al., 2020; W. Zeng et al., 2019). Anxiety is often diagnosed as a comorbid condition along with depression among postsecondary students (Table 1).

Stress-Related Disorders and Burnout

Findings from various studies suggest that students are more vulnerable for acute stress reactions and long-term burnout issues compared to non-student population. The prevalence of stress-related disorders ranges from 20% to 50% in studies conducted across multiple Asian universities (Bayram & Bilgel, 2008; Cheung et al., 2016; Fares et al., 2016; Jaisoorya et al., 2018; Nebhinani et al., 2021; Ohtsu et al., 2014; Paudel et al., 2020; S et al., 2018; W. Zeng et al., 2019). However higher prevalence rates were found in single-centre studies, exceeding 90% (Gupta et al., 2015; Masri et al., 2019) (Table 1).

Suicidal Behaviour

Students across academic disciplines report suicidal ideation, and sometimes consequently make attempts to end their lives. Across Asian nations, the prevalence of suicidal ideation ranges between 9% and 27%, with a mean of 15%. The prevalence of suicide attempts

among postsecondary students in Asia ranges between 2% and 14% (Eskin et al., 2019; Nath et al., 2012; Peltzer et al., 2017; Shen et al., 2021) (Table 2).

Substance Abuse

Large-scale multicentric studies from India, Nepal, and Iran have found a prevalence of around 21% for alcohol disorders and 6.1% for tobacco use disorders (Jaisoorya et al., 2018; Mansouri et al., 2020; Panthee et al., 2017; Taremian et al., 2018). The prevalence rates of substance abuse reported in smaller samples are also quite high ranging from 11% to 37% (Fujita & Maki, 2018; Hassan et al., 2019). However, these rates might have been underreported due to fears of stigma from revealing substance abuse problems.

A recent meta-analysis from China found that 2.1% of postsecondary students had abused illicit drugs in their lifetime (Jia et al., 2018). Marijuana remained the most commonly used illicit drug among college students in Asia despite strong legal restrictions in most Asian regions (Panthee et al., 2017). Sedative and hypnotic drugs (i.e., sleeping pills) were used among 6.1% of postsecondary students in China (Jia et al., 2018) (Table 3).

Eating Disorders

A meta-analysis from China found a mean prevalence of eating disorders of around 2% among medical students (W. Zeng et al., 2019). However, as in other examples, single-centre studies reported much higher prevalence rates between 11% and 20% (Kronfol et al., 2018; Pengpid & Peltzer, 2018).

Adverse Childhood Experiences

Few studies in Asian setting have explored the prevalence of adverse childhood experiences (ACEs) among postsecondary students who report mental health problems (table 4). A study reported that male college students in Jordan had experienced most ACEs before the age of 14 years (Jumaian, 2001). Another multicentric study revealed household violence

and dysfunction were common ACEs of university students during their early years (Ho et al., 2020) (Table 3).

Cyber-Behaviours

Given the extremely high internet penetration rate (IPR) in Southeast Asian nations, a significant proportion of young adults are exposed to the internet and its associated avenues. The Southeast Asian country with the highest IPR is at 97.5% in Brunei, followed by Malaysia (89%), and Singapore (87.7%) (SEA, n.d.). Expansion in the availability of new gadgets and improved access to the Web has led to even more internet use and consequently, more internet-related behavioural disorders among postsecondary students in Asia.

Internet Addiction

Excessive smartphone usage has been associated with poor psychological well-being among university students (Tangmunkongvorakul et al., 2019), and typically involves prolonged hours spent online and using social media. Internet addiction (IA) is a behavioural addiction characterized by “excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that lead to impairment or distress” (Shaw & Black, 2008). A meta-analysis of studies in Southeast Asia found a prevalence of internet addiction among postsecondary students of 19.6% (Chia et al., 2020). China, the most populated country in Asia (and the world) has relatively higher IPR than other Asian nations, and another meta-analytic literature review on Chinese university students revealed a prevalence of IA of 11.3% (L. Li et al., 2018). Internet addiction among youth is also reported to be quite high in other Southeast Asian nations like the Philippines and Hong Kong (Mak et al., 2014). Among postsecondary students of the Southeast Asian nations, the prevalence rates of IA reported in the literature range between 1.2% and 34.3% (Balhara et al., 2018; Bhatt & Gaur, 2019; Haroon et al., 2018; Tenzin et al., 2018). The prevalence of “problematic internet use” (PIU; a less

severe internet use disorder below addiction) among youth of the Indian sub-continent ranged between 7.4% to 46.4% (Mamun et al., 2019; Pal Singh Balhara et al., 2019).

Students in Southeast Asia have reported multiple harmful effects of prolonged internet use, such as chronic insomnia, daytime sleepiness, and eye strain with visual difficulties (Balhara et al., 2018). A study of Saudi medical students found that sometimes they feel withdrawal-like features, such as feeling depressed, moody or nervous when while offline (Taha et al., 2019) (Table 5).

Internet Gaming Disorder

A meta-analysis on the prevalence of internet gaming disorder (IGD) around the globe found rates that varied from 0.21% to 57.5% in the general population, 3.2% to 91% among clinical populations, and 50.4% to 79.3% among those undergoing intervention for IGD (Darvesh et al., 2020). The literature on student mental health in Asia in particular reveals a prevalence ranging between 1.5% and 19% (Chia et al., 2020; Salam et al., 2019; Tang et al., 2018). A recent meta-analysis of studies on IGD within Southeast Asia revealed a pooled prevalence of 10.1% among students in various Southeast Asian countries (Chia et al., 2020).

Though the IPR in Asian countries is less than that in Europe and the Americas, the burden of internet addiction and internet gaming disorder in Asia is nevertheless quite large. Within Asian nations, reported prevalence rates of IA and IGD vary significantly, suggesting that there can be significant local socio-cultural factors in developing internet-based behavioral addictions. Analyses of studies from Asian settings suggest that age, proportion of male versus female participants, country of study, ethnic factor and personality can be potential moderators for the between-country variations within Asia.

Social Media Addiction

Individual studies from Asian settings reveal a prevalence rate of social media addiction between 33% and 49% (Hosen et al., 2021; Koc & Gulyagci, 2013; Y. L. Lee et al., 2016; Tang

et al., 2018). Regarding specifically students within Southeast Asia, a meta-analysis covering all such epidemiological studies found a pooled prevalence of social media addiction of just 5.9% (Chia et al., 2020), irrespective of their discipline of study. Cross-national comparisons show that Asian students demonstrated high levels of online social networking addiction (Tang et al., 2018) (Table 6).

Factors Associated with Psychiatric Morbidity

College and university students begin encountering stressors immediately at the start of their postsecondary academic career. The abrupt shift from life at home with parents to a life of independence with multiple responsibilities naturally produces stress and contributes to burnout amongst these students.

Depression, Anxiety, and Stress

Depression tends to be more frequent among students with increased academic pressure, among those who spent longer time in classroom and academic activities inside the school premises, and in those with low grades (AlJaber, 2020; Mao et al., 2019). A systematic review of Saudi medical students found high rates of depression, especially for first-year students (AlJaber, 2020). Low socio-economic status and financial hardships in family have also been found to be linked with depression among students (Kronfol et al., 2018; Pan et al., 2016), as well as insomnia, substance use comorbidity, reduced physical activity, and lack of leisure activities (Cheung et al., 2016; Kono et al., 2015; L. Li et al., 2020; Mao et al., 2019; W. Zeng et al., 2019). Experiencing multiple negative life events and poor perceived mental well-being have led to onset of depressive episodes among postsecondary students (Amarasuriya et al., 2015; W. Zeng et al., 2019). One important factor in recent times is the excessive usage of digital devices such as smartphones, and social

media accordingly. Excess smartphone usage and social media involvement were associated with elevated rates of depression in a study of university students in Bangladesh (Koly et al., 2021).

Studies have revealed that most postsecondary students report academic-related factors to be their main source of stress. Academic factors related to curriculum burden and examination stress were the most frequent reasons cited by students for suffering from stress-related disorders (Cheung et al., 2016; Gupta et al., 2015; Yang et al., 2014). Stress-related disorders were particularly associated with a lack of alone time amongst Hong Kong nursing students in one study (Cheung et al., 2016). Another found that courses having a long duration, confusing curriculum, and/or additional workload were main contributors of stress and burnout among Nepalese medical and dental students (Bali et al., 2020). Such issues call for more efficient and student-friendly curricula in Asian universities (Pokhrel et al., 2020).

Imbalanced diet has also been found to affect the stress levels of students (Cheung et al., 2016), as well as depression and anxiety. In a study of female Iranian students, those who had less dietary zinc intake were predisposed to suffer from mood disorders (Hajianfar et al., 2021). Environmental factors like air pollution have also been associated with increased burden of mental health problems on college and university campuses (Sui et al., 2018; Zu et al., 2020).

Suicidal Behaviour

Postsecondary students who report suicidal ideations and those who have made attempts to end their lives tend to have certain risk factors. Female gender, alcohol use, history of any form of abuse, academic stress, family-related stress, relationship-related stress were found to be associated with suicidal ideations among Indian medical students (Desai et al., 2021). Reporting ADHD-like symptoms was found to be associated with higher risk of suicide attempts in a study of Chinese medical students (Shen et al., 2021). And having a history of

parental neglect and/or previous psychiatric disorder indicated greater risk of suicide attempts among medical students in Pakistan (Osama et al., 2014).

At the same time, having friends and intimate relationships has been reported to be a protective factor against suicidal behaviour among Indian medical students (Desai et al., 2021). Further research is needed to isolate more protective factors and positive mental health aspects that can help suicide prevention among postsecondary students.

