






Impacts of COVID-19 Pandemic on Geopolitics, Health, Economics, Education and Sociocultural Events

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Abstract: The number of active cases of COVID-19 and deaths is markedly escalating. The pandemic had affected almost every aspect of our lives including geopolitics, health, economics, education, and sociocultural events. However, besides the negative impacts of the pandemic, there are some positive impacts as well, such as improving our awareness of the daily hygienic practices, emphasizing digital inequality, and increasing global collaboration in combating the crisis by intensifying scientific research to establish a promising vaccine. Other positive impacts are the activation and use of online education, also raising awareness about close family relationships and much more. This review addresses the impacts of the COVID-19 pandemic on various important aspects of life.

Keywords: COVID-19 outbreak, life aspects, health measures, economy, educational challenges

Introduction

The outbreak of COVID-19, a disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) occurred in an era characterized by advanced technology in mass media and communication resources. Such advances allowed people, in general, to follow the global news of this pandemic, be aware of its detrimental effects, and take protective measures as instructed by national and international health authorities. However, the coin has two sides and digital inequality sprang up where lack of technologies limited the access of certain populations to advanced technologies and reduced their educational knowledge and information regarding the pandemic, governmental restrictions, and protective measures to be taken to combat the crisis.¹⁻³ On the other hand, the crisis had a positive impact on the population where technologies are available as it provoked a tendency to technology illiterate people to put an effort to learn the basic skills to enable them to use such technologies for work from home, social interaction, information follow-up and educational purposes. It has been suggested that despite of the major impact they encountered due to the spread of the epidemic, dealing with digital inequalities is currently not receiving enough attention from decision-makers.⁴

Measures taken by governments such as shutdowns of not only international borders but also borders within each country to isolate the hard-hit areas by the pandemic have remarkably reduced the spread of the virus. However, despite the first declaration by the World Health Organization (WHO) that described the pandemic as a global emergency in January 2020,⁵ and the restrictions set by health authorities such as stay home, wearing masks and gloves, safe social distancing, and avoidance of group ceremonies, many countries witnessed ignorance of such measures by their people. Such attitude significantly increased the number of active cases and consequent deaths. Some countries across the globe took the matter lightly at the beginning of the global outbreak and even bragged of being free of cases to be struck later

by the outspread of active cases and their health situation was worsened more by their lack of facilities to screen their population. Still, data from such countries remain unreliable due to the previous reasons and the clinical features such as the incubation period of almost two weeks during which cases may become asymptomatic. With the worsening trends of COVID-19 pandemic, the entire health-care systems across the globe were challenged to develop new treatments and approaches to managing the infection and its myriad implications. This review will address the impact of COVID-19 on various aspects of our daily life including health, geopolitics, economic, social, cultural, environmental aspects, and education.

Methods

This review is intended to be informative to clinicians, researchers, students, and the public on both the positive and negative impacts of the COVID-19 pandemic. The impact on health, education, economics, geopolitics, social and cultural aspects, the living environment will be discussed in detail. We performed a search using the following electronic databases: MEDLINE and PubMed, for the period of 2019 right through to 2022. Search Terms included “COVID-19” OR “SARS-CoV-2 Infection” OR “COVID-19 Pandemic” OR “COVID-19 Outbreak” AND “Social-cultural effects” OR “Economic Burden” OR “Economic impact” “Digital Education” OR “Education” OR “Health” OR “Mental Health” OR “Psychological Health” OR “Physical Health” OR “Geopolitics” OR “Digital Inequality”. Studies were included if they were examining the effects of COVID-19 pandemic on different aspects of day-to-day life, including public health, education activities, global economics and geopolitics. Online resources on latest COVID-19 statistics and updates were also considered. Eligible research papers were identified by each of the reviewers and those selected articles were retrieved for closer examination. Each of the authors was assigned the literature search of two aspects that are believed to be markedly affected by the pandemic. In such a way, the search and inclusion criteria were more focused on the aim of the review. The other two authors have reviewed and verified that key statements were supported by references and appropriate evidence before being compiled in the final review. The final draft was reviewed by all authors and approved for submission.

