



## Influence of COVID-19 on the Psychological Wellbeing of Tertiary Institution Students in Nigeria

Seun N. Akorede<sup>1\*</sup>, Ayodotun E. Ajayi<sup>1</sup>, Atanda Toyin<sup>1</sup> and Gilbert U. Uwadia<sup>2</sup>

<sup>1</sup>Department of Human Kinetics & Health Education, Faculty of Education, Ahmadu Bello University, Zaria, Nigeria.

<sup>2</sup> Saint Luke's Anglican Hospital School of Nursing and Midwifery, Wusasa, Nigeria.

\*Corresponding author: seunakorede@gmail.com

Co-authors e-mails: edwardajayi@gmail.com (Ayodotun); atoyinonisesin@gmail.com (Toyin); guwadiau@yahoo.com (Uwadia)

Received 21 Oct 2020, Revised 25 Dec 2020, Accepted 28 Dec 2020, Published Feb 2021

### Abstract

The outbreak of COVID-19 has led to a global lockdown, pending the time medical researchers find a vaccine for the coronavirus. This study examined if loneliness, depression and stress are influences of COVID-19 on the psychological wellbeing of tertiary institutions students in Nigeria. A descriptive research design of survey type was employed for this study. The population comprised all students of tertiary institutions in Nigeria totaling about 4,406,000. One hundred and thirty-seven (137) respondents were sampled for the study. A validated researcher developed questionnaire tested for reliability was used for the study. The data collected were analyzed using descriptive statistics. Chi-square was used to test the hypotheses. All the hypotheses were tested at 0.05 level of significance. The results revealed that loneliness, depression and stress are significant influences of COVID-19 on the psychological wellbeing (Cal  $\chi^2$  val > Tab  $\chi^2$  val) @ 0.05 alpha level). The study concluded that loneliness, depression and stress are influences of COVID-19 on the psychological wellbeing of the students. Therefore, it was recommended that more social programmes should be organized on television as long as lockdown is active to help students out of loneliness to support the mental health and well-being of students to save them for depression.

**Keywords:** COVID-19; psychological wellbeing; depression; loneliness; stress; tertiary.

### Introduction

The fact that the COVID-19 pandemic affects tertiary students' mental health underscores the urgent need to understand these challenges and concerns in order to inform the development of courses of action and public health messaging that can better support college students in this crisis. University students are facing a variety of challenges in the wake of the COVID-19 outbreak (Torales et al. 2020). The pandemic has been escalating and threatening the welfare of human beings globally, and this public

health emergency generates fear and leads to a spectrum of psychological consequences (Liu et al. 2020), ranging from distress responses such as anxiety, depression, and substance abuse, to behavioural changes such as difficulty sleeping and stress eating. Before the pandemic started, one in five college students had experienced one or more diagnosable mental disorders worldwide (Zhai and Du 2020), and the psychological effects of COVID-19 can increase this number and exacerbate students' mental health issues. There are 188 countries in the world that have closed schools and

universities due to the novel coronavirus pandemic as of early April of 2020.

Almost all countries have instituted nationwide closures with only a handful, including the United States, implementing localized school closures. The world has never before seen this scale of education disruption. In recent decades, major disruptions to education mainly involved natural disasters, armed conflicts, or epidemics in individual countries or sometimes regions. Even compared to school closures during previous global crises, such as the 1918 Spanish flu pandemic where 40 U.S. cities closed schools, and World War II, where 1,000,000 children in the U.K. were forced out of school, the level of education disruption is much greater today, in part because 90 percent of the world's young people are enrolled in primary school now versus 40 percent in 1920 (World Health Organization 2020). The UNESCO Director-General Audrey Azoulay warned that "the global scale and speed of the current educational disruption is unparalleled". For children and adolescents with mental health needs, such closures mean a lack of access to the resources they usually have through schools. In some ways, this crisis presents an opportunity for leveraging educational activities to message necessary changes to public health behavior.

