

doi <https://doi.org/10.58256/sfss.v1i1.18>Check for
updates

Research Article

Section: Education and Pandemic

Published in Crewe, England
by Steadfast OA

Volume 1, Issue 1, 2022

**Article Information**Submitted: 4th August 2022
Accepted: 11th October 2022
Published: 21st October 2022Additional information is
available at the end of the
article<https://creativecommons.org/licenses/by/4.0/>To read the paper online,
please scan this QR code**How to Cite:**Matere, A., & Oranga, J. (2022).
Impact of COVID-19 on learners'
mental health during and in the
post COVID-19 pandemic world.
Steadfast Social Sciences, 1(1).
Retrieved from <https://www.steadfastoa.com/index.php/sfss/article/view/18>**Impact of COVID-19 on learners' mental health during and in the post COVID-19 pandemic world****Audrey Matere¹ & Josephine Oranga²**

Kisii University, Kenya

<https://orcid.org/0000-0002-6882-5135>Correspondence: josephineoranga@kisiiuniversity.ac.ke**Abstract**

Studies suggest that overall, the COVID-19 pandemic triggered an increase in the prevalence of depression and anxiety among college and school-going age populations worldwide. Accordingly, the pandemic also impeded access to mental health services by the affected. Furthermore, spikes in suicidal behaviour were found amongst young people in locations profoundly affected by COVID-19. Additionally, young school-going age people in Low and Middle-Income Countries (LMICs) were also considerably impacted as compared to high income countries. This article reports a spike in acts of self-harm, a general rise in suicide mortality, exhaustion and loneliness in the general population and amongst school-age going populations and highlights the extreme gap in mental health care as result of the COVID-19 pandemic. Hence the article analyses the impact of COVID-19 pandemic on the general population and amongst students and points out the pandemic's specific impacts on learning. Thereafter the article recommends that countries and learning institutions step up mental health services in response to overall skyrocketing cases of mental health problems amongst young people triggered by the COVID-19 pandemic.

Keywords: COVID-19, mental disorders, mental health, post COVID-19, education, students

© 2022 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY-NC-SA) license.

Introduction

The COVID-19 pandemic escalated many long-standing challenges that face humanity, mental health care and services being one of those sectors that were impacted negatively. Mental health generally refers to cognitive, behavioural and emotional well-being that is determined by a complex interplay of individual, social and structural stresses and vulnerabilities. In line with this, Rodin and Omeren (2009) define mental health as a state of mental well-being that enables individuals to cope with the stresses of life, realize their abilities and make meaningful societal contributions. Additionally, mental health determines individual and collective abilities to make decisions, learn, build relationships and shape the communities they live in. As a result, mental health is crucial to personal and societal socio-economic growth and development.

Individuals with mental health conditions experience lower levels of mental well-being even though this is not always the case. As a result, mental health can affect an individual's daily living, learning, physical health and relationships. Moreover, varied factors in people's lives including physical factors and interpersonal connections can all contribute to poor mental health. Consequently, looking after mental health includes balancing responsibilities and life activities geared toward achieving psychological resilience. Notably, mental health issues and illnesses including anxiety, depression and schizophrenic disorders were linked, for a long time, to increased rates of COVID-19 hospitalizations as the pandemic raged (Gunnell, Appleby, Arensman, et al., 2020). It is important to note here too that mental well-being is a pre-requisite to academic success as mental health problems are known to reduce motivation and social interactions amongst learners.

The rise in mental health disorders during the COVID-19 pandemic

According to World Health Organization (WHO, 2022) the first year of the COVID-19 pandemic saw the global prevalence of mental health problems. Studies conducted during COVID-19 pandemic reveal increased rates of depression, anxiety, traumatic stress-disorder in the general population (Jollant, 2021). In particular, depression and anxiety increased by a massive 20% amongst students. A major explanation for the spike in mental health problems amongst students was unparalleled stress caused by social isolation resulting from quarantine regulations coupled with limitations and constraints on learners' ability to visit and seek support from their kin and friends. Fear of infection, loneliness, suffering and death of loved ones, bereavement and financial worries also lead to anxiety and depression amongst learners and the general population. Concerningly, numerous previous studies had also identified students as a vulnerable group that constantly experiences high levels of stress (Yard, 2021).