Substance Abuse

Various factors seem to govern the onset, evolution, and outcome of substance abuse among postsecondary students in Asia. A meta-analysis of mainland Chinese students found that those with higher grades were at higher risk of initiating illicit drug use (Jia et al., 2018). In other studies in various Asian regions, the onset was characterized by “initiation with peers/peer pressure” in many students (Hassan et al., 2019; Jaisoorya et al., 2018; Panthee et al., 2017; Taremian et al., 2018). Certain psychological reported to promote substance abuse in a study of Iranian students included “positive attitudes towards substance, witnessing family members’ positive attitudes towards substance, and having low levels of religious beliefs” (Taremian et al., 2018). And in a study of Japanese dental students, poor sleep quality, lack of physical activity, and prolonged use of electronic gadgets were associated with greater risk of substance use, especially smoking nicotine (Fujita & Maki, 2018).

Eating Disorders

A study of Southeast Asian university students found that having a wealthier socio-economic background, living in a middle-income country, altered body weight perceptions, depression, and pathological forms of internet use were risk factors for developing eating disorders (Pengpid & Peltzer, 2018).

Internet Addiction & Problematic Internet Use

Various demographic and academic factors are associated with the high rates of IA and PIU among Asian students. A meta-analysis from China found that being male, pursuing higher grades, and having grown up in from an urban environment were significantly associated with IA (L. Li et al., 2018). Other studies have found anxiety, depression, family history of mental illness, suicidal ideations, and suicide attempts to be positively associated with internet addiction among postsecondary students in Asia (Pal Singh Balhara et al., 2019; Shen et al., 2020; Tsai et al., 2009; Wan Ismail et al., 2020). In addition, a study of Iranian medical students found that quality of life tended to be poor among those with internet addiction (Fatehi et al., 2016).

Social Media Addiction

The association between social media usage and mental health seems to be bidirectional, especially among the youth. Excessive social media usage has been linked with greater risk of depression, insomnia, impaired attention/concentration, impaired visual functioning, and somatic pain symptoms among Asian postsecondary students (Hosen et al., 2021; Tang et al., 2018). Conversely, a Turkish study found that having a weekly time commitment, harboring social motives, poor mental health status (e.g., severe depression and/or anxiety), and insomnia were highly predictive of social media addiction (specifically Facebook) (Koc & Gulyagci, 2013).

Findings from the Asian literature suggests that awareness and education programs regarding internet-related addictions are needed to curb the rising epidemic of social media addiction among Asian students.

Gender Differences

Studies have established that a considerable proportion of postsecondary students suffer from common mental health problems, and that various psychosocial and cultural influences lead to gender differences in the mental health of postsecondary students.

Global literature reveals that women were more likely to encounter depression when compared to men due to various biological, psychological, and socio-cultural reasons (Albert, 2015; Kuehner, 2017). It is also true for Asia where studies have found that female postsecondary students were more prone for depression than their male counterparts (Alharbi et al., 2018; AlJaber, 2020; Hamaideh, 2012; Jaisoorya et al., 2018; Koly et al., 2021; Kronfol et al., 2018; Madhan et al., 2012; Mahroon et al., 2018; Mao et al., 2019; Ohtsu et al., 2014). A study of Singaporean adolescents found that girls reported greater worries about their “self” and had more severe emotional distress than boys (Yeo et al., 2007). Female students reported higher levels of distress in conflict and pressure situations, and greater emotional reactions to stressors in a Jordanian study (Hamaideh, 2012). Suicidal ideations and suicide attempts have also been more frequently reported by female students than their male counterparts in Asian Muslim countries and in China (Eskin et al., 2019; Z.-Z. Li et al., 2014).

On the contrary, a recent meta-analysis from China revealed no gender differences in the prevalence of depression among Chinese medical students.(W. Zeng et al., 2019) Furthermore, another multicentric study, also with Chinese medical students, reported that males actually had more risk of depression than females.(Pan et al., 2016) One possible reason for this is that environmental factors such as air pollution have led to frequent mental health issues more in male students than female students in China (Zu et al., 2020). But it is not just in China; a study of university students in Thailand also found that female students reported better psychological well-being than males.(Tangmunkongvorakul et al., 2019)

And among students with substance abuse problems, the majority were male in studies in India, Japan, and China.(Fujita & Maki, 2018; Jaisoorya et al., 2018; Newman et al., 2017) Regarding internet-related behaviours, studies from the Asian continent indicated that most internet users were males (L. Li et al., 2018; Tsai et al., 2009). However, some studies, especially from the Arab nations, have found internet addiction to be more frequent among girls than boys (Haroon et al., 2018; Taha et al., 2019).

Finally, in a study on positive mental health in Singaporean students, girls demonstrated more positive attitudes towards education, displayed better friendship skills, and reported of having stronger relationships with their parents than males (Yeo et al., 2007).

Positive Mental Health/Resilience

One of the main reasons behind the prevalence of mental illness among Asian youth is that their socio-cultural milieu does not adequately foster in them the resilience necessary to endure failure or rejection. Faulty modes of dealing with problems and poor coping strategies are the ensuing ill-effects of such a lapse.

Resilience is a facet of positive mental health, that is useful in self-healing and providing the ability to bounce back, helping individuals to overcome obstacles and promote self-recovery (J. J. Liu et al., 2017). Studies focusing on such constructs among students in Asia are relatively rare, but those that have been done have found a positive relationship between resilience and overall mental well-being among Asian postsecondary students (Chow & Choi, 2019; Zhao et al., 2016).

Focusing on compassion towards both oneself and others has been noted to yield good benefits in Asian postsecondary students. For example, showing self-compassion has been found to improve the subjective well-being of Korean university students (Shin & Lim, 2019), while caring toward peers has proved beneficial to the subjective well-being of Chinese medical and nursing students (Zhao et al., 2016), and emotional connection (e.g., sharing

personal problems) with close peers has been found to be associated with positive mental well-being among Indian students (Deb et al., 2016). In addition, having good self-esteem and feeling satisfied with school life have been found to positively influence the mental well-being of Turkish nursing students (Karaca et al., 2019), and optimism about the future was found to be a protective factor against depression in Chinese university students (L. Li et al., 2020).

Physical exercise has also been found beneficial for postsecondary students. It was found to associate with positive mental health among Indian students in one study, (Deb et al., 2016), and another found a positive relationship between physical activity and perceived well-being among Japanese university students (Kono et al., 2015). These findings suggest that behavioural interventions to promote physical activity among postsecondary students could prove beneficial for their mental health and well-being.

CULTURAL ASPECTS

Acculturation

Globalisation has facilitated a significant increase in migration to other countries for the purpose of pursuing education. Many universities encourage international students to enrol because it enhances their revenues, and provides wider exposure to their students through diversity on campus. The United States, United Kingdom, China, Canada, and Australia are the countries that receive the most international students, with most immigrant students coming from India and China.

These international students face a host of challenges including language difficulty, separation from family and friends, and financial instability. Differences in the way the academic programs are implemented and evaluated in the host countries require the students to adapt to changing expectations, and cultural differences and culture shock can accentuate these difficulties. International students can develop acculturative stress due to the difficulty in

adapting to the host culture. Depressive symptoms, anxiety symptoms and perceived stress are common among such students, and they are at increased risk of alcohol abuse and other behavioural disorders. However, not all report the acculturation process to be stressful; many demonstrate effective coping skills and resilience in dealing with it. For example, in a study of international students in the United States, smooth acculturation strongly correlated with confidence in their English-language competence (Y. K. Kim & Cronley, 2020). Many universities have programs to ease the adaptation process of the students thereby reducing the negative impact of acculturative stress.

Most research on international student mental health focuses on those in Western nations like the USA, UK and Canada, but there are also international students in Asia. Students from mainland China studying in Hong Kong have also been found to experience acculturative stress, with the top reasons identified as including language barriers, prejudice and discrimination, cultural differences, and issues related to transport, food, and accommodation (Bhowmik et al., 2018). In a study of international students in mainland China, acculturative stress was more commonly seen among those who were not adequately prepared, belonged to organized religions, or were married, and African and Asian international students reported greater stress than those from other regions.(Yu et al., 2014)

Acculturation is an important determinant of mental health for immigrant students. Understanding the factors contributing to acculturative stress and instituting remedial measures can help them better cope with the changes and thereby improve their physical and mental health.

Discrimination

International students often experience significant levels of discrimination that can adversely impact their learning experience, acculturation, and mental well-being. Several factors predicting perceived discrimination have been identified by researchers. A study of

international students in the United States found that years of residence and race/ethnicity were associated with level of perceived discrimination among international students. As expected, being from Europe predicted lower levels of perceived discrimination than other regions of the world (Poyrazli & Lopez, 2007). Similarly, another study focusing on Indian international students found that in addition to acculturation barriers, Indian students who study in the US face barriers related to racism, especially for men and/or undergraduates (Aggarwal & Çiftçi, 2020).

In a study of White American college students, their degree of intercultural contact with Asian or Asian American students was shown to be associated with more positive attitudes toward this ethnic group as well as their awareness of racial discrimination (Dinh et al., 2008).

Social Support

The level of social support an international student has can influence their experience in the host culture and modify the ways they adapt to stressors. According to a study by Shu et al. (2020), different support systems may be required for instrumental (i.e., task-oriented) and socio-emotional (i.e., relationship-oriented) support. The study found that the presence of host nationals in an international student's support system promoted better cross-cultural adjustment.(Shu et al., 2020) In another study with international students from India, the belongingness aspect of social support was predictive of mental health, among other factors (Atri et al., 2006).

Help Seeking Attitudes, Patterns, and Barriers to Service Utilization

The importance of student mental health is becoming increasingly recognised by the universities across the world, and many have accordingly taken steps to provide mental health support and services to their students. Utilisation of these services depends on students' help-seeking attitudes and stigma. Several studies have assessed the help-seeking attitudes and

barriers to healthcare-seeking among Asian postsecondary students, and a few have compared these attributes between Asian students and their Western counterparts.

A study comparing perceptions of mental illness and mental health services between college students in Vietnam and the United States found that there were significant differences. Vietnamese participants tended to believe that individuals with mental illness need to be kept out from the community as they were dangerous, while the American students perceived mental illnesses to be similar to other illnesses. There was a low likelihood of Vietnamese students seeking formal help because they preferred seeking help from family and friends (Kamimura et al., 2018).

