



International Students' Mental Health Amidst COVID-19-A Systematic Review Based on Current Evidence

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While the psychological impact of the COVID-19 pandemic has been widely discussed during the past two years, little attention has been given to international students. This study aimed to systematically review all the empirical studies regarding international students' mental health amidst COVID-19. A search of the peer-reviewed papers was conducted using PsycINFO, Google Scholar, ProQuest Psychology, PubMed, Web of Science and ProQuest Public Health on 5 January 2022. Articles were selected based on inclusion and exclusion criteria created. Eighteen studies were finally included in this review. Findings showed that international students experienced various adverse psychological outcomes during COVID-19. Protective and risk factors that have been found to correlate with international students' mental health were reviewed. Four possible avenues for future research, based on the current literature are identified and discussed.

Introduction

It has been over two years since COVID-19 (SARS-CoV-2) was first reported and subsequently extended to an unprecedented, global public health emergency. The outbreak has since caused substantial human suffering and death across the world. According to the latest data (The World Health Organization, February 22, 2022), there are 424,822,073 confirmed cases in total to date, with 5,890,312 deaths in more than 200 countries.

Previous pandemics such as Ebola, the original Severe Acute Respiratory Syndrome (SARS) and MERS were demonstrated to

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have a significant negative impact on the mental health of both individuals and entire communities up to nine years later (Brooks et al., 2020; Loades et al., 2020; Maunder et al., 2006; Shultz et al., 2015). In light of these findings, COVID-19, as a more widespread global pandemic, is likely to have far-reaching implications for mental health worldwide.

There has been an increasing number of studies focusing on the mental health of people of different groups amidst COVID-19, including the general population (Shevlin et al., 2020; Wang et al., 2021), healthcare workers (see a review, De Kock et al., 2021), university students (Browning et al., 2021; Dodd et al., 2021), children and adolescents (Houghton et al., 2022a; see a review, Ma et al., 2021) as well as clinical patients of various diseases (Houghton et al., 2022b; Parisi et al., 2022; Yao et al., 2020). Rajkumar (2020) reviewed existing literature on the COVID-19 outbreak pertinent to mental health and suggested that various psychological symptoms including anxiety, depression and self-reported stress had been found to be common reactions of individuals to COVID-19. Nobles et al., (2020) also reviewed a broad range of literature regarding the impact of COVID-19 on mental health and reported that there were likely to be significant negative psychological impacts amongst the general population both during, and immediately after, any quarantine periods.

Although a large number of studies on people's mental health amidst COVID-19 have emerged, very little attention has been given to international students (Chen et al., 2020). As Humphrey and Forbes-Mewett (2021) argued, international students are often neglected in "mainstream health promotion and support services" (p. 58). International students are a vulnerable group during this global pandemic. Even under regular circumstances, international students have been found to be more vulnerable to psychological distress as a result of culture and language barriers, lack of understanding from the broader University community, racial discrimination, lack of social support and difficulties accessing medical care (Khan et al., 2021; Sherry et al. 2010; Yeh & Inose

2003). Apart from that, international students have also been reported to be less likely to use mental health services compared to their domestic peers due to their unfamiliarity with western therapeutic approaches (Forbes-Mewett, & Sawyer, 2016), having limited access to local medical system and facilities (Chen et al., 2020) and a lack of knowledge about available services (Skromanis et al., 2018). All these may increase the risk of international students' adverse mental health.

The COVID-19 pandemic may exacerbate their situation by throwing them into a more isolated status abroad. Despite the significance of international students to the economy and cultural diversity of the host country, the measures and policies put forward by governments or universities of host countries often exclude international students or neglect this minority group. For example, apart from the statement from the Australian Prime Minister that non-residents were no longer welcome in Australia in "times like this", Australia excluded temporary visa holders from all government financial support packages (Farbenblum & Berg, 2020, p. 486). Similarly, the 'stimulus checks' in the United States (U.S.) which allowed colleges and universities to award emergency financial aid grants to students also only opened to American citizens and certain qualifying non-citizens (Loweree et al., 2020), which excluded international students. Some U.S. universities shut their doors without considering that many international students had no place to live outside campuses (Daiya, 2020). Not to mention the limited accessibility to "a safe return to their home countries due to closed borders, reduced number of international flights, and potential exposure to COVID-19 during the travel" (Chen et al., 2020, p. 1). Being far away from their families and lacking social support in the local community, as well as increasing racial discrimination towards international students, especially of those from Asian countries, may all put international students in a vulnerable position, yet not enough attention and care have been given to them.