Findings

The authors agreed in principle on the fact that despite the fully documented and acknowledged negative impacts of the pandemic; it allowed governments, various institutional authorities, and the public to pinpoint the flaws in each of day-to-day aspect of life. The pandemic also alarmed governments and exposed deep flaws in health systems, global economic structure, and education processes. The crisis has exacerbated the significance of the hidden status of social and digital inequality and computer illiteracy. Authors agreed as well that there was an urgent need to develop evidence-based programs to face any future challenges. Furthermore, findings would help authorities to prioritize measures to avoid, or at least frame the most necessary precautionary measures to be followed when facing such a disaster.

Discussion

Impact on Health

The Physical and Psychological Impact of the SARS-CoV-2 Infection

The SARS-CoV-2 is a highly contagious virus that has spread and caused a global pandemic. It is estimated that 2% of the carriers are perfectly healthy. However, 5–10% was estimated to develop an acute respiratory distress syndrome (ARDS). The effects of the pandemic have the potential to detrimentally affect society and burden the health-care system.⁶ The clinical presentation can range from asymptomatic or mild to severe and even death. Mild manifestations of the illness include – fever, dry cough, sore throat, nasal congestion, malaise, headache, muscle pain, loss of taste and/or smell, diarrhea and vomiting. Moderate manifestations additionally include respiratory symptoms of shortness of breath with no signs of severe pneumonia, whereas severe clinical manifestations include severe pneumonia, ARDS, sepsis and septic shock.⁶ The effects of SARS-CoV-2 on the Central Nervous System (CNS) and mental health are still unclear. Evidence exists that the virus can penetrate the CNS through the olfactory and circulatory routes, which could explain the neurological manifestations of acute cerebrovascular disease, viral encephalitis, hypoxic encephalopathy, meningitis-

encephalitis, infectious toxic encephalopathy, conscious disturbance, alteration of taste, and olfactory disturbances.⁷ In a large study, SARS-CoV-2 patients exhibited several neuropsychiatric symptoms such as headaches, insomnia, encephalopathy, cerebrovascular disease, as well as depression and suicidal ideation. It is debated whether the mental health conditions occur independently of the infection or are a result of the chronic low-grade inflammation that accompanies the infection.⁷ There are many reports of the patients' mental health being severely affected by the infection. The study has shown that SARS-CoV-2 has scored higher in the Hamilton Anxiety and depression scales compared to those of patients with pneumonia from other causes and healthy controls.⁷ Several reasons have been proposed by the authors to explain these results infected patients experience physical and mental distress consequent to their infection and also because of - the concern for the potential infection of family members, the uncertainty of the characteristics of the disease, reports of deaths by the media as well as the prohibition of family and friends from visiting; preventing them from providing moral support.⁷ A study that compared the impact of face masks on physical and mental health between the population of Poland and China⁸ revealed that Poles were using face masks less than the Chinese and consequently, and that they suffered more infections, hospitalization and deaths in comparison to the Chinese.⁸ The same study reported that Poles because of fewer face masks use in comparison to Chinese, have shown significantly high levels of anxiety, depression, and stress.⁸ The COVID-19 pandemic has alarming implications on mental health, and the already stretched health-care providers should monitor the mental health of their patients and provide them with social support.⁹ The mental health impact is not only manifested on the public, but it is also greatly seen in the health-care professionals as one study has clearly revealed the high prevalence of anxiety and depressive symptoms that are associated with the COVID-19 pandemic in health-care workers.¹⁰ Another study has shown that female gender, student status and specific physical symptoms were linked to greater psychological impact which was manifested as high levels of stress, depression and anxiety.¹¹

