CG Report 5: Effects of COVID-19 Restrictions on University Students' Mental Health

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Summary

Restrictions affecting mental health and wellbeing can significantly affect vulnerable populations that include university students. Therefore, we undertook a scoping review by searching LitCovid, the WHO Covid-19 database, Google Scholar and bibliographies of retrieved articles for systematic reviews that included data on depression and anxiety in university students during the COVID-19 pandemic. We found nine systematic reviews (two were preprints) that varied from five included studies to 89. The quality of the short-term evidence was rated low to moderate, and evidence for the medium to long term impact was low (the prevalence estimates may change substantially if further high-quality evidence becomes available).

Reviews consistently reported high prevalence rates of anxiety and depression amongst university and college students. Rates of depression and anxiety were higher in those with financial difficulties, in non-Chinese students, in older students and females. In the most extensive review to date the pooled prevalence of depression was 34% (95%CI: 30-38%, 52 studies, n=1,277,755, I2 100%). The prevalence of anxiety was 32% (95% CI: 26-38%, 69 studies I2 100%). Also, anxiety was found at higher rates in older students, in those living alone, and in female students. Only one review concluded the evidence does not suggest a widespread negative effect on mental health in COVID-19 compared with previous years.

The overall impact of COVID-19 on the mental health and wellbeing of university students is substantial.

Main recommendations

Long term longitudinal studies are required to track trends in students' mental health and identify those risk factors that are amenable to intervention. Inaction when it comes to addressing the mental health burden in students is not an option; the promotion of mental wellbeing should, therefore, be a priority for universities and colleges. In addition, governments should reduce the financial burden for students given its detrimental impact on mental health during restriction periods.

Introduction

Restrictive measures to reduce the spread of COVID-19 among younger populations led to the widespread closure of colleges and universities in many countries. For example, in March 2020, closed schools and educational institutions affected 80% of the world's student population [1]. While education should be a priority, prolonged lockdown of educational institutions and universities potentially penalize an entire global cohort and their wellbeing [2].

Higher education students already must cope with the stresses of moving away from home whilst negotiating significant life changes. Young adults' mental health is particularly vulnerable - severe disorders such as schizophrenia and bipolar disorder often develop in early young adulthood. In addition, the added demands of academia, the workload and stress of exams, and financial insecurities can add substantially to a stressful environment.

The COVID pandemic restrictions have adversely affected children and adolescents mental health [3], and the pandemic has put a significant extra strain on students. Therefore, the mental wellbeing of higher education students is and should be a vital consideration for policymakers when deciding to intervene with restrictions. Accordingly, we undertook a scoping review to assess the current evidence from systematic reviews reporting mental health effects in university and college students during the COVID period of restrictions.

Methods

We performed a scoping review using a flexible framework for restricted systematic reviews. [4]. We Searched LitCovid, the WHO Covid-19 database, Google Scholar and bibliographies of retrieved articles for systematic review articles reporting mental health effects in children, adolescents and students during the COVID period of restrictions. We previously published a review on children and adolescents, and as part of this filtering process, we also selected articles on university and college students. However, we excluded articles on medical and health students as these are a group that face unique environments and risks and will form part of a separate review.