The only relevant systematic review of studies regarding international students' mental health identified so far was conducted by Wu et al. (2021), which explored the current mental health care of international students in China. In their study, Wu et al. (2021) reviewed 11 studies that were conducted from 2014 to 2021 and found that mental health care given to international students in China was not satisfying, and there wasn't enough attention to this minority. However, this review only includes results from studies conducted in China, and the time that these studies were conducted ranged from 2014 to 2021, which means that the review includes studies conducted both before and during COVID-19. Due to the influence of the pandemic, international students' mental health during COVID-19 may differ greatly from that before COVID-19.

Although research evidence regarding international students in different countries should be interpreted cautiously within context, more studies conducted in different countries will be helpful as this will lead to a better understanding about international students' mental health conditions and needs.

The present paper reviewed the existing literature regarding the mental health of international students amidst COVID-19, aiming to (1) understand international students' mental health amidst COVID-19; (2) identify factors that relate to international students' mental health amidst COVID-19; (3) identify research gaps in this area to inform policy makers, practitioners and health system workers in developing tailored and practical strategies to maintain international students' mental health during the pandemic.

Search Methods

The authors used the Preferred Reporting Items for Systematic Reviews (PRISMA) (Moher et al., 2009) as the guideline to search for the literature. Six databases were explored: PsycINFO, Google Scholar, ProQuest Psychology, PubMed, Web of Science and ProQuest Public Health. Keywords used included ("Mental health" OR "Psycholog*" OR "mental wellbeing" OR "experience") AND

("COVID-19" OR "coronavirus"). An initial pool of 415 articles were retrieved with this step by 5 January 2022. After removing overlapping papers, studies were included based on the following criteria: (1) Peer-reviewed papers; (2) empirical studies which reported findings related to international students' mental health amidst COVID-19; and (3) full-text available papers written in English language.

Letters to editor, editorials, correspondences, commentaries, perspectives and protocols were all excluded. The reference lists of searched articles were also reviewed to identify papers that might not have been found during the database search. As a result, 18 studies met the inclusion criteria and were included in this review. The PRISMA flowchart (Moher et al., 2009) depicts the number of papers that were included and excluded at each step in the process (see Figure 1).

Results and Discussion

A summary of the targeting population, country, research design, sample size and main findings of these studies are presented in Table 1. Of the 18 studies that were included in the review, 14 (77.78%) were cross-sectional quantitative studies, three (16.67%) used mixed methods (both quantitative and qualitative), and one (5.6%) used qualitative methods only. Regarding data collection, 14 studies used online surveys (Afzali et al., 2020; Alam et al., 2021; Elemo et al., 2021; Garbóczy et al., 2021; Khan et al., 2021; Kim & Kim, 2021; Lai et al., 2020; Li et al., 2020; Misirlis et al., 2020; Mosanya, 2020; Song et al., 2021; Wilczewski et al., 2021; Xu, 2021; Yuan et al., 2021), two used online open-ended questions and survey (Maleku et al., 2021; Pappa et al., 2020), one used online survey and online semi-structured interview (Humphrey & Forbes-Mewett, 2021), and one used online focus group interviews (Lai et al., 2021). Data for these 18 studies were collected between 3 February 2020 and 9 January 2021.

