

Literature review of the impact of covid-19 on the academic performance and achievement of students

¹ Ida Kruti, ² Klevisa Muça

¹Lecturer, ²Lecturer

¹ Department of psychology, ² Department of psychology, ²
University College “Wisdom”

Email - ida_t2002@yahoo.de; klevisa.muca@yahoo.com;

Abstract: Covid-19 had an impact on the achievements and academic performance of students in high schools, as well as students of college and universities. In various studies are found, that the high levels of stress, anxiety, fear of infection, or problems through instant online learning significantly affected the mental health and therefore the academic achievements and performance of high school students as well as college and university students. The study focuses on a review of the literature on studies conducted with students during the period 2020 - 2022 about the impact of Covid-19 on academic achievements and performance as a result of stress, increased anxiety, fear of infection from Covid-19 as well as online learning in different countries. The search engine was google scholar and google. This study includes 18 studies in 13 different countries like, USA, Arabia, Brazil, Germany, Italy, Turkey. According to the studies, it is found that the increased levels of anxiety, stress, fear of infection from Covid-19 and online learning have affected the academic achievements and performance of students by bringing interruptions to their studies, postponing their studies, or even not completing their graduations.

Key Words: impact of Covid-19, students, academic performance, cognitive impairments, brain fog.

1. INTRODUCTION:

According to World Health Organization Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. (WHO, 2020) As reported by World Health Organization, the high contagiousness and rapid spread of COVID-19 induced a considerable degree of fear, worry, and concern in the general population, resulting in an overall worsening of individuals' psychological health. For this reason, the World Health Organization has issued guidelines in order to come in help for managing the problem taking into consideration both medical and psychological perspectives.

Although several studies on COVID-19 focused on infection spread, containment measures, and potential vaccines, very little cognitive research has been conducted, so far, to address the impact of COVID-19 emergency on mental health and, therefore, possible treatment.

Recent case studies have provided evidence that COVID-19 patients can develop a range of neurological complication including those arising from stroke, encephalopathies, inflammatory syndrome, delirium and neuromuscular symptoms. Histopathologic examination of brains from deceased COVID-19 patients indicate the potential of SARS-CoV-2 to infiltrate the central nervous system (CNS). (Solomon IH, 2020)

More recently, using F-FDG PET, it has been demonstrated that in the most severely affected patients, the degree of cognitive impairment was accompanied by front parietal hypometabolism.

A recent study published in *Nature* shows that SARS-CoV-2 infection is associated with longitudinal effects, particularly on brain structures linked to the olfactory cortex, modestly accelerated reduction in global brain volume, and enhanced cognitive decline. Thus, even mild COVID-19 can be associated with long-lasting deleterious effects on brain structure and function. (Douaud, 2022)

There are concerns regarding potential neurological consequences due to sepsis, hypoxia and immune hyper stimulation, with reports of elevated cerebrospinal fluid autoantibodies in patients with neurological symptoms, white matter change in the brain and psychological and psychiatric consequences at the point of discharge.

Individuals with COVID-19 experience persistent mental health symptoms such as anxiety, depression, fatigue, and post-traumatic stress disorder (PTSD), which could contribute to the deficits in cognitive function. The most concerning cognitive symptoms is “brain fog”, which is a term used to describe slow or sluggish thinking, and can occur under many different circumstances. (M. Altuna M. S.-S., 2021) However, we don't really understand why brain fog happens after COVID-19, or how long this symptom is likely to last. But we do know that this form of brain fog can affect different aspects of cognition such as attention, memory, executive functions.

Although persistent cognitive symptoms are also observed in individuals with mild COVID-19, such deficits in cognitive function are more prevalent in individuals with severe COVID-19. Previous studies suggest that 36%-76% of individuals with severe acute COVID-19 show cognitive deficits 6 months after illness onset. (Nalbandian, 2021)

Taking into consideration all the data mentioned above, which emphasis the effect of covid in the cognitive processes, we conducted a systematic review and meta-analysis of the impact of coronavirus disease 2019 in academic performance in students with no prior history of cognitive impairment.