We extracted data on the outcomes, the number of included studies, the inclusion dates and the quality assessment. We tabulated the data and summarised the main findings and the quality of the evidence. We also provide recommendations, with an overall summary of the impact and quality of the evidence. Our review approach is available on the Collateral Global website: What is a Rapid Review?
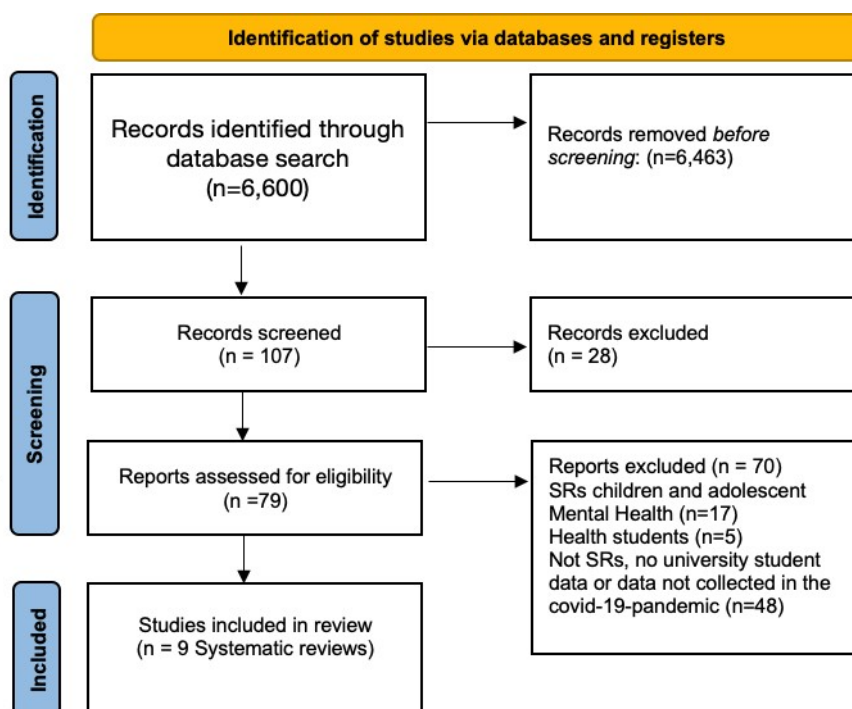https://collateralglobal.org/article/what-is-a-rapid-review/

Results

We identified 6,600 reviews in our search, and of these assessed 79 full-text articles for inclusion. Of these reports, we excluded 70 reviews; 17 were included in our review of children and adolescent mental health, five were health studies, and 48 were not systematic reviews or did not include university student data or data not collected in the COVID-19 pandemic period. We included nine systematic reviews on university students' mental health (two were preprints: Chen 2021 and Sun 2021).

The search date of the reviews varied from July 2020 [Guo 2021] to April 2021 [Al Manun 2021 and Sun 2021] (see Figure 2). Seven reviews undertook a meta-analysis [Chen 2021, Deng 2021, Luo 2021, Guo 2021, Sun 2021, Wang 2021, and Yang 2021], and two were descriptive [Al Mamun 2021 and Hekmat 2021].

The reviews varied in the number of included studies from five [Chen 2021] to 89 [Deng 2021]. Two reviews were done solely on Chinese students [Luo 2021, 84 studies and Guo 2021, 11 studies]; one review focussed solely on Bangladeshi students [Al Mamun 2021, 7 studies] and one on Spanish students [Chen 2021, 5 studies]. In addition, five reviews included studies from more than one country [Deng 2021, Hakmat, Sun 2021, Wang 2021 and Yang 2021] See Figure 2.

Figure 1 Prisma Flow Chart University Student Mental Health

Identification of studies via databases and registers

Records identified through database search (n=6,600) → Records removed *before screening*: (n=6,463)

Records screened (n = 107) → Records excluded (n = 28)

Reports assessed for eligibility (n =79) → Reports excluded (n = 70)
SRs children and adolescent Mental Health (n=17)
Health students (n=5)
Not SRs, no university student data or data not collected in the covid-19-pandemic (n=48)

Studies included in review (n = 9 Systematic reviews)

Quality of the evidence

Limitations in the evidence create uncertainty about the robustness of the reported effects. For example, many countries were not represented or provided evidence from only a single study. Also, there was a lack of comparative evidence, and many studies were small compared to the university population. Studies that focussed solely on one country's student population also preclude generalizing results outside of their setting. Many reviews also include overlapping studies, and the survey dates occurred early in the pandemic. Thus, there is the potential for research in this area to tail-off, and the lack of a standardized longitudinal approach prevents conclusions about the medium to longer-term impact.

There was considerable variation in screening tools and cut-off values used to assess psychological symptoms, leading to variations in prevalence. For example, Al Mamun et al. reported prevalence rates across studies might vary because of different tools and the cut-off scores of the same instruments. Chen et al. reported higher-quality studies reported a lower prevalence of mental health issues, and a lack of sufficient data limited the reliability of the estimates. Deng et al. downgraded the quality of the evidence due to the use of convenience samples and a lack of justification for sample sizes. Luo W et al. highlighted that the most common methodological issues were inappropriate sampling frames and problematic sampling methods. Sun Y et al. considered all the analyses were convenience samples - when they were not well-described, they still appeared to be convenience samples. Finally, Li Yang et al. indicated that many studies failed to offer detailed information on the subjects or valid data on essential factors that may affect the findings.