Disruption of Healthcare Services for Non-Communicable Diseases

Governments from around the world have taken unprecedented measures to mitigate the serious effects of the pandemic. However, this has led to disruptions in other health-care services in many countries, as non-urgent outpatient visits and one-to-one clinical visits were canceled, as well as the redirecting of staff to help with COVID-19 patients.¹² This is especially detrimental to patients with non-communicable diseases (NCDs), as they are at a higher risk of developing severe manifestations of SARS-CoV-2, are at a higher mortality risk and the infection may worsen the prognosis of their NCDs.^{12,13} Many high-income countries have included services for NCDs into their COVID-19 plans. However, most low-income countries have not.¹² Patients also may be more hesitant to seek medical care due to fears of infection. There is also the issue of medication adherence. Monitoring of patients is essential but not easy to carry out routinely. Moreover, research on NCDs have been halted or postponed. This could delay the progress in finding cost-effective interventions.¹³

It has also been reported that the COVID-19 pandemic has greatly impacted not only infectious disease and critical care but all areas of the healthcare system.¹⁴ The same authors also suggested that this impact is going to evolve over time and that it is going to linger for some time even after the pandemic is being controlled.¹⁴

COVID-19 pandemic has given a boost to digital health services, and health authorities across the globe—in response to the pandemic —have created initiatives enabling their health-care systems to benefit from these digital services for pandemic management.¹⁵ Such adoption in health policy took long time after the emergence of the pandemic and was mirrored with an increased concern on the emerging risks from integrating such technologies in critical infrastructure such as that of the health-care systems. These concerns are mostly related to security, privacy and trust, and can result in a lower rate of adoption. In healthcare systems' natural lifecycle, new emerging risks and vulnerabilities are detected and identified continuously. Such risk and vulnerabilities require near real-time process for updating the task definitions but without a framework for the risk assessment of medical systems, such updates could become invisible to cybersecurity experts and healthcare system would not then be able to continuously review any changes in the activities in the digitalisation of medical systems.¹⁶ This is of great importance as developing countries with under-developed digital infrastructure could not respond to the crisis as fast as other developed countries.¹⁶

Risk of Exposure of HCWs and Effects on Mental Health

Health-care workers (HCWs) are at a high risk of being infected. Factors for increased risk include working in a high-risk department, exposure to an infected family member, inadequately washing hands, improper wearing of personal protective equipment (PPE), close and frequent contact with infected patients and in some cases unprotected exposure. Several studies have found that HCWs experienced symptoms of anxiety, depression, and insomnia. Severe symptoms were especially found in nurses and female.^{13,14,17} There are many reasons for these disturbances: a fear of being infected and spreading the infection to family, a difficult work environment where difficult decisions need to be made on how to provide care to severely affected patients, working under extreme pressure and sometimes with limited resources.¹⁷ Moreover, the reported psychological impact of pandemic among health-care workers.¹⁰

The Psychological and Physical Impacts of Lockdowns

Lockdowns and social distancing have been shown to be effective in reducing the number of cases. However, it is likely to have an impact on people's physical and mental wellbeing. The lockdown has the potential of physically impacting people, especially those with chronic diseases, through reduced physical activity, limited access to fresh food, limited exposure to sunlight, isolation and its effects on mental health.¹³ A study has estimated the prevalence of post-traumatic stress disorder (PTSD) symptoms as 7%.¹³ The frequent exposure to social media was found to be a risk factor in the development of psychopathological symptoms.⁷ One of the first steps taken by governments was to close schools and universities. Prolonged school closures have been shown to have a negative impact on children, as social contact is essential for their development. It is especially detrimental if schools and parents are unprepared for home learning, and even more so for underprivileged students.¹⁸ Part of the restrictions imposed was forcing non-essential workers to work from home. Many were discharged and others had a hard time finding jobs. It was found that those who stopped working during lockdown had high levels of distress.⁷