A report by WHO (2021) explains that school-going age women's mental health was more severely affected than their male counterparts as a result of the COVID-19 pandemic and that young persons living with pre-existing medical conditions, such as cancer, asthma and heart disease were more likely to develop symptoms of mental disorders during the pandemic as compared to those without pre-existing medical conditions. Hence, the subsequent sections of this article attempt to break down the various general mental health issues and declining mental health indicators that were reported amongst the general population and learners and thereafter discusses mental health issues specifically amongst learners in post-secondary institutions during the COVID-19 pandemic.

General rise in suicidal mortality

WHO (2022) reports that the pandemic disproportionately affected the mental health of young school-going age people rendering them at risk of suicidal and self-harming behaviours. This was blamed on curbs on movement resulting in despair amongst them. On the other hand, exhaustion among young

health workers was highlighted as a major trigger for suicidal thinking and deaths as the pandemic raged on. Suicidal rates around the globe amongst healthcare workers increased globally by 8 per cent as a result (Rodin & Omeren, 2009). In Mexico, suicide rates increased slightly across the country amongst adolescents and students in the first nine months of the pandemic and this was attributed to rising anxiety (Borges, et al., 2021).

In Japan, the rise in suicide rates after July 2020 was greatest in young women below 40 years (includes students as well) attributed to curbs on human mobility and the stress associated with daily increases in COVID-19 infection rates (Pratti & Mancini, 2021). Low social support from kin and friends, quarantine, sleep disturbances, poor physical health all increased the likelihood of developing suicidal thoughts. Similarly, Garcia (2021) established that suicidal thoughts spiked significantly during implementation of the COVID-19 containment and prevention measures by 14 % all associated with severe depression.

Since this impacted the whole population, it implies that the education subsector was not spared. This by extension implies that stakeholders in the education subsector, going forward, may be required to address the lingering long-haul mental health issues amongst learners under their care who were negatively impacted or whose mental health issues were triggered by the pandemic. Free text responses provided an insight into how some students reported an inadequate home working space/environment and lacked necessary items such as a desk, highlighting the ability of remote working (in this case necessitated by the pandemic) to intensify social and digital inequality, particularly for students from more economically deprived households ((Bashir, Bashir, Rana, Lambert & Vernallis, 2021).

Hayat, et al., (2021) report that the main challenges encountered by learners during the pandemic include: infrastructural defects, non-compliance with virtual learning, inadequate interactions between learners and educators and time limitations (Bashir et al., 2021). All these may have increased learners' stress levels consequently impacting their mental well-being and level of output in relation to learning (Oranga & Matere, 2022). Other general negative experiences amongst learners included decreased concentration, sleeping difficulties and a general decline in learners' mental wellbeing. Accordingly, spikes in loneliness rates were also reported amongst students and were all linked to the strict COVID-19 containment and prevention measures and diagnosis (Yard, 2021).

General rise in acts of self-harm (That are not actual suicide)

The COVID-19 pandemic caused immense disruption of lives around the world thereby increasing human predisposition to stress and self-harm. Yard (2021), DelPozo (2021) and Garcia, (2021) reported a rise in self-harm presentations amongst adolescent girls as the pandemic raged. Similarly, Steeg Bojanic, Tilston, Williams Jenkins et al., (2021) reported a general rise in self-harm presentations among young people during the pandemic, implying that young people were constantly at risk of self-harm as the pandemic raged. Jollant et al., (2021) also indicated that overall hospitalizations as a result of self-harm in adolescents increase by 8.5% in the year 2020.