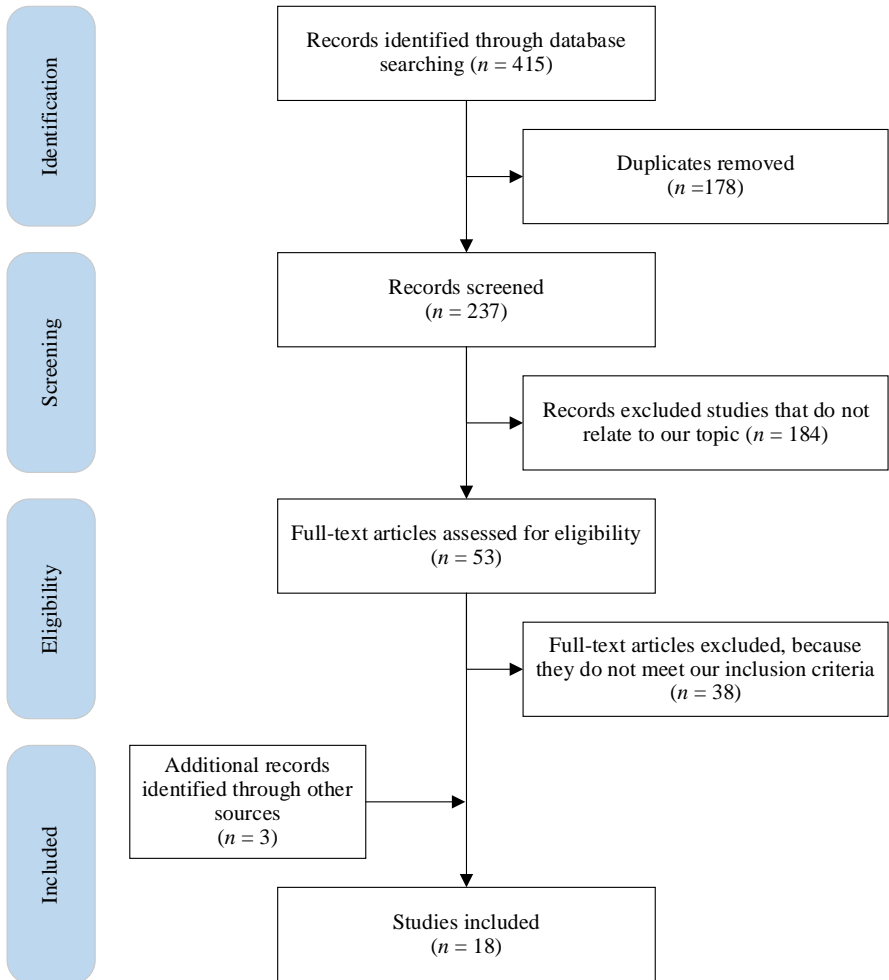


Figure 1. Flow diagram of how papers were selected

Regarding targeting population, 13 focused on general international students in different host countries including China (Alam et al., 2021; Khan et al., 2021; Xu, 2021; Yuan et al., 2021), Australia (Humphrey & Forbes-Mewett, 2021), the United States (U.S.) (Maleku et al., 2021); South Korea (Kim & Kim, 2021), Turkey (Elemo et al., 2021), Finland (Pappa et al., 2020), the United Arab Emirates (UAE) (Mosanya, 2020), Poland (Wilczewski et al., 2021), Russia (Afzali et al., 2020) and the Netherlands (Misirlis et al., 2020); two specifically focused on Chinese international students in the U.S. (Li et al., 2021; Song et al., 2021); two focused on Chinese international students in the U.S. and the United Kingdom (UK) (Lai et al., 2020; Lai et al., 2021); and the final one was a comparative study, which targeted domestic students and international students in Hungary (Garbóczy et al., 2021). Sample sizes varied across studies, ranging from 20 to 1,135. Other information can be found in Table 1.

Overall, the evidence based on the existing literature suggests varying degrees of adverse mental health among international students amidst the COVID-19 pandemic in different host countries. Specifically, half of the studies included in this review reported that international students experienced anxiety, depression, and stress at various degrees amidst COVID-19 (Alam et al., 2021; Garbóczy et al., 2021; Kim & Kim, 2021; Lai et al., 2020; Maleku et al., 2021; Song et al., 2021; Wilczewski et al., 2021; Xu, 2021; Yuan et al., 2021). For example, in a sample of 488 international students in South Korea (Kim & Kim, 2021), 47.1% reported to experiencing sleep problems, 39.6% experiencing anxiety and 49% depression. Other studies (e.g., Alam et al., 2021; Lai et al., 2020) have reported higher percentages of students with these adverse psychological outcomes.

Table 1 Characteristics of included articles

Author/s	Target population/ country	Research design/ sample size	Data collection time period	Key findings
Kim & Kim, 2021	International students in South Korea	Quantitative; cross-sectional; online survey/ <i>n</i> = 488	From 10 December 2020 to 31 December 2020	Sleep problems (47.1%), anxiety (39.6%), and depression (49%) were reported among international students. Participants who were male, living with someone, living in rural areas, and earning a higher income reported higher prevalence rates of mental health problems. Undergraduate student status, good understanding of the Korean language, longer hours of media usage, and experiences related to COVID-19 infection contributed to the prevalence of mental health problems.
Alam et al., 2021	International students in China	Quantitative; cross-sectional; online survey/ <i>n</i> = 402	From 28 May 2020 to 12 June 2020.	Symptoms of depression (73.4%), anxiety (76.6%), stress (58.5%), insomnia (77.6%), psychological distress (71.4%), loneliness (62.4%), and fear (73.1%) were reported among international students during the COVID-19. Students between 26 and 30-years-old, who lived with roommates, and stayed in