2. METHODOLOGY:

This search was focused on two searching engines for articles like Google Scholar and Google. The selection included the study years from 2020 to 2022. Part of the selection was first through the abstract and then through the full paper. Finally, in this study were included 18 studies from 13 different countries like: USA, Arabia, Colombia, Germany, Italy, Turkey. During the search it turned out that there were studies from the same countries, but in our study were taken into consideration only those studies, that were from the same countries, but brought different findings. In the studies were used different measurement, so our focus remains the findings of studies.

3. RESULT:

The findings of study with 378 gifted students all over Saudi Arabia (Alsabih A O, 2022) faced different problems during the online distance learning. This study showed that 70.4% of the gifted students had an increase in their academic achievement at the end of the second semester during quarantine compared to first semester. 50.3% of students had experienced major behavioural changes during quarantine. 56.9% of students suffered from annoying dreams and difficult sleeping and learning problems. The correlation analysis indicated a significant and positive correlation between gifted student's academic achievement, entertainment hours. It was significant and negative between the academic achievement and the number of sleeping hours.

The other study in three Arab countries, Egypt, Jordan, and Saudi Arabia (Atlam El-S, 2022) with 1766 students is not at the same line. This study showed a correlation between student's psychological health and the use of online education during COVID-19. The psychological challenges that students faced during the COVID-19 pandemic included stress, frustration, tension, and depression. The consequences of social and psychological impact on the student's academic performance was huge. The study shows a strong relationship between academic performance and online learning tools. The sleeptime of 50.7% of students has been affected during the time of COVID-19 due to the heavy use of digital devices.

In the study of Saint Louis University (Marler E K, 2021) was analyses the answer of 238 undergraduate students. These results indicate that as COVID-19-related psychological distress increased, academic motivation, sense of belonging, belief in online distance learning, and SES decreased. Analyses revealed significant negative relationships between COVID-19- related psychological distress and academic motivation, $r(236) = -.15, p = .02$, sense of belonging, $r(236) = -.39, p < .01$, belief in online distance learning, $r(236) = -.25, p < .001$, and SES, $r(236) = -.25, p < .001$. Analyses demonstrated significant positive relationships between sense of belonging and academic motivation, $r(236) = .29, p < .01$, and between sense of belonging and belief in online distance learning, $r(236) = .17, p = .01$.

In the study in USA (Reyes-Portillo J A, 2022) with college students (4714) from universities in New York (NY) and New Jersey (NJ) showed that students' mental health was severely affected and that black students were disproportionately affected by academic, financial, and COVID-related stressors. Worry about COVID-19 infection, stressful living conditions, lower grades, and loneliness emerged as correlates of deteriorating mental health. COVID-19's mental health impact on college students is alarming and highlights the need for public health interventions at the university level.

In the the canadian study (J. Whitley, M. H. Beauchamp and C. Brown, 2021) was found that many children and youth have experienced disengagement, chronic attendance problems, declines in academic achievement, and decreased credit attainment during the pandemic, with the impact far deeper for those already at-risk

In the study made in Andalusian Universities, Spain (Gómez-García G, 2022), that is in same line with others studies, included 1873 university students reflected the strong negative impact that the pandemic had, especially on the levels of life satisfaction and the indices of depression, anxiety, and stress of the students. The COVID-19 Fear Scale The Cronbach's alpha coefficient obtained in this study was 0.929. Depression Anxiety Stress Scale-21. The Cronbach's

alpha coefficient obtained in this study was 0.902. The results of the study indicated that the students presented an average degree of fear towards COVID-19 and a high value of uncertainty, while high levels of depression, anxiety and stress were observed during this period. In this study had not a positive effect on the indices of depression, anxiety, and stress of the participating university students, in contrast to what has been affirmed by studies in this sense.