Specific mental health issues amongst university students pre-and post COVID-19 pandemic

Even before the COVID-19 epidemic, there was rising concern about the mental wellbeing of university students. According to a UK Parliament Briefing Paper, an increasing proportion of students were having mental health issues (Hubble & Bolton, 2016). According to community surveys, anxiety and depression typically affect one in six individuals in England each week (McManus, Bebbington, Jenkins & Brugha, 2016). Hence, early in the pandemic, concerns were raised about the pandemic's potential long-term impact on university students' mental health (Holmes et al., 2020).

Accordingly, the pandemic posed a number of unique challenges for students in higher education, including the transfer of more learning and support services online, which many students found challenging to engage in effectively, thereby increasing anxiety and raising concerns about their academic performances and long-term employment prospects (Aristovnik et al., 2020). Other effects include the closing of residence halls for students, postponing exchange programs and commencement exercises and losing part-time employment. In addition to limiting possibilities for socializing and forming connections and increasing dependency on social media, the lockdown and social isolation tactics also contributed to chronic loneliness amongst university students (Shah et al., 2020).

In a research in the US, 162 university students reported significant levels of mental health issues. Apparently, those who spent more hours looking for material on COVID-19 online and from the press had greater levels of worry and sadness resulting in depression, ultimately leading to trouble focusing on academic work (Kecojevic et al., 2020).

A study conducted amongst French university students revealed that 25% experienced moderate to severe anxiety. Accordingly, students who had relatives or acquaintances who were hospitalized as a result of COVID-19 were more affected than those who did not have hospitalised relatives (Baumann, C., Rousseau, H., Tarquinio, C. et al, 2021), consequently, the study concluded that living conditions and arrangements for post-secondary learners during COVID-19 lockdowns in France also impacted the learners mental health.

Similarly, high levels of depression were also established in a July 2020 online survey of 255 students at a university in Hong Kong, with perceived availability of peer support correlating negatively with depression symptoms (Sun, Lin, & Chung, 2020). An additional cross-sectional online study conducted in 2020 on 324 college students in India determined that 68.8% of them had a high fear of COVID-19, 28.7% of them had moderate to severe depression, and 51.5% of them had mild to severe anxiety. Additionally, having a family member with COVID-19 infection was also significantly associated with both anxiety and depression (Chaudhary et al., 2021).

In the same breath, the Higher Education Policy Institute in the UK polled undergraduate students and determined that 58% of them had had their mental well-being negatively impacted by the COVID -19 pandemic with just 14% saying it had improved, while the remaining 28% reported that it had remained the same (Hewitt, 2020), implying that the pandemic affected the vast majority of student mental well-being.

Additionally one longitudinal study determined that lockdowns caused a significant increase in depression and a general decline in wellbeing during the first lockdown (April/May 2020) as compared to before the pandemic struck (autumn 2019). More worrying was the fact that, more than one-third of the respondents fell in the category of being 'clinically depressed' at lockdown, up from 15% before the pandemic struck (Evans, et al., 2021).

Similarly a longitudinal study in a Chinese college came to the conclusion that the pandemic's emotional impact on the students was significantly influenced by their sleep quality during as the pandemic raged and that regular exercise and sound sleep could have helped prevent mental health issues. Rather positively, they study also reported a reduction in aggressive tendencies amongst learners, which they hypothesized as being as result of individuals being more aware of the fragility and value of life (Zhang et al., 2021).

Moreover, according to a research documenting the effects of COVID-19 on students' education, mental health and welfare, academic disruptions resulting in change of instruction-delivery strategies ultimately reduced university students' motivation to learn (Zhai & Du, 2020), which subsequently led to heightened worries about their social and economic well-being (Grubic, Badovinac & Johri, 2020). In

addition, losing contact with friends and having research projects and internships abruptly interrupted before the end of the semester coupled with uncertainty about the job-market and employment prospects triggered depression (Zhai & Du, 2020). Additionally, abandoning hospital or clinical research also significantly diminished students' research output leading to heightened anxiety levels (Grubic, et al., 2020).