Maunder et al. (2020) observed that many countries that have closed schools today are moving to some form of remote learning whether by printed materials, radio programs, or online learning with a global coalition forming to help provide guidance and supports. Given that many young people are now learning from home, it is likely that public health messages will be quicker than in normal circumstances to make it from the lesson book to the dinner table. Much of what we know about education in emergencies comes from low-income countries where school buildings are no longer functional and communities are displaced. Education has been hit particularly hard by the COVID-19 pandemic with 1,530,000,000 learners out of school and 184

country-wide school closures, impacting 87.6% of the world's total enrolled learners (World Health Organization 2020). Drop-out rates across the globe are likely to rise as a result of this massive disruption to education access. While other critical needs such as health, water and sanitation are being responded to, educational needs cannot be forgotten and these have an equally detrimental impact if left unaddressed (Maunder et al. 2020).

According to Montemurro (2020), the 'pile-on effect' of the coronavirus is that, during the global COVID-19 pandemic, interruptions to education can have long term implications especially for the most vulnerable. There is a real risk of regression for children whose basic, foundational learning (reading, mathematics and languages) was not strong to begin with. The zoonotic virus (2019-nCoV) has terrifically affected the world that it becomes even hard to breathe. The sharp pang of this pandemic (2019-nCoV) is exponentially sweeping across the world and is triggering chaos, fear, anxiety, and stress among the people (Wang et al. 2020).

Wu (2020) noted that it may cause pernicious impacts on cognitive functions, and also inflict extensive neurological disruption. By December 22, 2020 (79,132,157) persons have been globally infected due to the convergence of this uncontrollable infectious disease. Most of the global population has been depressed and threatened due to the exponential growth of infections and the increasing number of fatalities (WHO 2020). To avoid the mass spreading of this pandemic virus, the decision regarding nationwide lockdown has been taken. No doubt, this will save the masses of life. Xiang et al. (2020) opined that, college and university students are stressed about dormitory evacuation and cancellation of anticipated events such as exchange studies and graduation ceremonies. Some lost their part-time jobs as local businesses closed. Students in their final years are anxious about the job market they are going to enter soon. Social distancing measures can result in social isolation in an abusive home,

with abuse likely exacerbated during this time of economic uncertainty and stress. However, not much is known about the long-term mental health effects of large-scale disease outbreaks on children and adolescents. While there is some research on the psychological impacts of severe acute respiratory syndrome (SARS) on patients and health-care workers, not much is known about the effects on ordinary citizens. Evidence is especially scarce in children and adolescents. This is an important gap for research.

Wu (2020) found that COVID-19 is much more widespread than SARS and other epidemics on a global scale. As the pandemic continues, it is important to support children and adolescents facing bereavement and issues related to parental unemployment or loss of household income. There is also a need to monitor young people's mental health status over the long term, and to study how prolonged school closures, strict social distancing measures, and the pandemic itself affect the wellbeing of children and adolescents. In addition to the regular examinations, most of the competitive examinations have also been aborted or postponed for which students were preparing for the last couple of months or even a year. The postponement of the examinations is also causing frustration and stress among the students. These different kinds of tensions disrupt the sleep time of the students which eventually decreases the body's immunity and hence makes them more susceptible to infections. Some of the students have taken educational loans for their higher studies in abroad (Bhat et al. 2020).

Brooks et al. (2020) submitted that since lockdown, a lot of students have been confined for over two months with little or no physical human engagements. The only difference this has from being locked up in a prison cell is that, you have the keys to your door. Human beings are social beings, and we were made to thrive in a social gathering. As the pandemic continues, many students have developed both mental and physical fatigue since there are lesser activities to expend their mental and

physical energies on. While for some, the little morning walk to and from the workplace is an opportunity to exercise and keep the body in a good shape, but with this involuntary confinement, it might be an unwanted opportunity for many to add physical weights. Students who are lonely are more susceptible to illness. Brooks et al. (2020) further noted that the immune system of people who have the feelings of loneliness fights virus differently, as such they are prone to falling sick easily. The more people become idle, the higher they become prone to perpetuating evil with their unoccupied time. For some, this time will become the perfect time to engage and visit immoralities or addictions like inappropriate sexual conduct, smoking and gambling. In a bid to prevent the feeling of loneliness and becoming potential victims of depression, they will seek activities that will make them feel busy, productive and working (Wang et al. 2020).