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				China less than 2 years were more likely to experience moderate to extremely severe symptoms of all psychological outcomes.
Song et al., 2021	Chinese International students in the U.S.	Quantitative; cross-sectional; online survey/ <i>n</i> = 261	Not specified.	More than one-third of the respondents experienced moderate-to-severe PTSD and nearly half of them reported moderate-to-severe anxiety. Factors found associated with higher levels of psychological impact and worse mental health status included future academic plans, economic pressure, and health status.
Lai et al., 2020	Chinese international students in UK and U.S. (both stayed and returned)	Quantitative; cross-sectional; online survey/ <i>n</i> = 124	From 28 April 2021 to 12 May 2021	Among all students, 84.7% had moderate-to-high perceived stress, 12.1% had moderate-to-severe symptoms of anxiety and depression, and 17.7% had moderate-to-severe symptoms of insomnia. Stayers had significantly higher stress from COVID-19-related stressors than returnees. Stress related to academics, personal health and health of family and friends, availability of reliable COVID-19-related information, and lack of social support predicted more negative mental health impacts. Resilience, positive thinking, and exercise were predictors of less severe mental health impacts.

Pappa et al., 2020	International students in Finland	Mixed, open-ended questions and online survey/ $n = 37$	From June to early August 2020	Students' decreased social interactions with others seemed to affect their psychological wellbeing while self-isolating at home, and decreased interaction with classmates due to online teaching seemed to affect their sense of well-being, which was closely related to their commitment to learning and studying. Their challenges in coping with the situation affected their mental health.
Xu, 2021	International students in China	Quantitative; cross-sectional; online survey/ $n = 289$	From 15 to 31 August 2020.	New teaching mode and the corresponding changes in learning behaviour were significantly associated with students' psychological distress; collective values were conducive to the alleviation of psychological distress, while individual values had the opposite effect. If sufficient social support was available, isolation was not necessarily directly related to psychological distress.
Elemo et al., 2021	International students in Turkey	Quantitative; cross-sectional; online survey/ $n = 368$	Not specified.	Sense of control was positively correlated with students' fear of COVID-19 and flourishing; and the fear of COVID-19 was negatively correlated with their flourishing. Sense of control partially mediates the association between students' fear of COVID-19 and flourishing.

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Humphrey & Forbes-Mewett, 2021	International students in Australia	A mixed approach; cross-sectional; online survey and interview/ $n_1 = 135, n_2 = 20$	Not specified.	International students' mental health was declining before COVID-19, and the impact of the pandemic exacerbated this situation. Close social connections will benefit international students' mental health. Students from highly socially engaged (collectivistic) cultures face challenges when studying in countries with individualistic cultures like Australia amid COVID-19.
Mosanya, 2020	International student population in the UAE	Quantitative; cross-sectional; online survey/ $n = 170$	April 2020	Grit and growth mindset can be taught to students as resilience-building prevention of academic stress during COVID-19. Parents (37%) and friends (32%) were most frequently identified by students as supporters during the COVID-19 pandemic with minimal support from universities (2.5%).
Lai et al., 2021	Chinese international students in UK & US	Qualitative; online focus group interviews, $n = 20$	From 3 May to 12 May 2020	Students reported (i) stress from personal, interpersonal, and environmental factors; (ii) significant differences in culture and cognitive appraisal in the levels of perceived susceptibility and severity; (iii) positive thinking and using alternative measures in meeting challenges, which included effective emotion and problem coping strategies, and the importance of support from family, friends and schools; and (iv) negative psychological impact and positive personal growth

				in crisis management and gains in family relationships.
Yuan et al., 2021	International medical students in China	Quantitative; cross-sectional; online survey/ <i>n</i> = 519	During November 2020	Among the 519 students, 28.5% had anxiety symptoms and 31.6% depressive symptoms. Stressors in school, negative coping and perceived stress were found to be predictors of anxiety symptoms among the international medical students; while gender, staying up late, current place of residence, stressors in the school, negative coping style, and perceived stress were found to be predictors of depressive symptoms.
Khan et al., 2021	International students in China	Quantitative; cross-sectional; online survey/ <i>n</i> = 180	From 3 to 14 February 2020	Students' trust in university management was found to be negatively associated with their anxiety levels. Having trust in university management positively influenced students' commitment to the self-quarantine guidelines.
Wilczewski et al., 2021	International students in Poland	Quantitative; cross-sectional; online survey/ <i>n</i> = 357	At the turn of May and June 2020	Compared to students who remained in the host country, those who returned to the home country found that online communication with other students contributed more to their online learning experience and they exhibited higher academic adjustment. There was no difference in the experience of acculturative stress between home