Gaps in care as a result of COVID-19

Pratti and Mancini (2021) report that the spike in mental health issues during COVID-19 coincided with severe disruptions of mental health services and care, leaving those that required the vital services and care at risk of severe disease (Bashir et al. 2021). Apparently, during the pandemic health services that were most disrupted were those for neurological, mental and substance use amongst all the essential health services that were hitherto available (Robinson, Sutin, Daly and Jones, (2021). Worryingly, a number of countries also reported huge disruptions in suicide prevention services.

On the other hand, and rather concerningly, studies (Behera et al., 2021; Pratti & Mancini, 2021) reported a drop in the utilization and uptake of health services for/after self-harm during the pandemic due to curbs on movement as COVID-19 infection spiked. Moreover, both patients and hospital personnel feared getting infected with the deadly Covid-19 disease hence unable to meet their patients at a time when they needed their services most. Similarly, Knipe (2021) reported a drop in hospital presentations for self-poisoning by 32% between March and August 2020 in Sri Lanka as compared to the pre-pandemic period. Overall, the studies reported an overall drop in service uptake and utilization.

Notably, unavailability of face-to-face care drove many people to online support, begetting the need to make reliable and effective digital tools easily accessible. Yet, developing and deploying the digital tools for mental health intervention remains a major challenge in resource-limited settings and countries. Accordingly, institution-based mental health programmes and alcohol management and prevention programmes were among the most severely affected at the peak of the pandemic (WHO, 2022).

Important to note is also the fact that during the pandemic, outpatient appointments were shortened, reduced, or ultimately postponed and admissions to emergency departments due to mental health episodes were reduced coupled with fewer face-to-face services, making the situation even dire (Pratti & Mancini, 2021). Accordingly, by the end of 2021 the situation had improved but today many people including students remain unable to get the care and support they need for both newly developed mental health conditions and pre-existing ones as a result of the huge gap occasioned by the COVID -19 pandemic (Pratti & Mancini, 2021).

Alternative mental health service provision during COVID-19

As a result of mental health service disruptions at the onset of COVID -19, the vast majority of WHO Member States reported developing new health services and integrating mental health support into all COVID-19 response endeavours. Both in and out- patient mental health care programmes changed drastically during the pandemic. Accordingly, therapy-related activities like family visits, group therapy and external events were suspended as majority inpatient services shifted to virtual visits, with a more focus on self-care, physical and diet activity. Patients in secured therapy treatment settings and psychiatric hospitals were also relocated or discharged earlier including persons with severe mental disorders.

Pratti and Mancini (2021) report that mental health care professionals mitigated the disruptions to service-provision through the use of digital technologies, with therapy, consultations and follow-up

delivered through telephone, web applications or video-conferencing. Additionally, staff were re-assigned to help prevent occurrence and counter-occurrences of mental episodes and disorders in vulnerable individuals putting in place online psychological support programmes and enhancing community care for health care workers, older adults and grieving families.

Knipe (2021) reports that the shift to remote, and more especially online mental healthcare, was well-embraced by certain groups of patients, such as the young and the financially independent with their own private space. Similarly, Robinson, Sutin, Daly and Jones (2021) report positive impacts as a result of the shift to remote healthcare provision. The main pros, as a result being: convenience, cost-effectiveness of the services and acceptability (especially for outpatient care and common mental disorders). Additionally, patients and health care workers reported that e-mental healthcare enabled flexible scheduling of appointments and services.

Consequently, implementational challenges for e- mental health care however included low levels of technological literacy and potential lack of privacy during consultations for patients living in crowded households or limited private space. Other factors that impeded implementation and uptake of remote mental healthcare services are: lack of provider confidence and experience; inadequate facilities and resources; worries about convenience of the services by providers, sustainability of the services, inadequate patient-professional interaction and poor communication concerning medical prescriptions (drug interactions, side effect and so on).