In another study, Chinese and Australian university students who had experienced suicidal ideation reported remarkably similar attitudes about seeking professional help for it (Han et al., 2018). Self-reliance was a potentially important barrier to help-seeking in these participants, whereas suicide literacy, suicide stigma and social support did not seem to have an influence on their help-seeking intentions. They did differ in that relying on informal support from family and friends was identified as a critical barrier to help-seeking in the Chinese students, while high costs of mental health services was for the Australian students (Han et al., 2018).

Another study found a gender difference in Chinese college students' mental health and help-seeking, where males reported more mental health problems in their first year of study, and females reported more and increasing help-seeking behaviour over the following four years. While number of mental health problems experienced and help-seeking behaviours among the students were positively associated, the relationship was not linear but an inverter U-shaped curve, where sought help when they experienced either relatively few or quite a lot of mental health issues (F. Liu et al., 2017).

Despite relatively easy access to mental healthcare services for medical students, there were several barriers found to prevent them from seeking treatment in three Indian studies (Menon et al., 2015; Arun et al., 2021; Grover et al., 2015). One found that the most common were stigma, confidentiality issues, lack of awareness about where to seek help, and fear of unwanted intervention (Menon et al., 2015). Another found that students with psychiatric disorders perceived more barriers to seek treatment than those without psychiatric disorders (Arun et al., 2021). In the third, despite reporting moderate to severe stress that was adversely affecting their physical and mental health, only about 13% had sought professional help due to barriers such as the stigma of being labelled as mentally ill, being labelled as weak, and lack of time (Grover et al., 2019).

Summary

Culture can play a major role in how students perceive and address mental health problems. Overall, help-seeking attitudes and behaviours for mental health among Asian postsecondary students is less than optimal and this area offers scope for effective interventions. Addressing the identified barriers by promoting a culture of help-seeking and reducing stigma can make meaningful improvements in Asian students' mental health.

INTERVENTIONS FOR HEALTH PROMOTION

Making mental health services available to students and encouraging their use is one clear opportunity for improving student mental health. Another approach involves proactive non-pharmacological interventions to promote their mental health, and several such interventions have been studied for their efficacy.

In the studies reviewed below, such interventions were most commonly delivered as daily sessions for several days or as weekly sessions over several weeks, and administered in a group format with active participation from the students, using methods including lectures,

group discussions and role-playing. Cognitive strategies, relaxation training, breathing exercises and mindfulness training were the most widely used techniques evaluated in these studies, as well as some examples of physical activity and spirituality-based interventions.

Cognitive Strategies

Several studies on interventions for improving student mental health have evaluated cognitive strategies administered along with communication and interpersonal skills training and relaxation training (Hamdan-Mansour et al., 2009; S. Kim et al., 2016, 2018). The cognitive strategies most commonly used in these studies were cognitive restructuring, self-awareness, emotion regulation and problem-solving strategies. The interventions studied included the Integrated Stress Management Program, a modified form of the Teaching Kids to Cope program, and the Williams LifeSkills Training program. When these interventions were administered to postsecondary students over several sessions, there were significant reductions in psychological stress, depression, and anxiety, as well as improvements in coping strategies and self-esteem (Hamdan-Mansour et al., 2009; S. Kim et al., 2016, 2018). Cognitive-behavioural therapy has also been shown to be effective among colleges students with internet addiction (J. Liu et al., 2017).

Studies of cognitive strategies have also incorporated relaxation and breathing exercises as part of the intervention program. For example, one study of Malaysian pharmacy students found relaxation therapy and systematic desensitisation to be effective in reducing test anxiety and psychological distress, improving motivation, and improving grades (Rajiah & Saravanan, 2014).

Thus, cognitive intervention strategies have potential for improving the mental health of Asian postsecondary students.

Mindfulness

Mindfulness, defined as the awareness that arises through “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally,” is a method with a long history of association with Buddhism and other religions based in Asia. It has also been used by mental health professionals to alleviate psychological distress for decades (Hofmann & Gomez, 2017). Mindfulness-training aims to achieve a state of restful alertness that allows a high degree of awareness of body, breathing and external environment, quieting the mind by allowing invasive thoughts to pass through consciousness while paying attention to breathing and bodily sensations. Body scans using “internal eyes,” background music, and airy voice are other typical components of mindfulness-based training (Chen et al., 2013).

Several studies have established the efficacy of mindfulness-based meditation programs for alleviating mental distress, depression, anxiety, and stress, and improving the self-efficacy of Asian postsecondary students (Chen et al., 2013; Phang et al., 2015; Song & Lindquist, 2015). Mindfulness training has also been shown to improve the biological parameters associated with stress in a study with Chinese university students, where cortisol levels were lower after acute stress in students who participated in the training (Fan et al., 2014). Thus, mindfulness-based interventions can be a useful tool for improving the mental health of Asian postsecondary students.

Physical Activity

The mental health benefits of regular physical activity have been well-established, and a few have looked at its role specifically for improving the mental health of Asian postsecondary students. A Taiwanese study of nursing students found that those with moderate or severe levels of stress benefitted from an eight week health promotion program that involved group physical activities like jogging or exercise in the gym, and the participants held positive views of peer support and physical activity afterwards.(Hsieh, 2011) And in a meta-analysis of

East Asian studies, sports interventions to improve internet addiction was found to be effective, particularly in reducing withdrawal symptoms (J. Liu et al., 2017). Thus, encouraging physical activity in students through interventions can benefit the mental health of Asian postsecondary students.

Spirituality

Religiosity and spirituality are also associated with the mental well-being of postsecondary students, and this could provide a novel avenue for promoting their mental health promotion. In a study of female nursing students in Taiwan, a spiritual learning program that included lectures, discussion, reflection, and spiritual practices was shown to have a beneficial effect on spiritual health, clinical practice stress, and final test scores (Hsiao et al., 2012). The authors argue that spiritual interventions may alter the perception of participants to view stressors as meaningful events that are connected to individual life purposes.

Internet-Based Programs

Internet-based programs have rarely been used to address psychological stress and mental health issues in postsecondary students in Asia. One study did evaluate an online cognitive-behavioural therapy for female Taiwanese nursing students, and found it produced a small but significant reduction in anxiety and depression similar to that in the expressive writing group, and superior to wait-list controls (T.-Y. Lee et al., 2019). Internet-based programs can be less resource-intensive, more student-friendly and more convenient options for students to improve their mental health, so more research should be done in this area to demonstrate their effectiveness.

Summary

Overall, there is a good evidence base supporting the use of cognitive-behavioural strategies, mindfulness training and physical activity programs to improve student mental health in college and university campuses in Asia.

THE IMPACT OF COVID-19 ON STUDENT MENTAL HEALTH

The global COVID-19 pandemic has added a new layer to the issue of student mental health in Asia, and around the world. Two Asian survey studies, one Malaysian (Sundarassen et al., 2020) and the other from Jordan (Seetan et al., 2021), both of which examined psychological distress among university students since the onset of the pandemic are reviewed in this section. Findings were inconsistent between them; the range of participants with psychological distress ranged from 30% in the Malaysian study (Sundarassen et al., 2020) to more than 85% in the Jordanian study (Seetan et al., 2021). Being female, 18 to 25 years old, having a pre-university level of education, management studies, and poor social support were predictors of psychological distress among the Malaysian group, while remote teaching, academic uncertainty, and financial constraints were reported as their main stressors (Sundarassen et al., 2020). In the Jordanian study, activities like cooking, baking, and indulging in hobbies were the preferred methods to deal with stress and improve well-being (Seetan et al., 2021). Both the studies were cross-sectional in design, and the pandemic is still active two-years later, so its long-term impact on students is not yet fully understood.

CONCLUSION

Interest in the mental health and well-being of Asian university students has clearly grown in the last few decades. The landscape of psychiatric morbidity in this group is dominated by depression, anxiety, stress-related disorders, substance use disorders, and

suicidal behaviour, though there is also a considerable burden of other conditions such as eating disorders and internet addiction. Academic factors were the most common determinants of psychiatric morbidity; other determinants included financial strife, poor social support and excessive use of smartphones and social media. Most students with perceived psychological difficulties were hesitant to seek formal or professional help and preferred informal consultations with peers, family, and friends. Emerging evidence suggests that interventions aimed at promoting mindfulness and cognitive-behavioural principles hold promise in improving mental health and well-being for Asian postsecondary students.

Table 1

Prevalence of depression, anxiety and stress-related disorders among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies).

S.No.	Author	Year	Region(s)	Study design	Student population	Sample size	DEP	ANX	ST/BO/ Poor MH	SI	ED
1	Lei et al. (Lei et al., 2016)	2016	China	Meta-analysis	College/ University	32694	24%				
2	Zeng et al. (W. Zeng et al., 2019)	2019	China	Meta-analysis	Medical	30817	29%	21%		11%	2%
3	Mao et al. (Mao et al., 2019)	2019	China	Systematic review	Medical	35160	32.74%	27.22%			
4	Cuttilan et al. (Cuttilan et al., 2016)	2016	Asia	Systematic review	Medical	10147	11%				
5	Fares et al. (Fares et al., 2016)	2016	South Asia	Review	Medical	21672			47.9% (10 studies during 1988-2015)		
6	AlJaber (AlJaber, 2020)	2020	Saudi Arabia	Review	Medical	NA	51.5%				
7	Pan et al. (Pan et al., 2016)	2016	China	Multicentric (33 universities), Cross-sectional	Medical	9010	19.9%				
8	Jaisoorya et al. (Jaisoorya et al., 2018)	2017	India	Multicentric, Cross-sectional	College/ University	5784			35%		