In the other study in Italian was analysed the impact of distance education on mental health, social cognition and memory abilities of university student (Giusti L, 2021). Half of the student sample reported significant impairment in concentration and learning abilities during DE(distance education). Regarding psychological health, 19.7%, 27.1%, and 23.6% of the sample reported mild, moderate, and severe depressive symptoms, respectively. Correlation analyses showed a statistically significant negative association between depression and the overall subjective evaluation of DE ($r = -0.359$; $p < 0.000$). Learning concentration impairment during DE (O.R. 8.350; $p = 0.014$), anxiety about COVID-19 contagion for oneself or others (O.R. 3.363; $p = 0.022$), female gender (O.R. 3.141; $p = 0.045$), and depressive symptomatology (O.R. 1.093; $p = 0.047$) were ultimately determined to be the strongest predictors of poor academic performance, whereas the appreciation of DE represented a protective variable (O.R. 0.610; $p < 0.000$). The study showed a negative impact of DE on the mental health of students presenting depressive symptoms and impairment in concentration and learning, the latter identified as the strongest predictors of poor academic performances.

The study of “Understanding the psychological impact of the COVID-19 pandemic on university students” in Turkey, 2022 showed the high level of stress, anxiety and depression of students, who study nurse. 98.2% of undergraduate students reports from moderate to high level stress and difficult sleeping.

In the China study among all the 478 valid subjects 30.5% showed symptoms of anxiety, 32.4% showed symptoms of depression. (Ren Z, 2021)

In the Nigeria research (Eric-Chima N, 2021) was a sample of 303 University students. One trial tested instrument with three clusters, covering; depression, anxiety and academic success was used for data collection. The findings revealed that Corona virus pandemic has caused anxiety and depression to many students. It was also found that Covid-19 has a devastating effect on the psychological state and academic success of students. It was also discovered that Covid-19 has slightly different effect on males and females. The educational implication of this study is that, psychological state is essential for academic success. The data in indicated by the calculated t-value of 0.401 in respect of psychological state which is significant at 0.581 probability level and therefore significant at 0.05 levels of significance. Corona virus pandemic has significant influence on students’ psychological state and expected future academic success based on gender. The data indicate a mean students’ psychological state and expected future academic success.

In the study made in Germany including 917 students from eight universities (Gewalt S G, 2022) 80.6% were bachelor students ($n = 738$), the mean semester was 3.8 and mean age was 23.1 years. 51.8% ($n = 472$) were female students and 47.4% ($n = 432$) male students. 38.5% ($n = 352$) stated a deterioration in physical health and 53.1% ($n = 485$) in mental health. From 0 to 10, students rated mean levels of stress highest due to social distancing (5.6), spending most time at home (5.0) and e-learning (4.5). Compared to male students, female students’ mental health worsened significantly (58.7% vs. 46.8%). A logistic regression analysis identified gender having a significant effect on university students’ stress levels: males seemed to have a lower risk of moderate to high levels of stress compared to females (odds ratio = 0.698; 95% CI = 0.515 to 0.945). Age, city of university and semester did not show a significant effect. The results are important to both regional and international audiences as university students face similar physical and mental health challenges due to the pandemic and its public health measures.

In the study made in Norway (Sivertsen B, 2021) showed mental health problems in 2021, which mapped onto the different levels of COVID-19 cases and regional COVID-19-related restrictions. There was a significant negative dose–response association between days spent physically on campus and both mental health problems and indicators of suicide risk. The study found that there was an association between days on campus and a higher prevalence of suicidal thoughts, NSSH and suicide attempts in the last year. This study demonstrates a sharp increase and disturbing levels of mental health problems and suicide risk among students during the COVID-19 pandemic.