Engaging in Health-Protective Behaviors

The trust in governments, scientists and doctors is important when it comes to engaging in health protective behaviors such as social distancing, wearing masks and washing hands. However, many studies suggest that social media encourages the belief in conspiracy theories and discourages people from engaging in health-protective behaviors.¹⁹ A study has found that older people were less likely to believe in conspiracy theories and were more likely to engage in health-protective behaviors because they consume more broadcast media and use less of social media.¹⁹ On the other hand, misinformation can create fear and lead to extreme behaviors, such as discriminating against, mistreating and even attacking HCWs, as they are seen as a risk to society.¹²

Positive Health Effects of COVID-19 Pandemic

The COVID-19 pandemic has had a positive impact that will most probably shape the future of the healthcare system for the better. Anecdotal observations have found fewer extremely premature births during the lockdown. A possible explanation offered is that an increase in hygiene and home confinement could have decreased inflammation in women, which is a risk factor for premature birth. Reduced physical exertion due to work, reduced traveling, and reductions in incidents of minor accidents and other traumas could also be contributing to the decreased preterm births.²⁰ The pandemic will help the healthcare system and HCWs to be better prepared for future pandemics. A study found that HCWs taking care of COVID-19 patients had experienced growth, increase in affection and support for one another and feelings of professional responsibility.⁷

Impact on Geopolitics

The political consequences of the COVID-19 are not easily predictable. However, the lesson that is widely agreed upon is that political attitudes and practices must change to maintain a safe world for all. Efforts must be made to reduce inequality in its various facets including political power, health, digital literacy, and poverty. This is to be a priority; we must work through international agencies to improve the conditions of living in under-resourced countries otherwise we shall have pandemic areas that cannot be completely isolated from the rest of safe areas across the globe.^{21,22} The gaps in inequality must be reduced and in addition to health, more focus on climate, economy and sustainability is required to

achieve a wider and more beneficial recovery. Despite distances, the world is small and open to challenges that if we succeed in tackling wisely, we can appropriately combat any future health crisis of the sort. Preparedness requires cooperation between countries and strict regulations and control of scientific research in the area of virology and biological warfare.²¹ A crisis in one country should be looked upon as a global crisis and the United Nations and concerned international authorities must never turn a blind eye to such tragedies anywhere. The focus should be on people and communities and the human must be respected regardless of ethnicity, religion, color, race, or gender. Among the positive impacts of the pandemic are the collaborative efforts observed within scientific communities and educational institutes, the sympathy and cooperative spirit among people and societies. The world is in desperate need for strong, empathic and humanitarian leadership that works for humanity and not reelections. Woods of Oxford put right in saying “Poor leadership results in bad outcomes, whatever the political system”.²¹ Leaders must overlook their political differences and mistrust and grasp the opportunities for global cooperation in all aspects of fighting the pandemic and initiate efforts and plans to improve if not avoid the consequent negative impacts of COVID-19 on life in general and across the globe.²¹ Disasters such COVID-19 outbreak revealed the real needs of the people to a decisive leadership and many governors and leaders lost their credibility and appeared as fragile failures in times of crisis. We have to agree with Bishop and Roberts that the exceptional measures taken by governments, the private sector, and individuals in response to the COVID-19 pandemic will profoundly impact our geopolitical environment.²²

Impact on Economy

The massive drop in the price of oil in March 2020 that was the result of Russia’s refusal to reduce production which was challenged by the opponent decision of Saudi Arabia to increase production and reduce prices did not increase the demand for oil where most importing countries were rather busy with the COVID-19 crisis.²³ However, the fact that some countries may have grasped the chance to increase their oil reserve at such slashed prices should not be excluded. The Economy worldwide did not appear to benefit from such reduction in oil prices during the pandemic mainly because of social distancing and lockdown of factories, malls, restaurants, cinemas and theatres, transport means and other crowd functioning facilities. Various industries were badly affected with massively reduced turnovers especially in the light that the work from home solution does not apply to such industries. In addition, the termination of contracts of employees and their redundancy negatively impacted their living conditions, their health, familial, societal interactions and relations.²³ The International Labor Organization’s Fundamental Conventions (ILO) declared that