9	Kronfol et al. (Kronfol et al., 2018)	2018	Qatar and Lebanon	Multicentric, Cross-sectional	College/ University	1841	34.6%	36.10%			20.4%
10	Shamsuddin et al. (Shamsuddin et al., 2013)	2013	Malaysia	Multicentric, Cross-sectional	College/ University	506	27.5% (moderate); 9.7% (severe)	34% (moderate); 29% (Severe)	18.6% (Moderate); 5.1% (severe)		
11	Alharbi et al. (Alharbi et al., 2018)	2018	Saudi Arabia	Multicentric, Cross-sectional	Medical	2562	83.4%				
12	Zeng et al. (Y. Zeng et al., 2019)	2019	China	Multicentric, Cross-sectional	Vocational college nursing	554	28.7%	41.7%	20.2%		
13	Paudel et al. (Paudel et al., 2020)	2020	Nepal	Multicentric, Cross-sectional	College/ University	681	38.2%	46.9%	24%		
14	Li et al. (L. Li et al., 2020)	2020	Macau, Hong Kong, ,mainland China	Multicentric, Cross-sectional	College/ University	2312	28.9% (Highest in Hong Kong)				
15	Koly et al. (Koly et al., 2021)	2021	Bangladesh	Multicentric, Cross-sectional	College/ University	400	47.3%				
16	Ohtsu et al. (Ohtsu et al., 2014)	2014	Japan	Multicentric, Cross-sectional	Medical	1619			43%		
17	Gupta et al. (Gupta et al., 2015, p. 201)	2015	India	Single centre, Cross-sectional	Medical	81			91%		

18	Deb et al. (Deb et al., 2016)	2016	India	Single centre, Cross-sectional	College/ University	717	Moderate (37.7%), Severe (13.1%), Extremely severe (2.4%)				
19	Bhat et al. (S et al., 2018)	2018	India	Single centre, Cross-sectional	College/ University	4839			29%	13.6%	
20	Mahroon et al. (Mahroon et al., 2018)	2018	Bahrain	Single centre, Cross-sectional	Medical	350	35.4%				
21	Cheung et al. (Cheung et al., 2016)	2016	Hong Kong	Single centre, Cross-sectional	Nursing	661	35.8%	37.3%	41%		
22	Nebhinani et al. (Nebhinani et al., 2021)	2021	India	Single centre, Cross-sectional	Medical	100			30%		
23	Desai et al. (Desai et al., 2021)	2021	India	Single centre, Cross-sectional	Medical	506	14%			9%	
24	Tayefi et al. (Tayefi et al., 2020)	2020	Iran	Single centre, Cross-sectional	Medical & health sciences	560	11%	28.7%			
25	Kono et al. (Kono et al., 2015)	2015	Japan	Single centre, Cross-sectional	College/ University	726	43.1%				
26	Masri et al. (Masri et al., 2019)	2019	Jordan	Single centre, Cross-sectional	Medical	479			91%		

Notes. DEP-Depression, ANX-Anxiety, ST/BO/Poor MH- Stress, Burnout, MH-Poor Mental Health, SI-Suicidal Ideations, ED-Eating Disorder,

Table 2

Prevalence of suicidal behavior among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies).

S.No.	Author	Year	Region(s)	Study design	Student population	Sample size	SI	SA
1	Li et al. (Z.-Z. Li et al., 2014)	2014	China	Meta-analysis	College/ University	160339	11%	
2	Nath et al. (Nath et al., 2012)	2012	India	Multicentric, Cross-sectional	College/ University	1817	11.7%	4%
3	Kharsati & Bhola (Kharsati & Bhola, 2015)	2015	India	Single centre, Cross-sectional	College/ University	470		31.2%
4	Peltzer & Pengpid (Peltzer et al., 2017)	2017	ASEAN countries*	Multicentric, Cross-sectional	College/ University	4675	12%	2.4%
5	Eskin et al. (Eskin et al., 2019)	2019	12 Muslim countries of Asia	Multicentric, Cross-sectional	College/ University students	8417	22%	8.6%
6	Shen et al. (Shen et al., 2021)	2021	China	Multicentric, Cross-sectional	Medical students	5693	27.5%	14.8%

SI-Suicidal Ideations, SA-Suicide Attempt, *ASEAN Countries include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

Table 3

Prevalence of substance use disorder among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies)

Author	Year	Region(s)	Study design	Student population	Sample size	AUD Pooled prevalence	TUD Pooled prevalence	Illicit drug use	Sedative/hypnotic use
Jia et al. (Jia et al., 2018)	2018	China	Systematic Review	College/University	269292	--	--	2.1%	6.10%
Tareмян et al. (Tareмян et al., 2018)	2018	Iran	Multicentric (30 universities), Cross-sectional	College/University	7330	7.9%	19.9%	2.6%	--
Jaisoorya et al. (Jaisoorya et al., 2018)	2018	India	Multicentric (58 colleges), Cross-sectional	College/University	5784	21.4%	--	--	--
Panthee et al. (Panthee et al., 2017)	2017	Nepal	Multicentric (3 universities), Cross-sectional	College/University	407	26%	21.6%	8.8%	--
Mansouri et al. (Mansouri et al., 2020)	2020	Iran	Large-scale, Cross-sectional	Iranian university students admitted in 2012-13	82806	--	6%	--	--
Fujita & Maki (Fujita & Maki, 2018)	2018	Japan	Single centre, Cross-sectional	Dental	453	--	11.5%	--	--
Hassan et al. (Hassan et al., 2019)	2019	Bangladesh	Cross-sectional	College/University	416	--	37%	--	--

Notes. AUD-Alcohol Use Disorder, TUD-Tobacco Use Disorder

Table 4

Prevalence of Eating Disorders & Adverse Childhood Experiences (ACEs) among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies).

S.No.	Author	Year	Region(s)	Study design	Student population	Sample size	ED	ACE
1	Tran et al. (Tran et al., 2015)	2015	Vietnam	Multicentric, Cross-sectional	Medical students	2099		76%
2	Pengpid & Peltzer (Pengpid & Peltzer, 2018)	2018	ASEAN countries*	Multicentric, Cross-sectional	College/ University students	3148	11.5%	
3	Ho et al. (Ho et al., 2020)	2020	Hong Kong, China, Taiwan, Japan	Multicentric, Cross-sectional	College/ University students	1346		Class 2: Household Violence (20.6%). Class 3: Household Dysfunction (3.4%).

ED-Eating Disorder, ACE-Adverse Childhood Experiences, *ASEAN Countries include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

Table 5

Prevalence of internet addiction among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies)

.	Author	Year	Region(s)	Study design	Student population	Sample size	IA Pooled Prevalence	IA Prevalence Range	PIU Pooled prevalence	PIU Prevalence range
	Chia et al. (Chia et al., 2020)	2020	Southeast Asia	Meta-analysis	Adolescents	16012	19.6%	6.6% to 45.4%	--	--
	Li et al. (L. Li et al., 2018)	2018	China	Meta-analysis	College/University	122454	11.3%	10.1% to 12.5%	--	--
	Balhara et al. (Balhara et al., 2018)	2018	Southeast Asia	Review	College/University	16649	--	0 to 47.4%		7.4% to 46.4%
	Balhara et al. (Pal Singh Balhara et al., 2019)	2019	Bangladesh, Croatia, India, Nepal, Turkey, Serbia, Vietnam, and United Arab Emirates (UAE).	Multicentric, Cross-sectional	College/University	2643	--	--	8.4%	--
	Shen et al. (Shen et al., 2020)	2020	China	Multicentric, Cross-sectional	College/University	8098	7.7%	--	--	--
	Tang et al. (Tang et al., 2018)	2018	Singapore, Hong Kong /Macau, China, South Korea, Taiwan, Japan	Cross-sectional	College/University	8067	8.9%	--	--	--
	Mak et al. (Mak et al., 2014)	2014	China, Hong Kong, Japan, South Korea, Malaysia, the Philippines	Cross-sectional	College/University	5366	16.8% (Highest in Philippines)	--	--	--

Tenzin et al. (Tenzin et al., 2018)	2018	Bhutan	Cross-sectional	First and Final year College	823	34.3%	--	--	--
Taha et al. (Taha et al., 2019)	2019	Saudi Arabia	Cross-sectional	Medical	209	12.4%	--	--	--
Haroon et al. (Haroon et al., 2018)	2018	Pakistan	Cross-sectional	Medical	148	7.86%	--	--	--
Sayyah & Khanaferreh(Sayyah & Khanaferreh, 2019)	2019	Iran	Cross-sectional	Medical	302	47.4% mild, 38.1% moderate, and 12.9% severe	--	--	--
Gedam et al. (Gedam et al., 2016)	2016	India	Cross-sectional	Medical vs. Dental	Medical = 249, Dental = 348	Severe IA in Dental students = 2.3%; Severe IA in Medical students = 1.2%	--	--	--
Mamun et al. (Mamun et al., 2019)	2019	Bangladesh	Cross-sectional	College/University	405	--		32.6%	
Tsai et al. (Tsai et al., 2009)	2009	Taiwan	Cross-sectional	College/University	680	17.9%	--	--	--
Bhatt & Gaur (Bhatt & Gaur, 2019)	2019	India	Cross-sectional	Dental	320	23%	--	--	--

Notes. IA – Internet Addiction, PIU – Problematic Internet Usage

Table 6

Prevalence of social media addiction among college / university students in Asian settings (Findings from meta-analyses, systematic reviews, multicentric & large population studies)

Author	Year	Region(s)	Study design	Student population	Sample size	Pooled prevalence
Tang et al. (Tang et al., 2018)	2018	Singapore, Hong Kong /Macau, China, South Korea, Taiwan, Japan	Cross-national comparison, Cross-sectional	College/University	8067	33.1%
Hosen et al. (Hosen et al., 2021)	2021	Bangladesh	Cross-sectional	College/University	2658	47.3%
Lee et al. (Y. L. Lee et al., 2016)	2016	Malaysia	Cross-sectional	Dental	188	33.2%
Koc & Gulyagci (Koc & Gulyagci, 2013)	2013	Turkey	Cross-sectional	Technical teaching college	447	49.6%