Loneliness is a widespread and significant problem impacting the mental health and success of college students in the U.S. According to recent surveys, 79% of Gen Z youths (18-22) are lonely. These survey data, compared with data from previous years, show dramatic increases in college students reporting moderate and severe depression, attempting suicide, and leaving college due to mental health issues. Social distancing during the COVID-19 pandemic has triggered an urgent need to address the compounded and acute social isolation and disconnection felt by young people. Nod helps students tackle these challenges with an intervention co-created with young adults, and driven by evidence. These experiences are all understandable in the face of this significant challenge. There has been loss of life, rapid changes to our ways of life (e.g., study, work, social gatherings), and disrupted plans due to travel restrictions and social (physical) distancing measures in our efforts to slow the spread of transmission. People are naturally concerned for their own and their loved ones' health and safety. There is still much uncertainty (Brooks et al. 2020).

Depression is a mental illness characterized by sadness, loss of interest, feelings of hopelessness, disturbed sleep, poor concentration, thought of attempting or committing suicide, inability to move around and substantial impairment on the ability to cope with daily life and all these are traceable to Covid-19. The symptoms, which can range from mild to severe, interfere with one's daily activities (World Health Organization 2020). World Health Organization (2020) also describes depression as a common mental disorder affecting over 264 million people globally, which may result to suicide. It also states that over 800,000 people die by suicide annually, and that depression will be the single biggest cause of ill health in the world by 2030. According to Braimah (2020), there is urgent need for people to deal with depression by seeking help, engaging in positive activities that will distract them from the COVID-19 pandemic ravaging the world.

According to the WHO (2020), as COVID-19 pandemic sweeps across the world, it is causing widespread concerns, fear and stress, all of which are natural and normal reactions to the changing and uncertain situations that people find themselves in. Stress is an unavoidable experience resulting from the complex interactions between an individual and his or her environment. Stress occurs when an individual's resources are insufficient to cope with situational demands and pressures. Stress is a subjective experience that is more likely to arise in some situations than others. In addition, some individuals can be more prone to stress than others (Coker et al.2018). Overall, stress can undermine the achievement of goals, both for individuals and organizations. Stress has been linked to all leading physical causes of death, heart diseases, cancer, and stroke. Excessive stress has also been reported to result in physical and mental health problems and reduced self-esteem, as well as affect academic achievement and personal and professional development. It predicts negative health behaviours such as smoking, alcohol abuse, illicit substance use,

and sleeplessness, as well as relapses (Cowanet al. (2013).

This lockdown is creating chaos and huge difficulties for the people (Sharma 2020). Over 90% of enrolled learners (1.5 billion young people) worldwide are now out of education. In a survey by the mental health charity Young Minds (2020), which included 2111 participants up to age 25 years with a mental illness history in the UK, 83% said the pandemic had made their conditions worse. 26% said they were unable to access mental health support; peer support groups and face-to-face services have been cancelled, and support by phone or online can be challenging for some young people. The massive transmission of the fake news over social sites (WhatsApp, Twitter and Facebook) and media has created chaos and stressful atmosphere for the students (Sharma 2020). The scary atmosphere is affecting the concentration level and the learning ability of the students. Sharma (2020) opined that the consequences of this pandemic are worsened for psychologically weak students and teachers. Due to the lockdown of colleges, universities the teachers and students are not able to use the facilities of their laboratories.

The researchers observed that the COVID-19 pandemic has caused stress, anxiety and worry for many students. Common causes of psychological stress during pandemics include, fear of falling ill and dying, avoiding health care due to fear of being infected while in care, fear of losing work and livelihoods, fear of being socially excluded, fear of being placed in quarantine, feeling of powerlessness in protecting oneself and loved ones, fear of being separated from loved ones and caregivers, refusal to care for vulnerable individuals due to fear of infections, feelings of helplessness, boredom, loneliness and depression due to being isolated and fear of re-living the experience of a previous pandemic (Gulliveret al. 2010).

The researcher's also observed that many Nigerian students in their final year have to cease their research projects and teaching

practice/student industrial training among others. Moreover, disruptions of their research projects and teaching practice/student industrial training jeopardize their programs of study, delay their graduation, and undermine their competitiveness on the job market, which in turn fuel anxiety among college students. They may also struggle with the costs of returning home and managing belongings. Many college students have lost their on-campus jobs due to the evacuation, and the pending issue of house rent can aggravate their financial hardship and mental health outcomes. In the light of these, the researchers investigated the influence of COVID-19 on the psychological wellbeing (loneliness, depression and stress) of tertiary institution students in Nigeria.