The COVID-19 crisis had impacted on both the demand and the supply sides of the labor market, and it has major implications for the goal of ensuring full employment and decent work, in particular, the crisis is pushing many families into poverty and increasing existing inequalities.²⁴

Despite the unpreparedness at both national and international levels to face the shock of the unemployment and lockdown of production in various industries, relief programs should be a priority to focus on not only from the point of view of economic recovery but from the humanitarian side as the shock of the crisis had severely negatively affected the low- and middle-class people. Their redundancy will reflect badly and costly on health, social and cultural aspects. It is rather imperative to suggest that any well-planned relief programs to recover the industries and work conditions in a country would not only be beneficial to the industrial sector but also to the workers, their health and socioeconomic status and the entire community at large if these programs considered the human as the center of their interest. Governments again intervened by injecting billions of dollars to revive the situation; however, the picture is still far from ideal, and the situation is somewhat cloudy. This is partly due to income cuts and the tremendous losses of jobs and the escalating unemployment. “The latter” in some countries such as China and France witnessed some increase in hiring rates as a result of ease in shutdown and it is hoped that a more significant recovery occurs elsewhere.²⁴ Long-term unemployment has detrimental effects on physical and mental health, and it has been associated with increases in mortality.²⁵ This is certainly stressing the view that any long-term plans should prioritize human welfare, where focusing on job retention and developing educational and training programs to help the unemployed to gain new skills in order to secure newer jobs. Worldwide efforts must collaborate to reduce digital inequality and illiteracy, increase the availability of smart devices and internet access particularly in poor countries to help increase the awareness of all of the health information,

regulatory restrictions during pandemics, follow-up with online education, secure work from home jobs if need arise and practice distant family and social interaction.

Impact on Social and Cultural Aspects

The COVID-19 pandemic is affecting the public of any community and causing unprecedented disruptions of familial, social and cultural communications and relations. The shutdown and isolation and social distancing have significantly reduced the spread of the virus and reduced the escalation of death cases when they are strictly followed by the population of any community,⁵ but it had negatively impacted familial and social interaction. Just like other sides of our daily life, the crisis had effectively increased digital technology use and interaction but severely reduced face-to-face interaction even among members of the same family. Frontline health-care professionals attending hospitals and isolation centers were isolated from their families. Death tragedies in the health-care professions just like other sectors were enormous and the families of deceased ones suffered greatly their losses. They were emotionally and physically depressed by the separation from their close relatives and loved ones whom they were not able to properly pay their respect and tribute to their farewell. The shutdown may have the advantage of bringing again family gathering into life at least for some part of the day, increase their interaction and allow sharing and caring to appear in its most shining beautiful way. Such feelings were ignited more by the passionate thinking of family members stranded overseas or in quarantine centers whether governmental or private. The shutdown had its impacts which were reflected on the societies and spiritual and religious practices of people as mosques and churches were shut down, the transport was effectively stopped, weddings and funerals were avoided. However, thanks to the digital era, digitally literate people communicated through social networks, ceremonies, workshops and conferences were held online.⁴ Digital inequality again stretched its neck during the crisis, where not all parents were able to afford the highly priced smart devices for their children to follow their education programs online. The later problem was further aggravated was even further aggravated by the parents losing their jobs or having sharp cuts in their income. Studies related to pandemics in the past and also the recent pandemic of COVID-19 have shown that the psychological effect, as well as the social effect, are not limited to the fear of contracting the virus.²⁶ There are more fears which are encountered by people such as separation from loved ones, losing freedom, uncertainty of the advancement of the disease as well as the feeling of helplessness.^{27,28} This may lead to a rise in suicidal attempts among the population, especially among those who are extremely sensitive and cannot tolerate these circumstances.²⁹