References

- Aggarwal, A., & Çiftçi, A. (2020). Colorblind Racial Ideology, Sense of Belonging, and Racism-Related Stress in Asian Indian International Students. *Psychological Reports*, 33294120961063. <https://doi.org/10.1177/0033294120961063>
- Albert, P.R. (2015). Why is depression more prevalent in women? *Journal of Psychiatry & Neuroscience*, 40(4):219-21. doi: 10.1503/jpn.150205. PMID: 26107348; PMCID: PMC4478054.
- Alharbi, H., Almalki, A., Alabdan, F., & Haddad, B. (2018). Depression among medical students in Saudi medical colleges: A cross-sectional study. *Advances in Medical Education and Practice*, 9, 887–891. <https://doi.org/10.2147/AMEP.S182960>
- AlJaber, M. I. (2020). The prevalence and associated factors of depression among medical students of Saudi Arabia: A systematic review. *Journal of Family Medicine and Primary Care*, 9(6), 2608–2614. https://doi.org/10.4103/jfmpc.jfmpc_255_20
- Amarasuriya, S. D., Jorm, A. F., & Reavley, N. J. (2015). Prevalence of depression and its correlates among undergraduates in Sri Lanka. *Asian Journal of Psychiatry*, 15, 32–37. <https://doi.org/10.1016/j.ajp.2015.04.012>
- Arun, P., Ramamurthy, P., & Thilakan, P. (2021). Indian Medical Students with Depression, Anxiety, and Suicidal Behavior: Why Do They Not Seek Treatment? *Indian Journal of Psychological Medicine*, 0253717620982326. <https://doi.org/10.1177/0253717620982326>
- Atri, A., Sharma, M., & Cottrell, R. (2006). Role of social support, hardiness, and acculturation as predictors of mental health among international students of Asian Indian origin. *International Quarterly of Community Health Education*, 27(1), 59–73. <https://doi.org/10.2190/IQ.27.1.e>
- Balhara, Y. P. S., Mahapatra, A., Sharma, P., & Bhargava, R. (2018). Problematic internet use among students in South-East Asia: Current state of evidence. *Indian Journal of Public Health*, 62(3), 197–210. https://doi.org/10.4103/ijph.IJPH_288_17
- Bali, H., Rai, V., Khanduri, N., Tripathi, R., Adhikari, K., & Sapkota, B. (2020). Perceived Stress and Stressors among Medical and Dental Students of Bhairhawa, Nepal: A Descriptive Cross-sectional Study. *JNMA; Journal of the Nepal Medical Association*, 58(226), 383–389. <https://doi.org/10.31729/jnma.4911>
- Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology*, 43(8), 667–672. <https://doi.org/10.1007/s00127-008-0345-x>
- Bhatt, S., & Gaur, A. (2019). Psychological risk factors associated with internet and smartphone addiction among students of an Indian dental institute. *Indian Journal of Public Health*, 63(4), 313–317. https://doi.org/10.4103/ijph.IJPH_330_18
- Bhowmik, M. K., Cheung, R. Y. M., & Hue, M. T. (2018). Acculturative stress and coping strategies among Mainland Chinese university students in Hong Kong: A qualitative inquiry. *The American Journal of Orthopsychiatry*, 88(5), 550–562. <https://doi.org/10.1037/ort0000338>
- Chen, Y., Yang, X., Wang, L., & Zhang, X. (2013). A randomized controlled trial of the effects of brief mindfulness meditation on anxiety symptoms and systolic blood pressure in Chinese nursing students. *Nurse Education Today*, 33(10), 1166–1172. <https://doi.org/10.1016/j.nedt.2012.11.014>
- Cheung, T., Wong, S. Y., Wong, K. Y., Law, L. Y., Ng, K., Tong, M. T., Wong, K. Y., Ng, M. Y., & Yip, P. S. F. (2016). Depression, Anxiety and Symptoms of Stress among Baccalaureate Nursing Students in Hong Kong: A Cross-Sectional Study.

- International Journal of Environmental Research and Public Health*, 13(8), E779.
<https://doi.org/10.3390/ijerph13080779>
- Chia, D. X. Y., Ng, C. W. L., Kandasami, G., Seow, M. Y. L., Choo, C. C., Chew, P. K. H., Lee, C., & Zhang, M. W. B. (2020). Prevalence of Internet Addiction and Gaming Disorders in Southeast Asia: A Meta-Analysis. *International Journal of Environmental Research and Public Health*, 17(7), E2582.
<https://doi.org/10.3390/ijerph17072582>
- Chow, S. K. Y., & Choi, E. K. Y. (2019). Assessing the Mental Health, Physical Activity Levels, and Resilience of Today's Junior College Students in Self-Financing Institutions. *International Journal of Environmental Research and Public Health*, 16(17), E3210. <https://doi.org/10.3390/ijerph16173210>
- Cuttilan, A. N., Sayampanathan, A. A., & Ho, R. C.-M. (2016). Mental health issues amongst medical students in Asia: A systematic review [2000-2015]. *Annals of Translational Medicine*, 4(4), 72. <https://doi.org/10.3978/j.issn.2305-5839.2016.02.07>
- Darvesh, N., Radhakrishnan, A., Lachance, C. C., Nincic, V., Sharpe, J. P., Ghassemi, M., Straus, S. E., & Tricco, A. C. (2020). Exploring the prevalence of gaming disorder and Internet gaming disorder: A rapid scoping review. *Systematic Reviews*, 9(1), 68. <https://doi.org/10.1186/s13643-020-01329-2>
- Deb, S., Banu, P. R., Thomas, S., Vardhan, R. V., Rao, P. T., & Khawaja, N. (2016). Depression among Indian university students and its association with perceived university academic environment, living arrangements and personal issues. *Asian Journal of Psychiatry*, 23, 108–117. <https://doi.org/10.1016/j.ajp.2016.07.010>
- Desai, N. D., Chavda, P., & Shah, S. (2021). Prevalence and predictors of suicide ideation among undergraduate medical students from a medical college of Western India. *Medical Journal, Armed Forces India*, 77(Suppl 1), S107–S114. <https://doi.org/10.1016/j.mjafi.2020.11.018>
- Dinh, K. T., Weinstein, T. L., Nemon, M., & Rondeau, S. (2008). The effects of contact with Asians and Asian Americans on White American college students: Attitudes, awareness of racial discrimination, and psychological adjustment. *American Journal of Community Psychology*, 42(3–4), 298–308. <https://doi.org/10.1007/s10464-008-9202-z>
- Dobson, A., Treloar, S. A., Zheng, W. Y., Anderson, R. E., Bredhauer, K., Kanesarajah, J., Loos, C., Pasmore, K., & Waller, M. (2013). *The Middle East Area of Operations (MEAO) Health Study: Census study report*. <https://researchers.mq.edu.au/en/publications/the-middle-east-area-of-operations-meao-health-study-census-study>
- Eskin, M., AlBuhairan, F., Rezaeian, M., Abdel-Khalek, A. M., Harlak, H., El-Nayal, M., Asad, N., Khan, A., Mechri, A., Noor, I. M., Hamdan, M., Isayeva, U., Khader, Y., Al Sayyari, A., Khader, A., Behzadi, B., Öztürk, C. Ş., Hendarmin, L. A., Khan, M. M., & Khatib, S. (2019). Suicidal Thoughts, Attempts and Motives Among University Students in 12 Muslim-Majority Countries. *The Psychiatric Quarterly*, 90(1), 229–248. <https://doi.org/10.1007/s11126-018-9613-4>
- Fan, Y., Tang, Y.-Y., & Posner, M. I. (2014). Cortisol level modulated by integrative meditation in a dose-dependent fashion. *Stress and Health : Journal of the International Society for the Investigation of Stress*, 30(1), 65–70. <https://doi.org/10.1002/smi.2497>
- Fares, J., Al Tabosh, H., Saadeddin, Z., El Mouhayyar, C., & Aridi, H. (2016). Stress, Burnout and Coping Strategies in Preclinical Medical Students. *North American Journal of Medical Sciences*, 8(2), 75–81. <https://doi.org/10.4103/1947-2714.177299>