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				country and host country. There was an expected increase in levels of loneliness among self-isolating students in both countries.
Maleku et al., 2021	International students in the U.S.	Mixed; cross-sectional; online survey and open-ended questions/ <i>n</i> = 103	From July to August 2020	Quantitative results showed that loneliness and anxiety mediated the association between discrimination and depression; qualitative results confirmed the negative impact of COVID-19 and COVID-19 related discrimination and exclusion on the mental well-being of international students.
Li et al., 2021	Chinese international college students in U.S.	Quantitative; cross-sectional; online survey/ <i>n</i> = 1010	From 31 December 2020 to 9 January 2021.	Chinese international students experienced high prevalence rates of depression and anxiety problems; students with anxiety problems showed a higher tendency to take medicines and alcohol; female students experienced more anxiety problems with drugs and cigarettes; self-injury ideas and behaviours showed high tendency among these international students.
Garbóczy et al., 2021	International students in Hungary	Quantitative; cross-sectional; online survey; Hungarian (<i>n</i>	From 30 April 2020 to 15 May 2020.	There was a statistically significant positive relationship between perceived stress and health anxiety. Health anxiety and perceived stress levels were significantly higher among international students compared to domestic students. In terms of coping, wishful thinking was associated with higher

		= 948) and international students ($n = 341$)		levels of stress and anxiety among international students, while being a goal-oriented person acted the opposite way.
Afzali et al., 2020	International students in Russia	Quantitative; cross-sectional; online survey/ $n = 300$	Not specified.	International students' financial stability, living conditions, educational conditions, level of social life, and physiological factor were all positively correlated with their psychological stability and life satisfaction.
Misirlis et al., 2020	International students in Netherlands	Quantitative; cross-sectional; online survey/ $n = 300$	From 6 April to 6 May 2020	Students' stress, panic, anxiety and depression were all associated with high levels of loneliness; university satisfaction was associated with lower levels of depression; the lockdown experience on a student's life correlated with high levels of anxiety. There was a weak relationship between COVID-19 and social capital and COVID-19 and university satisfaction.

Psychological distress or psychological disorders of other forms have also been reported among international students. For example, loneliness, a potential antecedent of emerging mental health issues (see Alam et al., 2021; Maleku et al., 2021; Wilczewski et al., 2021). Other studies have reported students experiencing insomnia and sleep problems (Alam et al., 2021; Kim & Kim, 2021; Lai et al., 2020), fear (Alam et al., 2021; Elemo et al., 2021), substance abuse, and self-injury ideas and behaviours (Li et al., 2021).

With reference to international students during COVID-19 research has identified: declining levels of wellbeing (Pappa et al., 2020); higher levels of anxiety and perceived stress (Garbóczy et al., 2021); and declining levels of mental health (Humphrey & Forbes-Mewett, 2021). The current review identified factors associated with levels of international students' psychological impact and mental health, that can be used to create psychological interventions or improve existing psychological inventions for international students during COVID-19.

Protective factors associated with mental health identified in the existing literature included grit and growth mindset (Mosanya, 2021), resilience, positive thinking and exercise (Lai et al., 2020); sense of control (Elemo et al., 2021), and perception of trust in university management (Khan et al., 2021). Financial stability, living conditions, educational conditions, social life, and physiological factors were also positively related to international students' psychological stability (see Afzali et al., 2020). Conversely, risk factors associated with international students' mental health included living with someone, being an undergraduate student, having longer hours of media exposure, and having experience related to a COVID-19 infection (Kim & Kim, 2021). In addition, seeking a job or planning to continue studying abroad, economic pressure, poor self-rated health status (Song et al., 2021), negative coping (Garbóczy et al., 2021; Yuan et al., 2021), individualism (Humphrey & Forbes-Mewett, 2021), perceived discrimination (Maleku et al., 2021), stress related to academic work, personal health and health of family and friends,

and availability of reliable COVID-19 related information, and lack of social support were also risk factors (Lai et al., 2020). . Moreover, international students' diminished social interaction with others due to self-isolation and online teaching was found to influence their sense of wellbeing (Pappa et al., 2020).