Impact on Education

With the COVID-19 outbreak, schools, universities and other educational institutes were shut down and their reopening is still not foreseen soon in many countries. According to UNESCO, the temporary closure of educational institutes in most countries impacted 60% of the students' population in the world while localized closures implemented by other counters impacted additional millions of learners.³⁰ Princess Laurentien of the Netherlands, UNESCO Special Envoy on Literacy for Development reported that already there are globally around 773 million youth and adults deficient in basic levels of literacy and numeracy, and two-thirds of them are females.³¹ Those illiterate youth and adults must have suffered a great deal before and after the COVID-19 crisis. In addition, digital deficiencies and illiteracy as mentioned before may have negatively impacted their day-to-day fight against the pandemic. These facts again call for a consideration of not only human welfare from the point of view of health but of literacy to be a priority in the long-term planning of governments and international organizations, particularly in areas of widespread poverty. The shutdown of educational institutes forced educators and learners to resort to online education and the crisis of COVID-19 led to the development of various innovative strategies of distant teaching/learning to compensate for the in-class learning. However, despite the numerous advantages of digital online education, again it was not available to all and even those who have the resources for digital education could not cater to the needs of all their children. With the loss of jobs and income cuts thousands of parents, if not more, were facing the challenge of whom, among their children, to provide with facilities to follow up with his/her digital online classes.²³ On the other hand, many schools were willing to return only transport but not tuition fees, in order to keep teachers' jobs to continue distant online education. The pandemic crisis and the educational challenges were not without some advantages. The crisis demolished reluctance to learn digital skills and

even teachers who were digitally illiterate took up the challenge and learned through hands-on workshops and online activities to provide distance education effectively. Governments and educational institutes worldwide cooperated to develop remote professional training programs for teachers, administrators and learners. Most governments worldwide adopted programs and plans to recover effective education. The United Arab Emirates (UAE) provided free home internet connections for those who do not have them. An eLearning platform “In This Together Dubai” was launched by the Knowledge and Human Development Authority to facilitate online classes for school students amid the COVID-19 outbreak and the implementation distant learning programs by the Ministry of Education.³² Among the problems that faced effective digital education are the practical and training classes that are essential components of several educational programs and it has to be conducted on campus while keeping the safety of both teachers and students. A similar problem was experienced with graduate students carrying out experimental research in small, spaced research labs. These problems were, in general, solved by applying safe distancing, shift-based working schedules and implementing strict safety measures from a must COVID-19 testing to the use of all protective measures. In India, and despite the challenges which arose because of the pandemic, the Higher Education Institutions have reacted positively and managed to ensure the continuity of teaching-learning, research and service to the society with some techniques and tools during the pandemic. Due to COVID-19 pandemic, many new modes of learning, new perspectives, new trends have emerged.³³ A literature review in 2021 on the impact of COVID-19 pandemic on teaching and learning, concluded that in developing countries suitable pedagogy and platform for various classes at different education levels need to be explored further.³³ Internet bandwidth is relatively low with lower access points, and data packages are costly in comparison to the income of the majority of the people in developing countries. The education system across the world needs to invest in the professional development of teachers, especially in Information and Communication Technology (ICT) and effective pedagogy.³⁴ An article published recently in 2021 explored the impact of the pandemic on Nigerian educational institutions. The article identified the suspension of internal and external examinations, disruption of the academic programs, suspension of admission of new students, suspension of teaching and learning programs in primary and secondary schools. The same was true for higher education institutions.³⁵

Limitations

Since COVID-19 pandemic influenced almost every aspect of the daily life of all people across the globe, it is only imperative that this review did not address all the positive and negative impacts of the pandemic.

Conclusion

The COVID-19 pandemic influenced almost every aspect of our daily life. It changed, among others, the facet of health, geopolitics, economy, education, movement, social and cultural aspects. However, the disaster alarmed us of measures to be prioritized in any national and international strategies for a safer future. The crisis has also alarmed us of the apparent priority to tackle digital inequality and computer literacy. The world had suffered and still suffering a great deal of the negative impacts of the pandemic but the lessons we learned are of great value in combating unpredictable future disasters of the kind. The burden in the present fight should not be carried on by only health authorities but by all private and public organizational sectors. The public must actively contribute to the efforts of fighting the pandemic by strictly following the directions of their health authorities and actively contribute to their national strategies for the post COVID-19 pandemic.