- Fatehi, F., Monajemi, A., Sadeghi, A., Mojtahedzadeh, R., & Mirzazadeh, A. (2016). Quality of Life in Medical Students With Internet Addiction. *Acta Medica Iranica*, 54(10), 662–666.
- Fujita, Y., & Maki, K. (2018). Associations of smoking behavior with lifestyle and mental health among Japanese dental students. *BMC Medical Education*, 18(1), 264. <https://doi.org/10.1186/s12909-018-1365-1>
- Gedam, S. R., Shivji, I. A., Goyal, A., Modi, L., & Ghosh, S. (2016). Comparison of internet addiction, pattern and psychopathology between medical and dental students. *Asian Journal of Psychiatry*, 22, 105–110. <https://doi.org/10.1016/j.ajp.2016.06.007>
- Greer, T. M. (2008). Racial and Ethnic-Related Stressors as Predictors of Perceived Stress and Academic Performance for African American Students at a Historically Black College and University. *The Journal of Negro Education*, 77(1), 60–71.
- Grover, S., Dua, D., Shouan, A., Nehra, R., & Avasthi, A. (2019). Perceived stress and barriers to seeking help from mental health professionals among trainee doctors at a tertiary care centre in North India. *Asian Journal of Psychiatry*, 39, 143–149. <https://doi.org/10.1016/j.ajp.2018.12.020>
- Gulec Oyekcin, D., Sahin, E. M., & Aldemir, E. (2017). Mental health, suicidality and hopelessness among university students in Turkey. *Asian Journal of Psychiatry*, 29, 185–189. <https://doi.org/10.1016/j.ajp.2017.06.007>
- Gupta, S., Choudhury, S., Das, M., Mondol, A., & Pradhan, R. (2015). Factors causing stress among students of a medical college in Kolkata, India. *Education for Health (Abingdon, England)*, 28(1), 92–95. <https://doi.org/10.4103/1357-6283.161924>
- Hajianfar, H., Mollaghasemi, N., Tavakoly, R., Campbell, M. S., Mohtashamrad, M., & Arab, A. (2021). The Association Between Dietary Zinc Intake and Health Status, Including Mental Health and Sleep Quality, Among Iranian Female Students. *Biological Trace Element Research*, 199(5), 1754–1761. <https://doi.org/10.1007/s12011-020-02316-3>
- Hamaideh, S. H. (2012). Gender differences in stressors and reactions to stressors among Jordanian university students. *The International Journal of Social Psychiatry*, 58(1), 26–33. <https://doi.org/10.1177/0020764010382692>
- Hamdan-Mansour, A. M., Puskar, K., & Bandak, A. G. (2009). Effectiveness of cognitive-behavioral therapy on depressive symptomatology, stress and coping strategies among Jordanian university students. *Issues in Mental Health Nursing*, 30(3), 188–196. <https://doi.org/10.1080/01612840802694577>
- Han, J., Batterham, P. J., Cleave, A. L., & Ma, J. (2018). Seeking professional help for suicidal ideation: A comparison between Chinese and Australian university students. *Psychiatry Research*, 270, 807–814. <https://doi.org/10.1016/j.psychres.2018.10.080>
- Haroon, M. Z., Zeb, Z., Javed, Z., Awan, Z., Aftab, Z., & Talat, W. (2018). Internet Addiction In Medical Students. *Journal of Ayub Medical College, Abbottabad: JAMC*, 30(Suppl 1)(4), S659–S663.
- Hassan, M. S., Hossain, M. K., & Khan, H. T. A. (2019). Prevalence and predictors of tobacco smoking among university students in Sylhet Division, Bangladesh. *International Health*, 11(4), 306–313. <https://doi.org/10.1093/inthealth/ihy091>
- Ho, G. W. K., Bressington, D., Karatzias, T., Chien, W. T., Inoue, S., Yang, P. J., Chan, A. C. Y., & Hyland, P. (2020). Patterns of exposure to adverse childhood experiences and their associations with mental health: A survey of 1346 university students in East Asia. *Social Psychiatry and Psychiatric Epidemiology*, 55(3), 339–349. <https://doi.org/10.1007/s00127-019-01768-w>
- Hofmann, S.G. & Gómez, A.F. (2017). Mindfulness-Based Interventions for Anxiety and

- Depression. *Psychiatr Clin North Am*. 40(4):739-749. doi: 10.1016/j.psc.2017.08.008. Epub 2017 Sep 18. PMID: 29080597; PMCID: PMC5679245.
- Hosen, M. J., Eva, S. A., Rahman, M. M., Ibrahim, M., Lira, U. F., Hossain, A. B., Shill, M. C., & Uddin, M. J. (2021). Health impacts of excessive use of Facebook among university students in Bangladesh. *Heliyon*, 7(6), e07271. <https://doi.org/10.1016/j.heliyon.2021.e07271>
- Hsiao, Y.-C., Chiang, H.-Y., Lee, H.-C., & Chen, S.-H. (2012). The effects of a spiritual learning program on improving spiritual health and clinical practice stress among nursing students. *The Journal of Nursing Research : JNR*, 20(4), 281–290. <https://doi.org/10.1097/jnr.0b013e318273642f>
- Hsieh, P.-L. (2011). A school-based health promotion program for stressed nursing students in Taiwan. *The Journal of Nursing Research : JNR*, 19(3), 230–237. <https://doi.org/10.1097/JNR.0b013e318228d010>
- Jaisoorya, T. S., Gowda, G. S., Nair, B. S., Menon, P. G., Rani, A., Radhakrishnan, K. S., Revamma, M., Jeevan, C. R., Kishore, A., Thennarasu, K., & Benegal, V. (2018). Correlates of High-Risk and Low-Risk Alcohol Use among College Students in Kerala, India. *Journal of Psychoactive Drugs*, 50(1), 54–61. <https://doi.org/10.1080/02791072.2017.1370748>
- Jia, Z., Jin, Y., Zhang, L., Wang, Z., & Lu, Z. (2018). Prevalence of drug use among students in mainland China: A systematic review and meta-analysis for 2003-2013. *Drug and Alcohol Dependence*, 186, 201–206. <https://doi.org/10.1016/j.drugalcdep.2017.12.047>
- Jumaian, A. (2001). Prevalence and long-term impact of child sexual abuse among a sample of male college students in Jordan. *Eastern Mediterranean Health Journal = La Revue De Sante De La Mediterranee Orientale = Al-Majallah Al-Sihhiyah Li-Sharq Al-Mutawassit*, 7(3), 435–440.
- Kamimura, A., Trinh, H. N., Johansen, M., Hurley, J., Pye, M., Sin, K., & Nguyen, H. (2018). Perceptions of mental health and mental health services among college students in Vietnam and the United States. *Asian Journal of Psychiatry*, 37, 15–19. <https://doi.org/10.1016/j.ajp.2018.07.012>
- Karaca, A., Yildirim, N., Cangur, S., Acikgoz, F., & Akkus, D. (2019). Relationship between mental health of nursing students and coping, self-esteem and social support. *Nurse Education Today*, 76, 44–50. <https://doi.org/10.1016/j.nedt.2019.01.029>
- Kharsati, N., & Bhola, P. (2015). Patterns of non-suicidal self-injurious behaviours among college students in India. *The International Journal of Social Psychiatry*, 61(1), 39–49. <https://doi.org/10.1177/0020764014535755>
- Kim, S., Kim, H., Lee, H., Lee, H., & Noh, D. (2018). Effectiveness of a brief stress management intervention in male college students. *Perspectives in Psychiatric Care*, 54(1), 88–94. <https://doi.org/10.1111/ppc.12212>
- Kim, S., Lee, H., Kim, H., Noh, D., & Lee, H. (2016). Effects of an Integrated Stress Management Program (ISMP) for Psychologically Distressed Students: A Randomized Controlled Trial. *Perspectives in Psychiatric Care*, 52(3), 178–185. <https://doi.org/10.1111/ppc.12114>
- Kim, Y. K., & Cronley, C. (2020). Acculturative stress and binge drinking among international students in the United States: Resilience and vulnerability approaches. *Journal of American College Health: J of ACH*, 68(2), 207–218. <https://doi.org/10.1080/07448481.2018.1538998>
- Koc, M., & Gulyagci, S. (2013). Facebook addiction among Turkish college students: The role of psychological health, demographic, and usage characteristics. *Cyberpsychology, Behavior and Social Networking*, 16(4), 279–284. <https://doi.org/10.1089/cyber.2012.0249>

- Koly, K. N., Sultana, S., Iqbal, A., Dunn, J. A., Ryan, G., & Chowdhury, A. B. (2021). Prevalence of depression and its correlates among public university students in Bangladesh. *Journal of Affective Disorders*, 282, 689–694. <https://doi.org/10.1016/j.jad.2020.12.137>
- Kono, K., Eskandarieh, S., Obayashi, Y., Arai, A., & Tamashiro, H. (2015). Mental Health and Its Associated Variables Among International Students at a Japanese University: With Special Reference to Their Financial Status. *Journal of Immigrant and Minority Health*, 17(6), 1654–1659. <https://doi.org/10.1007/s10903-014-0100-1>
- Kronfol, Z., Khalifa, B., Khoury, B., Omar, O., Daouk, S., deWitt, J. P., ElAzab, N., & Eisenberg, D. (2018). Selected psychiatric problems among college students in two Arab countries: Comparison with the USA. *BMC Psychiatry*, 18(1), 147. <https://doi.org/10.1186/s12888-018-1718-7>
- Kuehner, C. (2017). Why is depression more common among women than among men? *Lancet Psychiatry*. 4(2):146-158. doi: 10.1016/S2215-0366(16)30263-2.
- Lam, T. P., & Lam, Y. Y. B. (2009). Medical education reform: The Asian experience. *Academic Medicine: Journal of the Association of American Medical Colleges*, 84(9), 1313–1317. <https://doi.org/10.1097/ACM.0b013e3181b18189>
- Lee, T.-Y., Hsieh, T.-C., Sung, H.-C., & Chen, W.-L. (2019). Internet-Delivered Cognitive Behavior Therapy for Young Taiwanese Female Nursing Students with Irritable Bowel Syndrome-A Cluster Randomized Controlled Trial. *International Journal of Environmental Research and Public Health*, 16(5). <https://doi.org/10.3390/ijerph16050708>
- Lee, Y. L., Verma, R. K., Yadav, H., & Barua, A. (2016). Health impacts of Facebook usage and mobile texting among undergraduate dental students: It's time to understand the difference between usage and an excessive use. *European Journal of Dental Education: Official Journal of the Association for Dental Education in Europe*, 20(4), 218–228. <https://doi.org/10.1111/eje.12164>
- Lei, X.-Y., Xiao, L.-M., Liu, Y.-N., & Li, Y.-M. (2016). Prevalence of Depression among Chinese University Students: A Meta-Analysis. *PloS One*, 11(4), e0153454. <https://doi.org/10.1371/journal.pone.0153454>
- Li, L., Lok, G. K. I., Mei, S.-L., Cui, X.-L., An, F.-R., Li, L., Cheung, T., Ungvari, G. S., & Xiang, Y.-T. (2020). Prevalence of depression and its relationship with quality of life among university students in Macau, Hong Kong and mainland China. *Scientific Reports*, 10(1), 15798. <https://doi.org/10.1038/s41598-020-72458-w>
- Li, L., Xu, D.-D., Chai, J.-X., Wang, D., Li, L., Zhang, L., Lu, L., Ng, C. H., Ungvari, G. S., Mei, S.-L., & Xiang, Y.-T. (2018). Prevalence of Internet addiction disorder in Chinese university students: A comprehensive meta-analysis of observational studies. *Journal of Behavioral Addictions*, 7(3), 610–623. <https://doi.org/10.1556/2006.7.2018.53>
- Li, Z.-Z., Li, Y.-M., Lei, X.-Y., Zhang, D., Liu, L., Tang, S.-Y., & Chen, L. (2014). Prevalence of suicidal ideation in Chinese college students: A meta-analysis. *PloS One*, 9(10), e104368. <https://doi.org/10.1371/journal.pone.0104368>
- Lipson, S. K., Lattie, E. G., & Eisenberg, D. (2019). Increased Rates of Mental Health Service Utilization by U.S. College Students: 10-Year Population-Level Trends (2007–2017). *Psychiatric Services*, 70(1), 60–63. <https://doi.org/10.1176/appi.ps.201800332>
- Liu, F., Zhou, N., Cao, H., Fang, X., Deng, L., Chen, W., Lin, X., Liu, L., & Zhao, H. (2017). Chinese college freshmen's mental health problems and their subsequent help-seeking behaviors: A cohort design (2005-2011). *PloS One*, 12(10), e0185531. <https://doi.org/10.1371/journal.pone.0185531>