A number of controversial findings regarding the factors that relate to international students' mental health were also reported. For example, three studies presented inconsistent results regarding the correlation between international students' mental health and sex. Song et al. (2021) reported that being female was significantly associated with lower levels of anxiety and stress. In contrast, Lai et al. (2020) reported that female international students experienced marginally significantly higher stress than their male peers. Xu (2021) reported that sex had no effect on international students' psychological distress. Whether sex is a risk or protective factor therefore should be examined in future studies.

Avenues for Future Practice and Research

Several gaps have been identified from the reviewed studies regarding international students' mental health amidst the COVID-19 pandemic. On this basis, the authors make four recommendations for future research.

Recommendation 1. More research is needed regarding international students' mental health amidst COVID-19

Only 18 studies were located regarding international students' mental health amidst COVID-19, which indicates a relative lack of research. One possible reason for this could be that since COVID-19 has become a global pandemic and influenced people of almost all groups, international students, as a minority, tend to be neglected from the mainstream population.

International students are a vulnerable population *per se* who could arguably be more affected by the outbreak than other cohorts. First, travel bans enacted by a number of countries during the COVID-19

pandemic blocked a relatively large number of international students from entering the host country. This greatly increased uncertainty for students who were studying in overseas universities. Studying overseas transitioned to studying online at home without any overseas experience, which is not what international students were looking forward to, especially given the high tuition fees. For those who continue studying in host countries, the less frequent flights and high price of flight tickets, quarantine policy as well as unpredictability of coming back all make it difficult for international students to visit their family. According to Elemo et al. (2021), compared to domestic students who could head to their hometown with their family, international students were left with difficult decisions to make - whether to return to their home country or stay in host country. International students tend to experience more loneliness than their local peers who have their family and friends. Killgore et al. (2020) investigated levels of loneliness and health status of 1,013 U.S. adults and found that higher loneliness was strongly associated with greater depression and suicidal ideation. Therefore, loneliness experienced by international students may contribute to their mental health problems. In addition, some supporting policies enacted by host countries usually exclude international students and international students have less access to medical resources compared to citizens of the host countries.

Second, students and younger individuals have been more badly affected by the outbreak than other groups (Wang et al., 2020a; Wang et al., 2020b). In particular, Huang and Zhao (2020) reported that younger people experienced higher levels of anxiety and more serious depressive symptoms than did older people during the outbreak. Studies published by Ahmed et al. (2020) and Wang et al. (2020b) also indicated that young people were more vulnerable in terms of their mental health responses to the COVID-19 outbreak than older people. All of these may put international students at even greater risk of mental health effects from the COVID-19 outbreak.

Third, the increasing racial tensions between China and some western countries (e.g., the U.S., Australia) may also increase mental health risk among international students of specific ethnicities, especially China; attention increases in racially based conflicts are reported regularly within the news (Zhai & Du, 2020). According to Zhao et al. (2022) perceived discrimination mediates the relationship between Chinese international students' mental health and their residence country (China vs. Australia). There has been a lack of institutional efforts when it comes to providing educational workshops and other interventions to address such issues (Cheng, 2020), however.

Existing studies currently available were conducted in China, Turkey, South Korea, Poland, the UAE, Finland, the Netherlands, Russia, the U.S. and the U.K. International students' mental health in other popular overseas study destinations such as Canada and New Zealand have not been examined. The findings from existing studies need to be interpreted with a degree of caution within the specific context because the seriousness of the pandemic, policies, data collection times and students' backgrounds are all different, and this may have resulted in different findings. Nevertheless, these findings provide valuable information for understanding this minority group of people, and highlights the need for more attention from host countries, universities and policy makers for international students and their mental health.

Furthermore, while the targeting populations of all existing literature are international students at university level, research about international students at other levels (e.g., preliminary, secondary, vocational education and training) could not be identified at all. Attention should therefore be given to international students of different levels and course types. More research conducted in different countries and with students in different course types will lead to a better understanding about international students' mental health issues during COVID-19. This will allow policy makers, practitioners, schools and universities to be more informed about how to take care of international students and how

to prepare them to cope with adverse mental health outcomes amidst COVID-19.