Highlights of the Study

- The economic and social disruption caused by the COVID-19 pandemic is a humanitarian crisis.
- United global collaborative efforts are needed to address the challenges facing health, education, and the economy.
- The pandemic alarmed governments and the public to deficiencies in almost every system.
- Digital inequality and computer illiteracy became an apparent priority to tackle.
- There is an urgent need to develop evidence-based programs to face any future challenges.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available upon request from the corresponding author.

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References

1. Büchi M, Festic N, Latzer M. How social well-being is affected by digital inequalities; 2018. doi:10.5167/UZH-167385
2. DiMaggio P, Hargittai E. From the “digital divide” to “digital inequality”: Studying internet use as penetration increases. Center for Arts and Cultural Policy Studies, Princeton University. *J Bioelectromag Soc.* 2001;15:1–23. doi:10.1002/bem.20484
3. Hargittai E. Digital Na(t)ives? Variation in internet skills and uses among members of the “net generation. *Sociol Inq.* 2010;80(1):92–113. doi:10.1111/j.1475-682X.2009.00317.x
4. Beaunoyer E, Dupéré S, Guitton MJ. COVID-19 and digital inequalities: reciprocal impacts and mitigation strategies. *Comput Human Behav.* 2020;111(106424):106424. doi:10.1016/j.chb.2020.106424
5. Sohrabi C, Alsafi Z, O'Neill N, et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). *Int J Surg.* 2020;76:71–76. doi:10.1016/j.ijsu.2020.03.036
6. Cascella M, Rajnik M, Cuomo A. Features, evaluation, and treatment of Coronavirus (COVID-19). Available from: <https://www.ncbi.nlm.nih.gov/books/NBK554776/>. Accessed August 22, 2020.
7. Szcześniak D, Gładka A, Misiak B, et al. The SARS-CoV-2 and mental health: from biological mechanisms to social consequences. *Prog Neuropsychopharmacol Biol Psychiatry.* 2021;104(110046):110046. doi:10.1016/j.pnpbp.2020.110046
8. Wang C, Chudzicka-Czupala A, Grabowski D, et al. The association between physical and mental health and face mask use during the COVID-19 pandemic: a comparison of two countries with different views and practices. *Front Psychiatry.* 2020;11. doi:10.3389/fpsy.2020.569981
9. Pfefferbaum B, North CS. Mental health and the covid-19 pandemic. *N Engl J Med.* 2020;383(6):510–512. doi:10.1056/NEJMp2008017
10. Braquehais MD, Vargas-Cáceres S, Gómez-Durán E, et al. The impact of the COVID-19 pandemic on the mental health of healthcare professionals. *QJM.* 2020;113(9):613–617. doi:10.1093/qjmed/hcaa207
11. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 Coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health.* 2020;17(5):1729. doi:10.3390/ijerph17051729
12. COVID-19 significantly impacts health services for noncommunicable diseases. Who.int. Available from: <https://www.who.int/news/item/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases>. Accessed August 25, 2020.
13. Palmer K, Monaco A, Kivipelto M. The potential long-term impact of the COVID-19 outbreak on patients with non-communicable diseases in Europe: consequences for healthy ageing. *Aging Clin Exp Res.* 2020;32(7):1189–1194. doi:10.1007/s40520-020-01601-4
14. Chang AY, Cullen MR, Harrington RA, Barry M. The impact of novel coronavirus COVID-19 on noncommunicable disease patients and health systems: a review. *J Intern Med.* 2021;289(4):450–462. doi:10.1111/joim.13184
15. Radanliev P, De Roure D. Alternative mental health therapies in prolonged lockdowns: narratives from Covid-19. *Health Technol.* 2021;11(5):1–7. doi:10.1007/s12553-021-00581-3
16. Radanliev P, De Roure D. Epistemological and bibliometric analysis of ethics and shared responsibility—health policy and IoT systems. *Sustainability.* 2021;13(15):8355. doi:10.3390/su13158355
17. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. *Int J Emerg Med.* 2020;13(1):40. doi:10.1186/s12245-020-00299-5
18. UNESCO. Adverse consequences of school closures; 2020. Available from: <https://en.unesco.org/covid19/educationresponse/consequences>. Accessed August 25, 2020.
19. Allington D, Duffy B, Wessely S, et al. Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency. *Psychol Med.* 2021;51(10):1763–1769. doi:10.1017/S003329172000224X
20. Hedermann G, Hedley PL, Bækvad-Hansen M, et al. Danish premature birth rates during the COVID-19 lockdown. *Arch Dis Child Fetal Neonatal Ed.* 2021;106(1):93–95. doi:10.1136/archdischild-2020-319990
21. Wood N. Global governance: planning for the world after COVID-19. Challenges and opportunities in the post-COVID-19 world. World Economic Forum. Available from: http://www3.weforum.org/docs/WEF_Challenges_and_Opportunities_Post_COVID_19.pdf. Accessed September 25, 2020.
22. Bishop J, Roberts A. Geopolitics: resilient and sustainable globalization. Challenges and opportunities in the Post-COVID-19 world. World Economic Forum. Available from: http://www3.weforum.org/docs/WEF_Challenges_and_Opportunities_Post_COVID_19.pdf. Accessed September 25, 2020.
23. Nicola M, Alsafi Z, Sohrabi C, et al. The socio-economic implications of the coronavirus pandemic (COVID-19): a review. *Int J Surg.* 2020;78:185–193. doi:10.1016/j.ijsu.2020.04.018
24. COVID-19 and the world of work (COVID-19 and the world of work). Available from: <https://www.ilo.org/global/%20topics/coronavirus/lang-en/index.htm>. Accessed September 27, 2020.
25. Lessons from the past on how to revive the US economy after COVID-19. McKinsey.com; 2020. Available from: <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/lessons-from-the-past-on-how-to-revive-the-us-economy-after-covid-19>. Accessed September 10, 2020.
26. Barbisch D, Koenig KL, Shih FY. Is there a case for quarantine? Perspectives from SARS to Ebola. *Disaster Med Public Health Prep.* 2015;9(5):547–553. doi:10.1017/dmp.2015.38
27. Cao W, Fang Z, Hou G, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* 2020;287(112934):112934. doi:10.1016/j.psychres.2020.112934