- Liu, J. J., Reed, M., & Girard, T. A. (2017). Advancing resilience: An integrative, multi-system model of resilience. *Personality and Individual Differences*, 111, 111–118.
- Liu, J., Nie, J., & Wang, Y. (2017). Effects of Group Counseling Programs, Cognitive Behavioral Therapy, and Sports Intervention on Internet Addiction in East Asia: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, 14(12). <https://doi.org/10.3390/ijerph14121470>
- Madhan, B., Rajpurohit, A. S., & Gayathri, H. (2012). Mental health of postgraduate orthodontic students in India: A multi-institution survey. *Journal of Dental Education*, 76(2), 200–209.
- Mahroon, Z. A., Borgan, S. M., Kamel, C., Maddison, W., Royston, M., & Donnellan, C. (2018). Factors Associated with Depression and Anxiety Symptoms Among Medical Students in Bahrain. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, 42(1), 31–40. <https://doi.org/10.1007/s40596-017-0733-1>
- Mak, K.-K., Lai, C.-M., Watanabe, H., Kim, D.-I., Bahar, N., Ramos, M., Young, K. S., Ho, R. C. M., Aum, N.-R., & Cheng, C. (2014). Epidemiology of internet behaviors and addiction among adolescents in six Asian countries. *Cyberpsychology, Behavior and Social Networking*, 17(11), 720–728. <https://doi.org/10.1089/cyber.2014.0139>
- Maksutova, K. (n.d.). *A Comparative Study of Higher Education Reforms of three Central Asian Countries: Kyrgyzstan, Kazakhstan and Uzbekistan*. 65.
- Mamun, M. A., Hossain, M. S., Siddique, A. B., Sikder, M. T., Kuss, D. J., & Griffiths, M. D. (2019). Problematic internet use in Bangladeshi students: The role of socio-demographic factors, depression, anxiety, and stress. *Asian Journal of Psychiatry*, 44, 48–54. <https://doi.org/10.1016/j.ajp.2019.07.005>
- Mansouri, M., Sadeghi, O., Roshanfekr, P., Sharifi, F., Varmaghani, M., Yaghubi, H., Ghaffari, S., & Masjedi, M. R. (2020). Prevalence of smoking and its association with health-related behaviours among Iranian university students: A large-scale study. *Eastern Mediterranean Health Journal = La Revue De Sante De La Mediterranee Orientale = Al-Majallah Al-Sihhiyah Li-Sharq Al-Mutawassit*, 26(10), 1251–1261. <https://doi.org/10.26719/emhj.20.053>
- Mao, Y., Zhang, N., Liu, J., Zhu, B., He, R., & Wang, X. (2019). A systematic review of depression and anxiety in medical students in China. *BMC Medical Education*, 19(1), 327. <https://doi.org/10.1186/s12909-019-1744-2>
- Masri, R., Kadhum, M., Farrell, S. M., Khamees, A., Al-Taiar, H., & Molodynski, A. (2019). Wellbeing and mental health amongst medical students in Jordan: A descriptive study. *International Review of Psychiatry (Abingdon, England)*, 31(7–8), 619–625. <https://doi.org/10.1080/09540261.2019.1670402>
- Menon, V., Sarkar, S., & Kumar, S. (2015). Barriers to healthcare seeking among medical students: A cross sectional study from South India. *Postgraduate Medical Journal*, 91(1079), 477–482. <https://doi.org/10.1136/postgradmedj-2015-133233>
- Nath, Y., Paris, J., Thombs, B., & Kirmayer, L. (2012). Prevalence and social determinants of suicidal behaviours among college youth in India. *The International Journal of Social Psychiatry*, 58(4), 393–399. <https://doi.org/10.1177/0020764011401164>
- Nebhinani, N., Kuppili, P. P., & Mamta 3. (2021). Stress, Burnout, and Coping among First-Year Medical Undergraduates. *Journal of Neurosciences in Rural Practice*, 12(3), 483–489. <https://doi.org/10.1055/s-0041-1727576>
- Nerdrum, P., Rustøen, T., & Helge Rønnestad, M. (2009). Psychological Distress Among Nursing, Physiotherapy and Occupational Therapy Students: A Longitudinal and Predictive Study. *Scandinavian Journal of Educational Research*, 53(4), 363–378. <https://doi.org/10.1080/00313830903043133>

- Newman, I., Ding, L., & Feng, Y. (2017). Estimate of undergraduate university student alcohol use in China: A systematic review and meta-analysis. *Archives of Public Health = Archives Belges De Sante Publique*, 75, 52. <https://doi.org/10.1186/s13690-017-0220-x>
- Ohtsu, T., Kaneita, Y., Osaki, Y., Kokaze, A., Ochiai, H., Shirasawa, T., Nanri, H., & Ohida, T. (2014). Mental health status among Japanese medical students: A cross-sectional survey of 20 universities. *Acta Medica Okayama*, 68(6), 331–337. <https://doi.org/10.18926/AMO/53022>
- Osama, M., Islam, M. Y., Hussain, S. A., Masroor, S. M. Z., Burney, M. U., Masood, M. A., Menezes, R. G., & Rehman, R. (2014). Suicidal ideation among medical students of Pakistan: A cross-sectional study. *Journal of Forensic and Legal Medicine*, 27, 65–68. <https://doi.org/10.1016/j.jflm.2014.08.006>
- Pal Singh Balhara, Y., Doric, A., Stevanovic, D., Knez, R., Singh, S., Roy Chowdhury, M. R., Kafali, H. Y., Sharma, P., Vally, Z., Vi Vu, T., Arya, S., Mahendru, A., Ransing, R., Erzin, G., & Le Thi Cam Hong Le, H. (2019). Correlates of Problematic Internet Use among college and university students in eight countries: An international cross-sectional study. *Asian Journal of Psychiatry*, 45, 113–120. <https://doi.org/10.1016/j.ajp.2019.09.004>
- Pan, X.-F., Wen, Y., Zhao, Y., Hu, J.-M., Li, S.-Q., Zhang, S.-K., Li, X.-Y., Chang, H., Xue, Q.-P., Zhao, Z.-M., Gu, Y., Li, C.-C., Zhang, Y.-Q., Sun, X.-W., Yang, C.-X., & Fu, C. (2016). Prevalence of depressive symptoms and its correlates among medical students in China: A national survey in 33 universities. *Psychology, Health & Medicine*, 21(7), 882–889. <https://doi.org/10.1080/13548506.2015.1127395>
- Panthee, B., Panthee, S., Gyawali, S., & Kawakami, N. (2017). Prevalence and correlates of substance use among health care students in Nepal: A cross sectional study. *BMC Public Health*, 17(1), 950. <https://doi.org/10.1186/s12889-017-4980-6>
- Paudel, S., Gautam, H., Adhikari, C., & Yadav, D. K. (2020). Depression, Anxiety and Stress among the Undergraduate Students of Pokhara Metropolitan, Nepal. *Journal of Nepal Health Research Council*, 18(1), 27–34. <https://doi.org/10.33314/jnhrc.v18i1.2189>
- Peltzer, K., Yi, S., & Pengpid, S. (2017). Suicidal behaviors and associated factors among university students in six countries in the Association of Southeast Asian Nations (ASEAN). *Asian Journal of Psychiatry*, 26, 32–38. <https://doi.org/10.1016/j.ajp.2017.01.019>
- Pengpid, S., & Peltzer, K. (2018). Risk of disordered eating attitudes and its relation to mental health among university students in ASEAN. *Eating and Weight Disorders: EWD*, 23(3), 349–355. <https://doi.org/10.1007/s40519-018-0507-0>
- Phang, C. K., Mukhtar, F., Ibrahim, N., Keng, S.-L., & Mohd Sidik, S. (2015). Effects of a brief mindfulness-based intervention program for stress management among medical students: The Mindful-Gym randomized controlled study. *Advances in Health Sciences Education : Theory and Practice*, 20(5), 1115–1134. <https://doi.org/10.1007/s10459-015-9591-3>
- Pokhrel, N. B., Khadayat, R., & Tulachan, P. (2020). Depression, anxiety, and burnout among medical students and residents of a medical school in Nepal: A cross-sectional study. *BMC Psychiatry*, 20(1), 298. <https://doi.org/10.1186/s12888-020-02645-6>
- Poyrazli, S., & Lopez, M. D. (2007). An exploratory study of perceived discrimination and homesickness: A comparison of international students and American students. *The Journal of Psychology*, 141(3), 263–280. <https://doi.org/10.3200/JRLP.141.3.263-280>
- Rajiah, K., & Saravanan, C. (2014). The effectiveness of psychoeducation and systematic desensitization to reduce test anxiety among first-year pharmacy students. *American Journal of Pharmaceutical Education*, 78(9), 163. <https://doi.org/10.5688/ajpe789163>