We rated the quality of the short-term evidence as low to moderate (the actual effect is likely to be close to what is reported in those countries with sufficient data, however in certain demographic regions, the lack of evidence limits the generalizability). The evidence for the medium to long term impact is rated as low (the prevalence estimates may change substantially if further high-quality evidence becomes available).

Figure 2: Included reviews (no. of studies in each review)
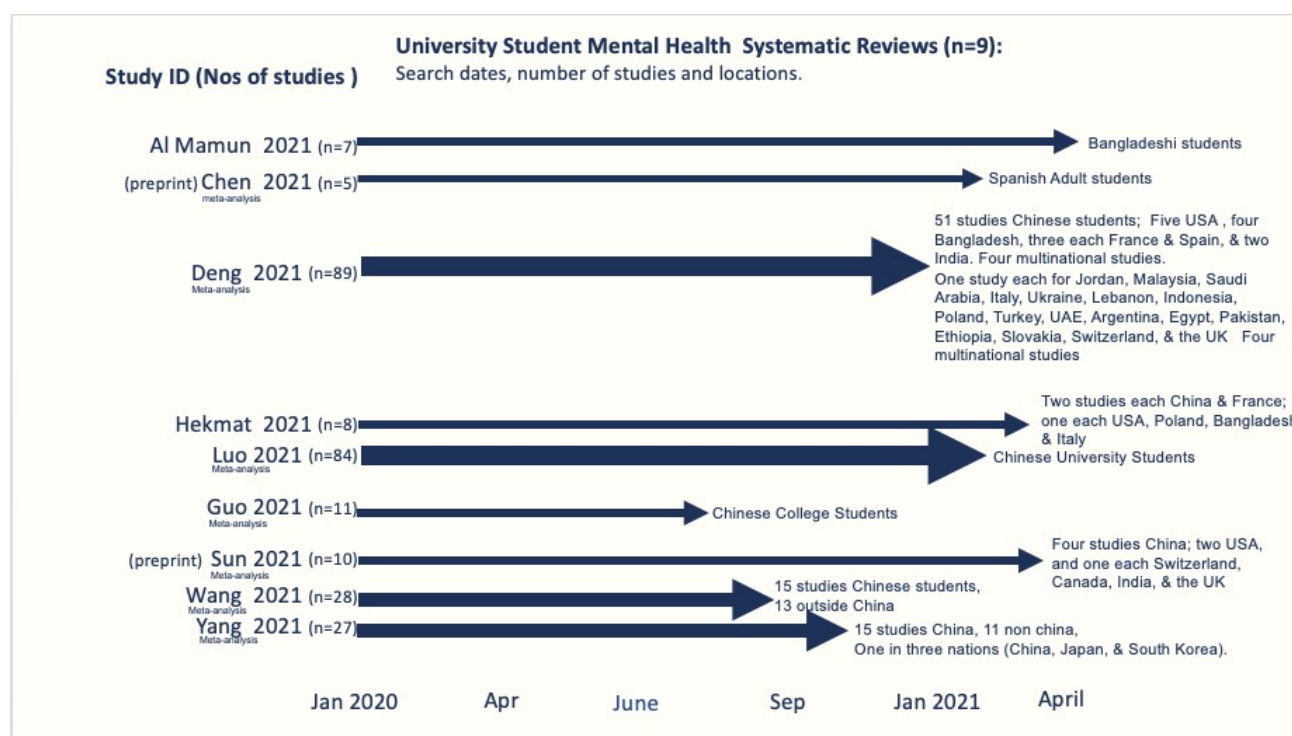
Key: the thickness of horizontal vectors relates to the number of studies

Impacts

Table 1 shows that reviews consistently reported high prevalence rates of anxiety and depression amongst university and college students. For example, Chen et al. reported that the overall prevalence of mental health disorders in adult students in Spain was 50% (95% CI, 32% to 69%, I2 100%), higher than the general population prevalence of 19% (95% CI, 16% to 23%, I2 100%).