Recommendation 2. Studies of longitudinal design and qualitative design are required.

All studies included in this review adopted cross-sectional designs. Although cross-sectional studies are faster and inexpensive to conduct and help identify specific factors that may relate to international students' mental health outcomes (Setia, 2016), they cannot examine the trajectory of their mental health status. Compared with cross-sectional studies, longitudinal studies allow researchers to follow particular individual's psychological change over time and show whether this change can be attribute to the "assumed" variables identified by cross-sectional studies (Caruana et al., 2015; Taris & Kompier, 2014).

Most studies (17 out of 18) included in this review adopted or mainly adopted a quantitative design with pre-designed questionnaires as the tool to collect data, which may rely too much on researcher's predetermined assumptions. Only four studies collected qualitative data through either semi-structured interview (Humphrey & Forbes-Mewett, 2021) or online focus group interview (Lai et al., 2021) or open-ended questions (Maleku et al., 2021; Pappa et al., 2020). More qualitative studies should be encouraged as they will increase the flexibility of research and allow participants to provide greater detail and depth or even some unique ideas to a researcher's findings (Griffin, 2004). While the social distancing strategy currently implemented in some areas may make it difficult to conduct face-to-face interviews, researchers could turn to online interviewing through social networking software such as what's app and WeChat, or online meeting software such as zoom and Microsoft teams.

Recommendation 3. An urgent need to develop systematic mental health programs for international students.

There is an urgent need to develop systematic mental health programs for international students. With such programs, the description and implementation should be well documented and reported in detail so that they can be evaluated in terms of their effectiveness. More importantly, this allows program replication in case there is another wave of COVID-19 outbreak or similar life-threatening pandemic (Cénat et al., 2020). Additionally, the mental health programs developed should also be made available online so that people can have easy access to them, especially given some countries are still implementing lockdown policies and/or people are staying at home to avoid social contact. This has been suggested by studies included in this review. For example, Song et al. (2021, p. 121) suggested health authorities provide “online or smartphone-based psychoeducation and psychological intervention”. This not only reduces the risk of getting infected by the virus through face-to-face therapy but also helps reduce the use of resources in health centres, improves access to services and provides more affordable psychological care (Monaghesh & Hajizadeh, 2020; Song et al., 2021). However, issues such as technological obstacles, logistical barriers, multi-organisational collaborations, engagement and privacy should be considered first when designing such programs (for reviews, see Gan et al., 2021; Monaghesh & Hajizadeh, 2020; Muir et al., 2020).

Moreover, while designing these programs, cultural, social and religious beliefs and possible COVID-19-introduced discrimination should also be considered. Two studies included in this review explored the influence of students’ cultural values on their mental health. The first one, conducted in Australia, identified with individualistic culture (Humphrey & Forbes-Mewett, 2021). This study indicated that individualistic and collectivistic social values are related to international students’ mental health, with individualism relating to increased stress and depression, while collectivism related positively to life satisfaction. The second study was conducted in China (Xu, 2021), which is generally considered

as a collectivist country. Similarly, in this study, collective values among international students were reported conducive to the alleviation of psychological distress, while individual values had the opposite effect. Based on these findings, host universities could pay specific attention to students who have individualistic values as they may experience more adverse mental health during this period. Interestingly, the results interpretation of these two studies are different. According to Humphrey and Forbes-Mewett (2021), collectivistic values are significantly associated with perceived social support, which positively predicted all wellbeing outcomes; while in the study by Xu (2021), collectivistic values enabled students to “give way to the needs of the collective in the event of a major emergency, and to prioritize the interests of the collective over the individual so that the government’s decision-making can be implemented effectively in a short time to overcome COVID-19” (p. 13). With different interpretations it is important to consider students’ cultural values while designing mental health programs and conducting further research. Likewise with social and religious beliefs, and perceived discrimination, which have all been found to relate to mental health (Bracke et al., 2019; Estrada et al., 2019; Zhao et al., 2022), and therefore should be taken into consideration while designing mental health programs for international students.

Recommendation 4. What else may benefit international students' mental health.