Implementation was also reportedly hindered by a lack of (trained) mental health professionals, especially in Low and Middle Income Countries (LMICs) even as self-care for professionals working in LMICs was being emphasised. Furthermore, not much direction was given with regard to adaptation of the interventions to local customs and cultures, literacy levels notwithstanding, thereby posing a further barrier to the adoption and use of several remote mental health care services and management strategies in LMICs. Accordingly, it was reported that e-mental healthcare services were less feasible in countries with limited infrastructure and resources (Borges et al., 2021). All in all, remote healthcare provision for various mental health issues and disorders played a significant role as the pandemic raged on and a lot needs to be borrowed and adopted from it even as the pandemic wears off gradually.

Notably, many effective remote evidence-based interventions for mental health disorders had been in existence before the onset of COVID-19 pandemic, however their uptake had been, reportedly, minimal. During the pandemic though, remote interventions and treatment became the main option in many countries and thus, more effort was geared towards adapting, adopting and utilising them and the development of new ones altogether for the treatment, prevention and management of mental health issues and disorders as the pandemic raged and mental health cases skyrocketed (Garcia et al, 2021).

WHO in action

Accordingly, WHO and partners have, drawn, developed and disseminated resources and handbooks in multiple formats and languages to help varied groups respond and cope with the mental health impacts of COVID-19. Notably, WHO and partners developed a story book for 6-11-year-olds, called 'My Hero is you', in 142 languages and 61 multimedia adaptations to help children with COVID-19 related stressors. Additionally, WHO developed a toolkit for offering care and support to adults with or pre-disposed to mental health crises in 16 languages. Accordingly, who also worked with partners, including the United Nations agencies, the Red Crescent and Red Cross and other international non-governmental organisations to lead an interagency psychosocial and mental health response to COVID-19 and its impacts to mental health incidences and mental healthcare provisions worldwide. As a result, WHO Member States have acknowledged the impact of COVID-19 pandemic on mental health and are taking

requisite action.

Accordingly, 90% of countries around the globe have been on their feet working to provide psychosocial and mental health support to COVID-19 patients and responders alike. As a result, at 2021's year's World Health Assembly, several countries stressed the need to develop and strengthen mental health support services as part of strengthening response, preparedness and resilience to COVID-19 and future health emergencies, leading to the speedy adoption of the updated Comprehensive Mental Health Action Plan 2013-2030 framework. The framework stipulates indicators and procedures for psychosocial and mental health preparedness support in public health emergencies.

Conclusion

Evidence from this discussion suggests that COVID-19 has led to a global spike in mental health disorders, including widespread anxiety and depression. From the discussion, suicide rates rose during the pandemic coupled with indications of an increased risk to students and other school-going age populations. Additionally, as discussed, the pandemic helped widen the mental health treatment gap, and outpatient mental health services were the most disrupted calling for the need to scale-up mental health services and psychosocial supports as a significant part of universal health coverage in response and in preparedness for unforeseen public health emergencies. Conclusively, the long-term pandemic impact and related economic recession on mental health and suicide rates amongst student and the general public remains a concern, given the strong link between economic constraints and suicidal behaviours. The huge care gap for common mental health conditions like anxiety and depression implies that countries must determine innovative strategies of diversifying and intervening and work to scale up care. Additionally, there is a need to scale up access to virtual learning as well as individualised coping strategies during crises. Moreover focused mental health policies targeting the education sub-sector are needed. Accordingly, education going forward may be required to address the long-term mental health needs of learners who were negatively impacted by the pandemic.