A high proportion of university students also reported mild to severe levels of stress, anxiety and depression in a review of eight studies during the COVID-19 pandemic. [Hekmat 2021] Only one review concluded that evidence does not suggest a widespread negative effect on mental health in COVID-19. The review of ten studies concludes that data gaps may have prevented identifying changes in the vulnerable groups [Sun 2021]. In contrast, Deng et al. concluded that the prevalence of depressive symptoms and anxiety symptoms was higher than the pre-pandemic prevalence in similar populations.

Depression

In the most extensive review to date of 89 studies [Deng 2021] that included evidence from multiple countries (see Figure 2), the pooled prevalence of depression was 34% (95%CI: 30-38%) based on an analysis of 52 studies (n=1,277,755, I2 100%). Figure 3 shows the rates of depression from the pooled analysis of three studies were higher in those with financial difficulties 61% (40-79%) compared to those without financial problems, 49% (95% CI: 39-60%) (4 studies, n=11,937).
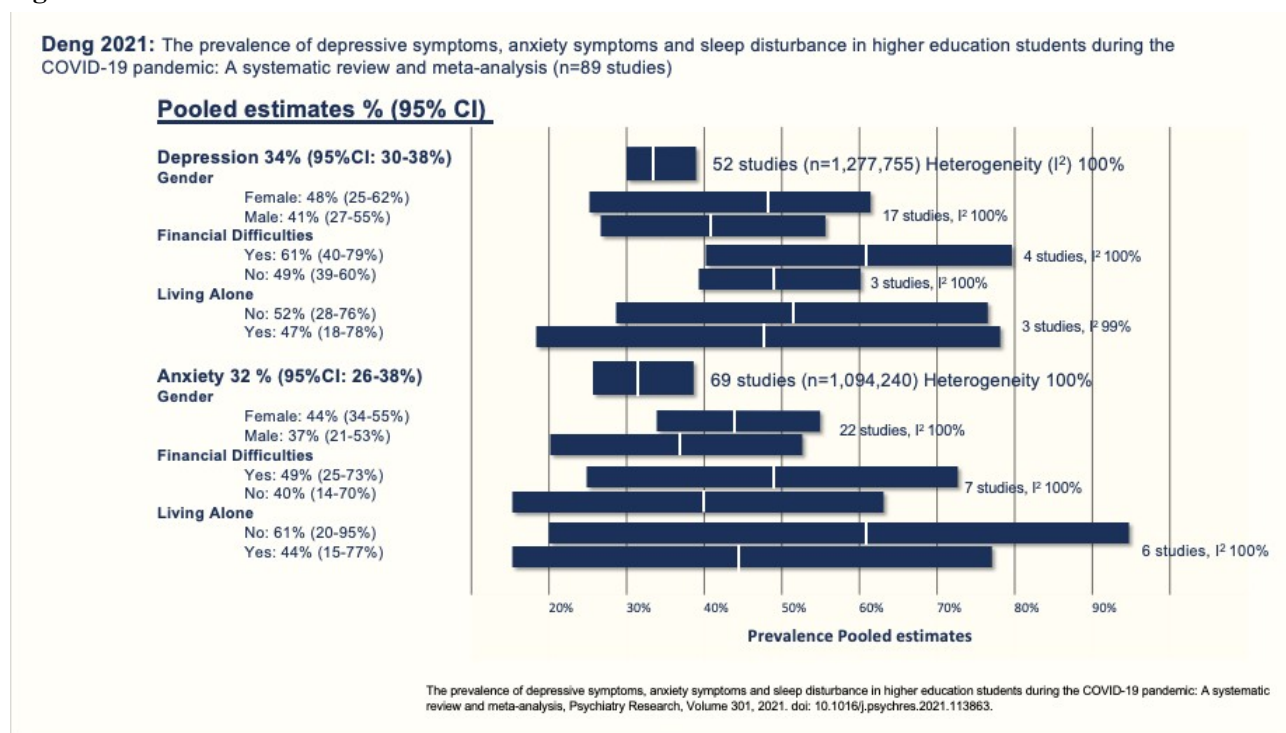
The review, including 19 studies by Wang, reports a similar prevalence of depression in college students of 37% (95% CI, 32–42%). Wang also notes the prevalence of depression was lower in Chinese students, 22% (95% CI, 19–25%) compared with non-Chinese students, 53% (40–66%). Li Yang's review of 27 studies reports similar findings in that Chinese college students had lower rates of depression compared with non-Chinese students (see Table 1). Deng's review reports a pooled prevalence of 24% from Chinese students. Three studies reported a prevalence of depression symptoms of 70% for Bangladeshi students, 55% for