In another study in UK (McGivern P, 2022) that was made with university students, where the mean age of the sample was 21.64 years ($SD = 5.30$). Fear of COVID-19 was measured as part of the survey using the Fear of COVID-19 Scale (Ahorsu et al., 2020). A Cronbach’s Alpha ($\alpha = 0.89$) measure reported a high level of internal consistency. The Fear of COVID-19 rated scale captures scores on a 5-point Likert scale with total scores ranging from 7–35. Higher scores represent greater levels of fear. Of those 77 participants, overall levels of fear were low ($M = 10.8$, $SD = 3.45$). Therefore, no further analyses were conducted based on the Fear of COVID-19 scale measure. 62 participants from 82 reported that the pandemic had negatively impacted their education in a range of ways. The negative impact of COVID-19 on participants’ mental health was the most prevalent finding. Reports of anxiety, stress, depression and loneliness had been triggered by a range of issues regarding the disruption to students’ lives. The students reported that Covid-19 had impacted negatively on their overall quality of life

In the study was made in Greece (Kaparounaki Ch K, 2020) 1000 university students, concerning the impact of the lockdown on their mental health. The students showed 42.5% for anxiety, 74.3% for depression, and 63.3% increase in total suicidal thoughts. Quantity of sleep increased in 66.3% but quality worsened in 43.0%. Quality of life worsened in 57.0% (same in 27.9%). There was a 25-3 fold increase in possible clinical cases of depression and an almost 8-fold increase in suicidal thoughts.

The other study in Colombia about effects of Covid – 19 on academic performance (Abadia L K, 2021) show that the effect of the Covid-19 pandemic on Saber11 exam overall scores remains negative and statistically significant. Results show that the Covid-19 crisis had a negative effect of academic performance for Colombian students. They obtained, on average, 5 points less in the Saber11 overall score (10% of a standard deviation) compared to previous years' cohorts who were not exposed to this unexpected and exogenous shock caused by the Covid-19 pandemic. In 2020, the pandemic had negative and significant effects on the performance in math, reading and natural sciences test scores as well. Students' performance in natural sciences was the most affected due to the Covid-19 pandemic and the suspension of in-person classes.

4. RECOMMENDATIONS:

This study aimed to present a systematic review of the literature from 2020-2022 which have brought findings on the impact of Covid-19 academic achievements and performance of high school students as well as college and university students. Findings from 13 countries around the world supported the opinion that Covid-19 affected achievement and academic performance. These studies indicated that the students have experienced major behavioural changes during and after quarantine, as a result of fear of infection from Covid - 19, high levels of anxiety, stress or depression. Another very important finding was the consequences of distance learning or online learning that affected achievement and academic performance.

These findings are related to the mental health of a certain group of the population after Covid-19, that making them vulnerable in later life. This evidenced by the results of studies related to the level of symptoms of anxiety, stress, depression, fear of infection, as well as the performance of distance learning in certain periods of time.

Implications for further studies are needed to shed light on the long-term effects of COVID-19 on physical and mental health and effects on learning. A better understanding of the psychological impact of the COVID-19 pandemic could contribute to design more effective interventions that improve mental health in population. COVID-19's mental health impact on students is alarming and highlights the need for public health interventions not only for students, but also of the entire population. It is recommended to emphasize the development of online learning system, in the form of innovating advanced teaching strategies.

REFERENCES:

1. Abadia L K, Alvarado S C, Gómez Soler J, González C. "Gone with the pandemic: effects of COVID-19 on academic performance in Colombia"
2. M. Altuna, M. S.-S. (2021). Cognitive symptoms after COVID-19
3. M. Altuna, M. S.-S. (December 2021). *Cognitive symptoms after COVID-19*, . <https://doi.org/10.1016/j.neurop.2021.10.005>.
4. Alsabih A O, Bougatfa R M, Morsi A A, Ali A Q, Alsafwani H H, Alatiya S A, Alzaaliay A K, Alsaqr A H, Abdelmoneim A M, Ahmed A H, Mersal E A, (2022) "The Impact of Quarantine Restrictive Measures on Gifted Students' Academic Achievement and Behavior During COVID-19 Outbreak, in Saudi Arabia: Educational and Psychological Aspects". The Egyptian Journal of Hospital Medicine (July 2022) Vol. 88, Page 2668-2676.
5. Atlam El-S, Ewis A, Abd El-Raouf M M, Ghoneim O (2022) " A new approach in identifying the psychological impact of COVID-19 on university student's academic performance". Alexandria Engineering Journal, (2022) 61, 5223–5233.
6. Birmingham, W. C., Wadsworth, L. L., Lassetter, J. H., Graff, T. C., Lauren, E., & Hung, M. (2021). COVID-19 lockdown: Impact on college students' lives. Journal of American College Health. Advance online publication <https://doi.org/10.1080/07448481.2021.1909041>
7. Clark, A.E., Nong, H., Zhu, H. & Zhu, R. (2021). Compensating for academic loss: Online learning and student performance during the Covind-19 pandemic. China Economic Review, 68, 101629
8. Dellagiulia A, Lionetti F, Fasolo, M. et al. (2020): Early impact of COVID-19 lockdown on children's sleep: a 4-week longitudinal study. J Clin Sleep Med.,16(9):1639–40
9. Douaud, G. e. (2022). SARS-CoV-2 is associated with changes in brain structure in UK Biobank. . *Nature* , 604