Governments, universities and schools should strive to ensure that international students have a positive experience of studying. Song et al. (2021) suggested universities consider special policies to provide international students with more options regarding their teaching and learning mode, including for example, the option which allows students to choose to study in a university in their home country. In this way, students get more experience of socialising with peers and studying on campus, which will benefit their mental health. Some universities have already adopted this policy and achieved positive results (Aloi, 2020; The University of Western Australia, 2022). For universities that cannot provide

students with such options, they should endeavour to maintain peer communication through online communications, and in doing so not only fostering collaborative learning but also creating online social activities. Supportive of this, Wilczewski et al. (2021) found that communication with peers contributed to their online learning and resulted in good academic adjustment. To maximise outcomes online teaching and learning should be trained before being implemented. Whether teachers and students can adapt to this new mode in a short time determines the effect of teaching and learning, and better ability to adapt to online classes led to less psychological distress (Xu, 2021).

International students' perception of trust in university management is associated negatively with their anxiety levels and positively with their commitment to self-quarantine (Khan et al., 2021). This indicates the important and necessary role of universities on international students' mental health amidst this COVID-19 pandemic. Therefore updating international students with reliable information, particularly about what universities have done to cope with the challenges brought about by COVID-19, should be adopted for the benefits of international students' mental health.

Social support and its impact on international students' mental health during COVID-19 may be different compared to before COVID-19. Social support has been found to play an important role in the mental health of international students studying in host countries (Bhochhibhoya & Branscum, 2017; Khawaja & Dempsey, 2008; Zhang, 2012). Xu (2021) examined the impact of different types of social support on international students' psychological distress in China and found that social support from students' family and friends had no impact on their psychological distress. Conversely, social support provided by the school and teachers at their universities effectively alleviated the distress arising from the pandemic. Conflicting findings to this arose from a study conducted in UAE (Mosanya, 2020). That is, universities were not seen as a source of support by international students, with only 2.5% reporting them to be supportive. These findings suggest

that educational institutions could be more actively engaged in supporting international students during COVID-19.

Apart from external factors, internal factors such as students' personal traits (sense of control, resilience, etc.) and coping strategies should also be considered in terms of improving international students' mental health. Universities and students could think about how to take advantage of coping with COVID-19-introduced challenges to empower students with more sense of control and resilience, so that international students can be prepared to better cope with not only the current on-going crisis but also potential negative events in the future. Elemo et al. (2021) investigated the relationship between fear of COVID-19, sense of control and flourishing with a group of international university students ($n = 368$) in Turkey. They found that international students' sense of control mediates the negative relationship between fear of COVID-19 and flourishing, which encourages mental health professionals and international students to consider the role of sense of control in improving mental health and wellbeing of international students. According to Mosanya (2020), grit and growth mindset helps students build resilience, which in turn helps prevent their academic stress during COVID-19. In a study conducted by Lai et al. (2021a), most international students that were interviewed claimed they had experienced positive personal growth while coping with the COVID-19-introduced challenges, which demonstrated their growth and grit mindset amidst COVID-19.

Training international students to use effective coping styles and strategies may also help improve their mental health. According to Garbóczy et al. (2021), wishful thinking coping was related to higher levels of stress and anxiety among international students, while goal-oriented coping was related to lower levels of stress and anxiety among international students. Another study (Yuan et al., 2021) reported that negative coping style predicted international students' anxiety and depressive symptoms, while personal habits such as staying up late predicting their depressive symptoms.

Practices such as yoga and mindfulness have also been found to be effective in reducing adverse psychological outcomes (Keng et al., 2011; Woodyard, 2011).

The findings from the contemporary research to date, can be integrated while designing and implementing relevant mental health intervention programs for international students. Governments, universities, schools and students themselves should work together to maintain and improve international students' mental health.

Conclusions

Research from many countries worldwide has shown that international students have experienced a range of negative mental health amidst COVID-19, and insufficient attention has been given to this minority group of people. Risk and protective factors related to international students' mental health during COVID-19 have been identified in this study and this provides much needed direction for administrators of educational institutions. Nevertheless, more empirical research is necessary to confirm the effectiveness of these and their roles in international students' mental health. While conducting further research, longitudinal-designs and qualitative designs should be considered so as to enrich current knowledge and to have students' voices heard regarding their mental health. Governments, universities, schools, communities and other stakeholders as well as international students themselves can make the best use of these research findings to determine how they can improve international students' mental health and wellbeing. The recommendations arising from this current review provide directions for future research regarding international students' mental health amidst COVID-19. These might also be applicable to other large-scale future pandemics or crises.

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