American students, and 29% for French students (two studies each). No other countries had more than one study

Luo's review of 84 studies focussed solely on Chinese students reported that rates of depression were significantly higher in postgraduates compared to undergraduates; in those living inside or universities that were inside the COVID-19 epicentre compared to outside the epicentre; and higher rates of depression in those with close contact with individuals with COVID. Sun Y et al.'s pooled analysis of ten studies reported no change in depression in university students post-Jan 1 2020 compared with 2018 and 2019: SMD = 0.19 (-0.08 to 0.45, I2 = 92%; 5 studies, n =1,537).

Deng showed a positive correlation between mean age and pooled prevalence of depressive symptoms. (p<0.01). As the year of study increased, depressive symptoms increased from 17%, 21%, 24% to 29% for years 1, 2, 3 to year 4 of undergraduate study, respectively (6 studies, n=12,730)

Figure 3.

Deng 2021: The prevalence of depressive symptoms, anxiety symptoms and sleep disturbance in higher education students during the COVID-19 pandemic: A systematic review and meta-analysis (n=89 studies)

The prevalence of depressive symptoms, anxiety symptoms and sleep disturbance in higher education students during the COVID-19 pandemic: A systematic review and meta-analysis, Psychiatry Research, Volume 301, 2021. doi: 10.1016/j.psychres.2021.113863.

Anxiety

Deng's review of 89 studies also reported an anxiety prevalence of 32% (95% CI: 26-38%) from 69 studies (I2 100%). Anxiety was higher in those with financial difficulties (49%, 95% CI: 25-73%) than without financial problems (40%, 95% CI: 14-70%) (7 studies n=118,114). In those living alone, rates of anxiety were higher 61% (95% CI: 20-95%) than those living with family or friends, 44% (95% CI: 15-77%).

Wang reported that Chinese students had lower rates of anxiety, 19% (95% C: 15–24%) compared with non-Chinese students, 40% (95% CI: 22–59%). Similarly, Li Yang reported that anxiety was greater in non-Chinese college students than in Chinese students. Finally, Sun Y et al.'s pooled analysis of ten studies reported no change in anxiety post-Jan 1 2020 compared with 2018 and 2019, SMD = 0.00, (- 0.35 to 0.36, I2 = 95%; 5 studies, n=1,537).

In Deng's review, 42 studies report a pooled anxiety symptoms prevalence of 23% from Chinese students. In contrast, the pooled prevalence was 73% for Bangladeshi students (four studies), 74% for American students and 42% for French students (three studies each), and 56% for Spanish students (two studies). Deng also reported the pooled anxiety symptoms prevalence was 19%, 19%, 22% and 25% for years 1, 2, 3, and 4 of undergraduate study, respectively (13 studies, n=102,776).