References

- Aristovnik, A., Kerzzic, D., Ravšelj, D., Tomazzevic N, & Umek L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12(20), 8438.
- Bashir A, Bashir S, Rana K, Lambert P and Vernallis A (2021). Post-COVID-19 Adaptations; the Shifts Towards Online Learning, Hybrid Course Delivery and the Implications for Biosciences Courses in the Higher Education Setting. *Frontiers Education*, 6, 711619.
- Behera C, Gupta SK, Singh S, Balhara YPS (2021). Trends in deaths attributable to suicide during COVID-19 pandemic and its association with alcohol use and mental disorders: findings from autopsies conducted in two districts of India. *Asian J. Psychiatr*, 58, 102597.
- Baumann, C., Rousseau, H., Tarquinio, C. et al. Effect of the COVID-19 outbreak and lockdown on mental health among post-secondary students in the Grand Est region of France: results of the PIMS-CoV19 study. *Health Qual Life Outcomes* 19, 265 (2021). <https://doi.org/10.1186/s12955-021-01903-9>
- Chaudhary, A.P., Sonar, N.S., Jamuna, T., Banerjee, M, & Yadav, S. (2021). Impact of the COVID-19 pandemic on the mental health of college students in India: cross-sectional web-based study. *JMIRx Med*, 2(3): e28158.
- DelPozo-Banos M, Chim Lee S, Friedmann Y, Akbari A, Torabi F, Llyod K, (2021) Healthcare presentations with self-harm and the association with COVID-19: An e-cohort whole-population-based study using individual-level linked routine electronic health records in Wales, UK,2016–March 2021. medRxiv:preprint.
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of educational technology systems*, 49(1), 5-22.
- Duan, L. (2020). An investigation of mental health status of children and adolescents in China during the outbreak of COVID-19. *J. Affect. Disord.* 275, 112–118.
- Evans, S., Alkan, E., Bhangoo, J., Tenenbaum, H. & Ng-Knight, T. (2021). Effects of the COVID-19 lockdown on mental health, wellbeing, sleep, and alcohol use in a UK student sample. *Psychiatry Research*, 113819
- Gracia R, Pamias M, Mortier P, Alonso J, Pérez V, Palao D. (2021) Is the COVID-19 pandemic a risk factor for suicide attempts in adolescent girls? *J Affect Disorder.* 292:139–141.
- Grubic, N., Badovinac, S., & Johri, A. M. (2020). Student mental health in the midst of the COVID-19 pandemic: A call for further research and immediate solutions. *International Journal of Social Psychiatry*, 66(5), 517-518.
- Gunnell D, Appleby L, & Arensman E, (2020). Suicide risk and prevention during the COVID-19 pandemic. *Lancet Psychiatry*, 7(6):468-471.
- Hewitt R. (2020). Students' views on the impact of Coronavirus on their higher education experience in 2020/ 21. Available from: <https://www.hepi.ac.uk/wp-content/uploads/2020/12/HEPI-Policy-Note-27-Students-views-on-the-impact-of-Coronavirus-on-their-higher-education-experience-in-2020-21-FINAL.pdf>.
- Holmes, E. A., O'Connor, R.C., Perry, V. H., Tracey, I., Wessely, S, & Arseneault L, (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*, 7(6):547–560.
- Hubble, S. & Bolton, P. (2020). Support for students with mental health issues in higher education in England. UK Parliament Briefing Paper.
- Jollant, F., Roussot, A., Corruble, E., Chauvet-Gelinier, J.C., Falissard, B., Mikaeloff, Y. & Quantin C.