#### **Purpose of the study**

The main objective of the study was to assess whether loneliness, depression and stress are influences of COVID-19 on the psychological wellbeing of tertiary institution Students in Nigeria. The following hypotheses were formulated to guide the study:

1. Loneliness is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.
2. Depression is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.
3. Stress is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.

#### **Materials and Methods**

The research design adopted for the study was a descriptive research design of the survey type. The population comprised of all students of tertiary institutions in Nigeria, totaling about 4,406,000 (National Bureau of Statistics 2020). One hundred and thirty seven (137) respondents were sampled for the study. The instrument used for the study was a researcher developed questionnaire titled Influence of COVID-19 on the Psychological Wellbeing of Tertiary Institution Students in Nigeria Questionnaire (IC19PWTISNQ) which was

validated by three experts in related field and tested for reliability.

Test re-test method was used to obtain the reliability of the instrument. Pearson Product Moment Correlation was used to obtain a correlation coefficient result of  $r = 0.75$ . The instrument was administered through an online survey. Inferential statistics of Chi-square was used to test the three research hypotheses set for the study at 0.05 alpha level, using Statistical Package for Social Science/Statistical Product and Service Solutions (SPSS) version 20.0.

#### **Results and Discussion**

Consideration of Hypotheses 1: Loneliness is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. Table 1 shows the results of the tested hypothesis one which stated that loneliness is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. The hypothesis which has a calculated chi-square value 88.38 is greater than tabulated chi-square value of 12.59 (Cal  $\chi^2$  val > Tab  $\chi^2$  val). This shows that the hypothesis was rejected which implies that loneliness is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.

Consideration of Hypotheses 2: Depression is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. Table 2 shows the results of the tested hypothesis two which stated that depression is not significant an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. The hypothesis which has a calculated chi-square value 89.24 is greater than chi-square table value of 12.59 (Cal  $\chi^2$  val > Tab  $\chi^2$  val). This shows that the hypothesis was rejected which implies that depression is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.

**Table 1:** Chi-square analysis on loneliness as a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria

SN	Items	SA	A	N	D	SD	Row Total	Df	Cal Value	Table Value	Remarks
1	Since lockdown started/ began, many students are expressing boredom	63 (46.0%)	50 (36.5%)	9 (6.6%)	4 (2.9%)	11 (8.0)	<b>137</b>	6	88.38	12.59	Ho rejected
2	Lockdown measure by government to curb COVID19 has resulted into having few or no friends around me	47 (47.3%)	67 (48.9%)	13 (9.5%)	7 (5.1%)	3 (2.2%)	<b>137</b>				
3	Loneliness among students has led to anti-social behavior such as smoking, drinking and binge eating	37 (27.0%)	59 (43.1%)	30 (21.9%)	6 (4.4%)	5 (3.6%)	<b>137</b>				
<b>Total</b>		<b>147</b>	<b>176</b>	<b>52</b>	<b>17</b>	<b>19</b>	<b>411</b>				

@ 0.05 alpha level; Df = Degrees of freedom, SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree.

**Table 2:** Chi-square analysis on depression as a significant Influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria

S N	Items	SA	A	N	D	SD	Row Total	Df	Cal Value	Table Value	Remarks
1	Depression set in for students especially those on there final year due to delay	82 (59.9%)	39 (28.5%)	7 (5.1%)	- (-)	9 (6.6%)	<b>137</b>				
2	Students with underlying health conditions are depressed due to poor access to medical care	35 (25.5%)	68 (48.9%)	15 (13.1%)	8 (5.8%)	9 (6.6%)	<b>137</b>	6	89.24	12.59	Ho rejected
3	Depression set in for students who are delayed in their laboratory work or in their research findings which already had timeline due to COVID-19 lockdown	21 (15.3%)	37 (27.0%)	21 (15.3%)	42 (30.7%)	16 (11.7%)	<b>137</b>				
<b>Total</b>		<b>138</b>	<b>144</b>	<b>43</b>	<b>50</b>	<b>34</b>	<b>411</b>				

@ 0.05 alpha level, Df = Degrees of freedom, SA = Strongly agree, A = Agree, D = Disagree, SD = Strongly disagree.