Table 1: Review populations and impacts

Study ID	Population	Impact
Al Mamun F 2021	Bangladeshi students 7 studies (n=21,543)	The prevalence rates of mild to severe symptoms (range) **Depression** (47% to 82%); **Anxiety** (27% to 97%); **Stress** (29% to 70%), Risk factors: socio-demographic; behaviour and health; COVID-19 pandemic (symptoms, perceptions and fears of infection, or miscellaneous
Chen RZ 2021	Adult students in Spain 5 studies	The prevalence of mental health disorders in students in Spain was 50% (95% CI, 32% to 69%, I^2 100%) compared with the general population of 19% (16% to 23%, I^2 100%)
Deng J 2021	University or college students 89 studies (n=1,441,828)	**Depressive symptoms 34%. (95% CI, 30-38%)** - 52 studies 49% (39-60%) without financial difficulties vs. with 61% (40-79%) - 4 studies; 52% (28-76%) students living alone vs. 47% (18-78%) living with family and/or friends - 3 studies; Prevalence of 23%, 13%, and 8% for mild, moderate, and severe depressive symptom Females 48%, 95% CI: 35-62% I^2 = 100% vs. Males 41%, 95% CI: 27-55% I^2 = 100% 17 studies **Anxiety 32% (95% CI, 26-38%)** - 69 studies Without financial difficulties 40% (14-70% vs. with 49% (25-73%) - 7 studies; Living alone 61% (20-95%) vs 44% (15-77%) living with family and/or friends - 6 studies; Prevalence of mild, moderate, and severe anxiety symptoms 20%, 11%, and 7% Sleep disturbances prevalence 33% (95% CI 22-44%) Males 37%, 95% CI: 21-53% I^2 = 100% vs. 44%, 95% CI: 34-55% I^2 = 100% -22 studies
Hekmat A 2021	Students 8 studies	A high percentage of students show mild to severe levels of stress, **anxiety and depression.** Factors affecting students' mental health level during home quarantine were student gender, financial status, living with family, and educational level.
Luo W 2021	Chinese university students 84 studies (n=1,292,811)	**Depressive symptoms 26.0% (95%CI: 23.3–28.9%),** Female vs. Males (30.8% v. 28.6%, p<0.001), Postgraduates vs. undergraduates (29.3% v. 22.9%, p < 0.001), Living inside vs. outside the COVID-19 epicentre (27.5% v. 22.3%, P< 0.001), Universities at the epicentre vs. outside (26.2% v. 23.1%, p< 0.001), Close contact with COVID-19 vs. not (46.0% vs. 25.0%, p<0.001), Rate of severe depressive symptoms, 1.69% (95%CI: 0.87–2.77%)
Guo S 2021	College students in China 11 studies (n =25,020)	**Mild depression:** 25% (95% CI = 17–33%) I^2 99% (10 studies) **Moderate depression:** 7% (95% CI = 2–14%) I^2 100% (8 studies) **Severe depression:** 2% (1–5%) I^2 99% (10 studies)
Sun Y 2021	University students 10 studies	Estimates of changes in university students post 1 Jan 2020 vs 2018 and 2019. **General mental health**, SMD = -0.01 (95% CI -0.33 to 0.30, I^2 = 92%; 3 studies, N = 3,372). **Anxiety symptoms**, SMD = 0.00, (- 0.35 to 0.36, I^2 = 95%; 5 studies, N = 1,537); **Depression symptoms**, SMD = 0.19 (-0.08 to 0.45, I^2 = 92%; 5 studies, N = 1,537)
Wang C 2021	College students 28 studies (n=436,799)	**Anxiety,** 29% (95% CI, 19–25%), I^2 99.8% (19 studies) Chinese students 19% (15–24%), vs. non-Chinese students 40% (22–59%,) **Depression,** 37% (95% CI, 32–42%), I^2 = 99.9% (19 studies) Chinese students 22% (19–25%) vs. non-Chinese prevalence of 53% (40–66%) **Stress** 23% (95% CI, 8–39%) I^2 99.1% (5 studies) Chinese students 17% (0–39%), vs. non-Chinese prevalence of 28% (11–44%)
Li Yang 2021	College students 27 studies (n=706,415)	**Depression** 39% (95% CI: 27–51%) in non-Chinese students 60% (46–74%) vs. Chinese students 26% (21–30%). Depression was higher 54% (40–67%) after March 1 than before, 21% (16–25%). **Anxiety** 36% (26–46%). in non-Chinese college students 60% (46–74%) vs. Chinese college students 20 (14–26%). Anxiety 37% (26–48%) was higher after March 1 than before 19% (13–25%).

Discussion

The widescale closures of universities created a significant upheaval for students. The results of our review suggest the rates of depression and anxiety in the pandemic phase of lockdown were very high, with Deng's review of 89 studies finding that one in three students reported symptoms of depression or anxiety.

These results align with a previous systematic review of depression prevalence in university students that found reported prevalence rates ranged from 10% to 85%, with a weighted mean prevalence of 31%. [5] The results from Sun et al. suggest that there was no change in levels of anxiety and depression compared with before the pandemic. However, in the subgroup analysis of non-Chinese students, the prevalence of mental health problems is higher than previously suggested estimates. The majority of data in this current scoping review is from Chinese students who seemingly report much lower mental health problems than other countries. Such underreporting can occur due to students' reluctance to report depression and/or anxiety symptoms.