10. Eric-Chima N, Janet I, Edith N,(2021) “Impact of Corona Virus Pandemic on the Psychological State and Academic Success of Students” *Journal of Depression and Anxiety*, Vol. 10 Iss. 6 No: 410
11. Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *Plos One*, 16(3), e0247999. <https://doi.org/10.1371/>
12. Gewalt S G, Berger S, Krisam R, Breuer M,(2022)“Effects of the COVID-19 pandemic on university students’ physical health, mental health and learning, a cross-sectional study including 917 students from eight universities in Germany”. *PLOS ONE*, <https://doi.org/10.1371/journal.pone.0273928>
13. Giusti L, Mammarella S, Salza A, Del Vecchio,S, Ussorio D, Casacchia M & Roncone R, “Predictors of academic performance during the covid-19 outbreak: impact of distance education on mental health, social cognition and memory abilities in an Italian university student sample” *Giusti et al. BMC Psychol* (2021) 9:142 <https://doi.org/10.1186/s40359-021-00649-9>
14. Gómez-García G, Ramos-Navas-Parejo, de la Cruz-Campos M, J & Rodríguez-Jiménez C (2022) “Impact of COVID-19 on University Students: An Analysis of Its Influence on Psychological and Academic Factors”. *Int. J. Environ. Res. Public Health* 2022, 19, 10433. <https://doi.org/10.3390/ijerph191610433>
15. Hebebc MT, Bertiz Y, Alan S. Investigation of views of students and teachers on distance education practices during the coronavirus (COVID-19) pandemic. *Int J Technol Educ Sci.* 2020;4(4):267–82. <https://doi.org/10.46328/ijtes.v4i4.113>
16. Kparounaki Ch K, Patsali M E, D - Priskila V Mousa, Papadopoulou E V K, Papadopoulou K K K, Fountoulakis K N, (2020) “University students’ mental health amidst the COVID-19 quarantine in Greece” *Psychiatry Research* 290 (2020) 113111, Journal homepage: www.elsevier.com/locate/psychres
17. Kara B, (2022) “Understanding the psychological impact of the COVID-19 pandemic on university students” *AIMS Medical Science*, 9(1): 1–4. DOI: 10.3934/medsci.2022001
18. Kruti I,(2021) “Psycho-Emotional Effects of 15-16 Years Adolescence on Pandemic”. 11th International Conference the Future of Education – Virtual Edition, ISBN 979-12-80225-23-8, ISSN 2384-9509, DOI 10.26352/F701_2384-9509
19. Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher*, 49(8), 549–565. <https://doi.org/10.3102/0013189X20965918>
20. Liang L, Ren H, Cao R, Hu Y, Qin Z, Li C, et al. The effect of COVID-19 on youth mental health. *Psychiatr Q.* 2020;91(3):841–52. <https://doi.org/10.1007/s1126-020-09744-3>
21. Marler E K, Bruce M J, Abaoud A, Henrichsen C, Suksatan W, Homvisetvongsa S & Matsuo, H, (2021) “ The Impact of COVID-19 on University Students’ Academic Motivation, Social Connection, and Psychological Well-Being”. *American Psychological Association Scholarship of Teaching and Learning in Psychology*
22. McGivern P, Shepherd J, (2022) “The impact of COVID-19 on UK university students: Understanding the interconnection of issues experienced during lockdown” *Power and Education* 2022, Vol. 14(3) 218–227. DOI: 10.1177/17577438221104227
23. Nalbandian, A. S. (2021). Post-acute COVID-19 syndrome. *Nat Med* 27, 601–615
24. Pfefferbaum, B., & North, C. S. (2020). Mental health and the Covid-19 pandemic. *New England Journal of Medicine*, 383(6), 510–512. <https://doi.org/10.1056/NEJMp2008017>
25. Reyes-Portillo J A, Warner C M, Kline E A, Bixter M T, Chu B C, Miranda R, Nadeem, Nickerson E A, Peralta A O, Reigada L, Rizvi Sh L, Roy A K, Shatkin J, Kalver E, Rette D, Denton E, & Jeglic E L(2022) “ The Psychological, Academic, and Economic Impact of COVID-19 on College Students in the Epicenter of the Pandemic”. *Emerging Adulthood* 2022, Vol. 10(2) 473–490 © 2022 Society for the Study of Emerging Adulthood and SAGE Publishing. sagepub.com/journals-permissions DOI:10.1177/21676968211066657 journals.sagepub.com/home/eax
26. Ren Z, XinY, Ge J, Liu Zh Zh D, Ho R C M & Ho C S H (2021) “Psychological Impact of Covid- 19 on College Students afters school reopening. A Cross-Sectional Study Based on Machine Learning”. *Frontiers Psychol.* 12:641806. doi: 10.3389/fpsyg.2021.641806
27. Rose S. Medical Student Education in the Time of COVID-19. *JAMA* 2020. <https://doi.org/10.1001/jama.2020.5227> PMID: 32232420
28. Sivertsen B, Knapstad M, Petrie K, O’Connor R, J, Lønning K, Hysing M(2021) “Changes in mental health problems and suicidal behavior in students and their associations with COVID-19-related restrictions in Norway: a national repeated cross-sectional analysis” *BMJ Open* 2022;12:e057492. doi:10.1136/bmjopen-2021-057492
29. Solomon IH, N. ., (2020). Neuropathological features of Covid-19 . *N Engl J Med*.

30. Sundarasan, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G. M., Khoshaim, H. B., Hossain, S. F. A., & Sukayt, A. (2020). Psychological impact of COVID-19 and lockdown among university students in Malaysia: implications and policy recommendations. *International Journal of Environmental Research and Public Health*, 17(17), 6206. <https://doi.org/3390/ijerph 17176206>
31. Wang, C., & Zhao, H. (2020). The impact of COVID- 19 on anxiety in Chinese university students. *Frontiers in Psychology*, 11(1), Article 1168. <https://doi.org/10.3389/fpsyg.2020.01168>
32. Whitley J, Beauchamp M H, & Brown C(2021) “The impact of COVID-19 on the learning and achievement of vulnerable Canadian children and youth” *FACETS* 6: 1693–1713. doi:10.1139/facets-2021-0096
33. World Health Organization: WHO Coronavirus disease (COVID-19) dashboard, 2021.
Available from: <https://covid19.who.int/>
34. WHO. (2020). WHO Announces COVID-19 Outbreak a Pandemic. Retrieved from WHO WHO Announces COVID-19 Outbreak a Pandemic. (2020). Available online at: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>