- Ramanaidu, S. (1991). A comparison of stresses experienced by home and overseas students of radiography. *Radiography Today*, 57(645), 18–27.
- S, B. U., Ac, A., P, K., S, J., S, K., A, A., Pa, J., & Av, C. (2018). Psychological distress among college students of coastal district of Karnataka: A community-based cross-sectional survey. *Asian Journal of Psychiatry*, 38. <https://doi.org/10.1016/j.ajp.2018.10.006>
- Salam, Z., Sadiq, Z., Tajamul, U., Sethi, M. R., & Irfan, M. (2019). Internet Gaming Disorder In Students Of Peshawar: A Cross Sectional Survey. *Journal of Ayub Medical College, Abbottabad: JAMC*, 31(4), 548–552.
- Sayyah, M., & Khanaferreh, S. (2019). Prevalence of internet addiction among medical students: A study from Southwestern Iran. *Central European Journal of Public Health*, 27(4), 326–329. <https://doi.org/10.21101/cejph.a5171>
- SEA: Internet penetration by country 2020. (n.d.). Statista. Retrieved July 30, 2021, from <https://www.statista.com/statistics/487965/internet-penetration-in-southeast-asian-countries/>
- Seetan, K., Al-Zubi, M., Rubbai, Y., Athamneh, M., Khamees, A., & Radaideh, T. (2021). Impact of COVID-19 on medical students' mental wellbeing in Jordan. *PLOS ONE*, 16(6), e0253295. <https://doi.org/10.1371/journal.pone.0253295>
- Shamsuddin, K., Fadzil, F., Ismail, W. S. W., Shah, S. A., Omar, K., Muhammad, N. A., Jaffar, A., Ismail, A., & Mahadevan, R. (2013). Correlates of depression, anxiety and stress among Malaysian university students. *Asian Journal of Psychiatry*, 6(4), 318–323. <https://doi.org/10.1016/j.ajp.2013.01.014>
- Shaw, M., & Black, D. W. (2008). Internet addiction: Definition, assessment, epidemiology and clinical management. *CNS Drugs*, 22(5), 353–365. <https://doi.org/10.2165/00023210-200822050-00001>
- Shen, Y., Chan, B. S. M., Huang, C., Cui, X., Liu, J., Lu, J., Patel, M., Verrico, C. D., Luo, X., & Zhang, X. Y. (2021). Suicidal behaviors and attention deficit hyperactivity disorder (ADHD): A cross-sectional study among Chinese medical college students. *BMC Psychiatry*, 21(1), 258. <https://doi.org/10.1186/s12888-021-03247-6>
- Shen, Y., Meng, F., Xu, H., Li, X., Zhang, Y., Huang, C., Luo, X., & Zhang, X. Y. (2020). Internet addiction among college students in a Chinese population: Prevalence, correlates, and its relationship with suicide attempts. *Depression and Anxiety*, 37(8), 812–821. <https://doi.org/10.1002/da.23036>
- Shin, N. Y., & Lim, Y.-J. (2019). Contribution of self-compassion to positive mental health among Korean university students. *International Journal of Psychology: Journal International De Psychologie*, 54(6), 800–806. <https://doi.org/10.1002/ijop.12527>
- Shu, F., Ahmed, S. F., Pickett, M. L., Ayman, R., & McAbee, S. T. (2020). Social support perceptions, network characteristics, and international student adjustment. *International Journal of Intercultural Relations*, 74, 136–148. <https://doi.org/10.1016/j.ijintrel.2019.11.002>
- Song, Y., & Lindquist, R. (2015). Effects of mindfulness-based stress reduction on depression, anxiety, stress and mindfulness in Korean nursing students. *Nurse Education Today*, 35(1), 86–90. <https://doi.org/10.1016/j.nedt.2014.06.010>
- Sui, G., Liu, G., Jia, L., Wang, L., & Yang, G. (2018). The association between ambient air pollution exposure and mental health status in Chinese female college students: A cross-sectional study. *Environmental Science and Pollution Research International*, 25(28), 28517–28524. <https://doi.org/10.1007/s11356-018-2881-6>
- Sundarasan, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G. M., Khoshaim, H. B., Hossain, S. F. A., & Sukayt, A. (2020). Psychological Impact of COVID-19 and Lockdown among University Students in Malaysia: Implications and Policy

- Recommendations. *International Journal of Environmental Research and Public Health*, 17(17), 6206. <https://doi.org/10.3390/ijerph17176206>
- Taha, M. H., Shehzad, K., Alamro, A. S., & Wadi, M. (2019). Internet Use and Addiction Among Medical Students in Qassim University, Saudi Arabia. *Sultan Qaboos University Medical Journal*, 19(2), e142–e147. <https://doi.org/10.18295/squmj.2019.19.02.010>
- Tang, C. S. K., Wu, A. M. S., Yan, E. C. W., Ko, J. H. C., Kwon, J. H., Yogo, M., Gan, Y. Q., & Koh, Y. Y. W. (2018). Relative risks of Internet-related addictions and mood disturbances among college students: A 7-country/region comparison. *Public Health*, 165, 16–25. <https://doi.org/10.1016/j.puhe.2018.09.010>
- Tangmunkongvorakul, A., Musumari, P. M., Thongpibul, K., Srithanaviboonchai, K., Techasrivichien, T., Suguimoto, S. P., Ono-Kihara, M., & Kihara, M. (2019). Association of excessive smartphone use with psychological well-being among university students in Chiang Mai, Thailand. *PloS One*, 14(1), e0210294. <https://doi.org/10.1371/journal.pone.0210294>
- Taremi, F., Yaghubi, H., Pairavi, H., Hosseini, S. R., Zafar, M., & Moloodi, R. (2018). Risk and protective factors for substance use among Iranian university students: A national study. *Substance Abuse Treatment, Prevention, and Policy*, 13(1), 46. <https://doi.org/10.1186/s13011-018-0181-2>
- Tayefi, B., Eftekhari, M., Tayefi, M., Darroudi, S., Khalili, N., Mottaghi, A., Shanjani, Z. H., & Nojomi, M. (2020). Prevalence and Socio-Demographic Correlates of Mental Health Problems Among Iranian Health Sciences Students. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, 44(1), 73–77. <https://doi.org/10.1007/s40596-019-01121-y>
- Tenzin, K., Dorji, T., Gurung, M. S., Dorji, P., Tamang, S., Pradhan, U., & Dorji, G. (2018). Prevalence of Internet Addiction and Associated Psychological Co-morbidities among College Students in Bhutan. *JNMA; Journal of the Nepal Medical Association*, 56(210), 558–564.
- Tran, Q. A., Dunne, M. P., Vo, T. V., & Luu, N. H. (2015). Adverse Childhood Experiences and the Health of University Students in Eight Provinces of Vietnam. *Asia-Pacific Journal of Public Health*, 27(8 Suppl), 26S–32S. <https://doi.org/10.1177/1010539515589812>
- Tsai, H. F., Cheng, S. H., Yeh, T. L., Shih, C.-C., Chen, K. C., Yang, Y. C., & Yang, Y. K. (2009). The risk factors of Internet addiction—A survey of university freshmen. *Psychiatry Research*, 167(3), 294–299. <https://doi.org/10.1016/j.psychres.2008.01.015>
- Wan Ismail, W. S., Sim, S. T., Tan, K.-A., Bahar, N., Ibrahim, N., Mahadevan, R., Nik Jaafar, N. R., Baharudin, A., & Abdul Aziz, M. (2020). The relations of internet and smartphone addictions to depression, anxiety, stress, and suicidality among public university students in Klang Valley, Malaysia. *Perspectives in Psychiatric Care*, 56(4), 949–955. <https://doi.org/10.1111/ppc.12517>
- Wong, J. G. W. S., Cheung, E. P. T., Chan, K. K. C., Ma, K. K. M., & Wa Tang, S. (2006). Web-Based Survey of Depression, Anxiety and Stress in First-Year Tertiary Education Students in Hong Kong. *Australian & New Zealand Journal of Psychiatry*, 40(9), 777–782. <https://doi.org/10.1080/j.1440-1614.2006.01883.x>
- Yang, F., Meng, H., Chen, H., Xu, X.-H., Liu, Z., Luo, A., & Feng, Z.-C. (2014). Influencing factors of mental health of medical students in China. *Journal of Huazhong University of Science and Technology. Medical Sciences = Hua Zhong Ke Ji Da Xue Xue Bao. Yi*

- Xue Ying De Wen Ban* = *Huazhong Keji Daxue Xuebao. Yixue Yingdewen Ban*, 34(3), 443–449. <https://doi.org/10.1007/s11596-014-1298-9>
- Yeo, L. S., Ang, R. P., Chong, W. H., & Huan, V. S. (2007). Gender differences in adolescent concerns and emotional well-being: Perceptions of Singaporean adolescent students. *The Journal of Genetic Psychology*, 168(1), 63–80. <https://doi.org/10.3200/GNTP.168.1.63-80>
- Yu, B., Chen, X., Li, S., Liu, Y., Jacques-Tiura, A. J., & Yan, H. (2014). Acculturative stress and influential factors among international students in China: A structural dynamic perspective. *PloS One*, 9(4), e96322. <https://doi.org/10.1371/journal.pone.0096322>
- Zeng, W., Chen, R., Wang, X., Zhang, Q., & Deng, W. (2019). Prevalence of mental health problems among medical students in China. *Medicine*, 98(18), e15337. <https://doi.org/10.1097/MD.00000000000015337>
- Zeng, Y., Wang, G., Xie, C., Hu, X., & Reinhardt, J. D. (2019). Prevalence and correlates of depression, anxiety and symptoms of stress in vocational college nursing students from Sichuan, China: A cross-sectional study. *Psychology, Health & Medicine*, 24(7), 798–811. <https://doi.org/10.1080/13548506.2019.1574358>
- Zhao, F., Guo, Y., Suhonen, R., & Leino-Kilpi, H. (2016). Subjective well-being and its association with peer caring and resilience among nursing vs medical students: A questionnaire study. *Nurse Education Today*, 37, 108–113. <https://doi.org/10.1016/j.nedt.2015.11.019>
- Zu, D., Zhai, K., Qiu, Y., Pei, P., Zhu, X., & Han, D. (2020). The Impacts of Air Pollution on Mental Health: Evidence from the Chinese University Students. *International Journal of Environmental Research and Public Health*, 17(18), E6734. <https://doi.org/10.3390/ijerph17186734>