- (2021) Hospitalization for self-harm during the early months of the COVID-19 pandemic in France: a nationwide retrospective observational cohort study. *Lancet Regional Health Europe*, 6, 100102,
- Kawohl, W & Nordt, C. (2020). COVID-19, unemployment, and suicide. *Lancet Psychiatry*, 7(5), 389–390.
- Kecojevic, A., Basch, C.H., Sullivan, M. & Davi, N. K. (2020). The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PloS One*, 15(9), e0239696.
- Knipe D, Silva T, Aroos A, Senarathna L, Hettiarachchi NM, Galappaththi SR, et al. (2021) Hospital presentations for self-poisoning during COVID-19 in Sri Lanka: an interrupted time-series analysis. *Lancet Psychiatry*, 8(10), 892–900.
- Krishnamurthy, S. (2020). The future of business education: A commentary in the shadow of the Covid-19 pandemic. *Journal of business research*, 117, 1-5.
- McManus, S., Bebbington, P.E., Jenkins, R. & Brugha T. (2016). Mental health and wellbeing in England: The adult psychiatric morbidity survey 2014. NHS Digital.
- Mojtahedi, D. (2021). The relationship between mental toughness, job loss, and mental health issues during the COVID-19 pandemic, *Front. Psychiatr*, 11(1668).
- Odriozola-Gonzalez, P (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university, *Psychiatr. Res.* 290, 113108.
- Oranga, J., & Matere, A. (2022). Post COVID-19 education strategies: Envisaging learning in a post COVID-19 pandemic world. *Research Journal in Advanced Social Sciences*, 3(2), 67-75.
- Prati, G, & Mancini, A. D (2021). The psychological impact of COVID-19 pandemic lockdowns: a review and meta-analysis of longitudinal studies and natural experiments. *Psychol Med.* 51(2), 201–211.
- Rajkumar, R.P. (2020). COVID-19 and mental health: a review of the existing literature. *Asian J. Psychiatr.* 52, 102066
- Ren, Z (2019). What factors are most closely associated with mood disorders in adolescents during the COVID-19 pandemic? A cross-sectional study based on machine learning, *Front. Psychol.* 12 (1346).
- Robinson E, Sutin AR, Daly M, & Jones A. (2021). A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic.
- Rodin D; van Ommeren M. (2009) Commentary: Explaining enormous variations in rates of disorder in trauma-focused psychiatric epidemiology after major emergencies. *Int. J. Epidemiol.* 38(4), 1045-1048.
- Shah, S.G.S., Nogueras, D., van Woerden, H. C. & Kiparoglou V. (2020). The COVID-19 pandemic: A pandemic of lockdown loneliness and the role of digital technology. *Journal of Medical Internet Research*, 22(11), e22287
- Shea, B.J. (2017) AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ*, 358;j4008.
- Son, C., Hegde, S., Smith, A., Wang, X. & Sasangohar F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), e21279.
- Stegg S, Bojanić L, Tilston G, Williams R, Jenkins DA, Carr MJ, (2021) Temporal trends in primary care-recorded self-harm during and beyond the first year of the COVID-19 pandemic: time series analysis of electronic healthcare records for 2.8 million patients in the Greater Manchester

- Care Record. *EClinicalMedicine*. doi:10.1016/j.eclinm.2021.101175.
- Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education, 15*.
- Sun, Y, Lin, S.Y. & Chung, K. K.H. (2020). University Students' Perceived Peer Support and Experienced Depressive Symptoms during the COVID-19 Pandemic: The Mediating Role of Emotional Well-Being. *International Journal of Environmental Research and Public Health, 17*(24), 9308.
- Tinsley B. (2020). Coronavirus and the impact on students in Higher Education in England: September to December 2020. Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/educationandchildcare/articles/>
- Yard E, Radhakrishnan L, Ballesteros MF, Sheppard M, Gates A, & Stein Z, (2021). Emergency department visits for suspected suicide attempts among persons aged 12–25 years before and during the COVID-19 pandemic – United States, January 2019–May 2021. *MMWR Morb Mortal Wkly Rep, 70*(24), 888–894. doi:10.15585/mmwr.mm7024e1.
- Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. *Psychiatry research, 288*, 113003.
- Zhang, Y., Zhang, H., Ma, X, & Di Q. (2020). Mental health problems during the COVID-19 pandemics and the mitigation effects of exercise: a longitudinal study of college students in China. *International Journal of Environmental Research and Public Health, 17*(10), 3722.