The lack of evidence from many countries significantly limits the generalisability of these review findings. It is not clear why so few countries have not reported on the mental health of their students and why it is not a priority. There are approximately 250 million - and growing - higher education students globally [6]. The rates reported in this review are alarming. Still, there are uncertainties regarding the true impact of the pandemic restrictions without high-quality longitudinal evidence.

The lack of evidence may reflect a large body of unpublished (grey literature) evidence that has not yet been synthesized. For example, in the UK, surveys on student mental health during COVID have reported that more than one in three young people (34%) said that their mental health significantly deteriorated during the pandemic [7]. A further UK survey of over 4,000 students from November 2020 reported 52 per cent said their mental health had deteriorated or been affected negatively due to the pandemic. Only one in five of those sought mental health support and, of those seeking help, just over half (57%) were satisfied with their support [8]. Students listed access to counselling and someone to talk to as crucial interventions. A third UK survey by the Health Education Policy Institute reported that over half of the students (58%) surveyed in November 2020 said their mental health was a little or much worse than just 14% who say their mental health was a little or much better [9]. Finally, the Office for National Statistics report based on surveys conducted in October and November 2020 highlighted that personal wellbeing measures, including happiness, wellbeing, and low anxiety decreased over time for students [10]. None of these surveys is included in the nine systematic reviews we retrieved.

The results reported in this review are consistent with previous evidence that gender, financial difficulties and level of social support can all adversely affect mental health [11, 12]. However, governmental support for students has not been forthcoming despite reports that 80% Of UK students struggled financially due to COVID-19. [13] Students were required to pay total tuition fees - and in some instances, accommodation rent despite having moved back home - while facing income reductions due to a lack of part-time work and increased worries about future employment. Developed countries have the opportunity to intervene. For example, The US. Department of Education gave $36 billion to Support Students and Institutions [14]. However, in many countries, there has been little or no financial support. Consequently, students in the UK resorted to protests over the "lack of support" [15].

A recent systematic review on the global prevalence and burden of depressive and anxiety disorders in 204 countries included 48 studies and reported that SARS-CoV-2 infection rates and reductions in human mobility were associated with increases in major depressive disorder and anxiety disorders [16]. The review findings also highlighted that females and younger age groups were more affected.

The pandemic has affected all students - some more than others - and contributed to widening inequities. The evidence in this review shows that the overall impact of COVID-19 restrictions on mental

health on university students is substantial, particularly given the immense burden of mental health problems in this group.

Limitations

The evidence from current studies has several limitations. First, the data is primarily limited to 2020, and only a handful of studies report late 2020. More data are needed. There are very few countries that report data from more than one country. This could be due to missing a large volume of unpublished data. To encompass the grey literature, systematic reviews should widen their search strategies. Similar to our report on children and adolescents, the pooled prevalence was highly heterogeneous [3]. A variety of factors affect these estimates, including the sampling techniques, the timing of the survey, and the instruments used. None of these factors should, however, trivialize the current findings – that the mental health problem amongst university students is severe, substantial and potentially long-lasting.

Conclusions

The evidence in this review shows that the overall impact of COVID-19 on the mental health and wellbeing ofuniversity students is substantial. Inadequate efforts to recognize and address university student mental wellbeing could have severe long-term consequences. The current approach to evaluating and researching the extent of the problems is haphazard and uncoordinated. Long term longitudinal studies are required to track trends in mental health amongst university students and identify those risk factors amenable to intervention. Inaction when addressing the mental health burden in students, particularly given the scale of the problem, is not an option. The promotion of mental wellbeing should be a priority for universities and colleges, along with targeted interventions to prevent and treat those with deteriorating mental health.

Ethics Committee Approval
No approval was necessary.

Tables and Figures:

- Figure 1. Prisma Flow Chart. CG Report 5.
- Figure 2. Included Reviews. CG Report 5.
- Figure 3. Deng 2021 Results. CG Report 5.
- Table 1. Review Populations and Impacts. CG Report 5.

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Competing Interest Statement