28. Li LZ, Wang S. Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Res.* 2020;291(113267):113267. doi:10.1016/j.psychres.2020.113267
29. Kawohl W, Nordt C. COVID-19, unemployment, and suicide. *Lancet Psychiatry.* 2020;7(5):389–390. doi:10.1016/S2215-0366(20)30141-3
30. UNESCO. Disruption and response; 2020. Available from: <https://en.unesco.org/themes/education-emergencies/coronavirus-schoolclosures>. Accessed March 20, 2020.
31. Römer K. COVID-19: a wake-up call to invest in literacy. UNESCO.org. Available from: <https://thelifelonglearningblog.uil.unesco.org/2020/07/21/covid-19-a-wake-up-call-to-invest-in-literacy/>. Accessed January 25, 2022.
32. Distance learning in times of COVID-19 - The Official Portal of the UAE Government. U.ae. Available from: <https://u.ae/en/information-and-services/education/distance-learning-in-times-of-covid-19>. Accessed March 20, 2020.
33. Jena PK. Impact of Covid-19 on higher education in India. *Int J Adv Edu Res.* 2020;5(3):77–81.
34. Pokhrel S, Chhetri R. A literature review on impact of COVID-19 pandemic on teaching and learning. *High Educ Future.* 2021;8(1):133–141. doi:10.1177/2347631120983481
35. Ogunode NJ, Ndubuisi AG, Terfa AC. Impact of the COVID-19 pandemic on Nigerian educational institutions; 2021. Available from: <https://papers.ssrn.com/abstract=3810123>. Accessed January 25, 2022.

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