Consideration of Hypotheses 3: Stress is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. Table 3 shows the results of the tested hypothesis three which stated that stress is not significantly an influence of COVID-19 on the psychological wellbeing of tertiary institution students in

Nigeria. The hypothesis which has a calculated chi-square value 127.74 is greater than chi-square table value of 12.59 (Cal  $\chi^2$  val > Tab  $\chi^2$  val). This shows that the hypothesis was rejected which implies that stress is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.

**Table 3:** Chi-square analysis on stress as a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria

SN	Items	SA	A	N	D	SD	Row Total	Df	Cal Value	Table Value	Remarks
1	Students experience anxiety due to COVID-19 infestation	46 (33.6%)	63 (46.0%)	16 (11.7%)	6 (4.4%)	6 (4.4%)	<b>137</b>				
2	Students lockdown at home have little opportunities of easing out stress through sporting activities	18 (13.1%)	82 (59.9%)	18 (13.1%)	15 (10.9%)	4 (2.9%)	<b>137</b>	6	127.74	12.59	Ho rejected
3	Inability to move around or attending functions due to COVID19 has led to anxiety in some students	67 (48.9%)	45 (32.8%)	11 (8.0%)	2 (1.5%)	12 (8.8%)	<b>137</b>				
<b>Total</b>		<b>131</b>	<b>190</b>	<b>45</b>	<b>23</b>	<b>22</b>	<b>411</b>				

@ 0.05 alpha level.

### Discussion of findings

Loneliness is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. This finding is in line with Brooks et al. (2020) who found out that since lockdown, a lot of students have being confined for over two months with little or no physical human engagements. The only difference this has from being locked up

in a prison cell is that you have the keys to your door. Human beings are social beings, and we were made to thrive in social gatherings. As the pandemic continues, many students have developed both mental and physical fatigue since there are lesser activities to expend their mental and physical energies on. While for some, the little morning walk to and from the workplace is an opportunity to exercise and



keep the body in a good shape, but with this involuntary confinement, it might be an unwanted opportunity for many to add physical weights. Students who are lonely are more susceptible to illness.

Depression is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. This finding is in line with WHO (2020) who reported that depression is a mental illness characterized by sadness, loss of interest, feelings of hopelessness, disturbed sleep, poor concentration, thoughts of attempting or committing suicide, inability to move around and substantial impairment on the ability to cope with daily life and all these are traceable to COVID-19. The symptoms, which can range from mild to severe, interfere with one's daily activities (WHO 2020). WHO (2020) also describes depression as a common mental disorder affecting over 264 million people globally, which may result to suicide. It also states that over 800,000 people die by suicide annually, and that depression will be the single biggest cause of ill health in the world by 2030. According to Braimah (2020), there is urgent need for people to deal with depression by seeking help, engaging in positive activities that will distract them from the COVID-19 pandemic ravaging the world.

Stress is a significant influence of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria. This finding is in line with WHO (2020), who ascertained that COVID-19 pandemic sweeps across the world, it is causing widespread concerns, fear and stress, all of which are natural and normal reactions to the changing and uncertain situation that everyone finds himself/herself in. Stress is an unavoidable experience resulting from the complex interactions between an individual and his or her environment. Stress occurs when an individual's resources are insufficient to cope with situational demands and pressures. Stress is a subjective experience that is more likely to arise in some situations than others. In addition, some individuals can

be more prone to stress than others (Coker et al. 2018).

### **Conclusions**

Based on the findings of the study, it was concluded that, loneliness, depression and stress are influences of COVID-19 on the psychological wellbeing of tertiary institution students in Nigeria.

### **Recommendations**

It is key to carefully plan coping strategies by the government and relevant stakeholders to enhance student's access to mental health services during and after COVID-19 crisis. Therefore, the following recommendations were made: provision of psycho-education by tele-counselling and face to face counselling following social distancing measures, educating about COVID-19, mental health education and referring to mental health care professionals, and also creating health education materials for university volunteers and NGOs for adequate awareness on the impacts of depression, stress and loneliness related to COVID-19 crisis.

**Acknowledgements:** Nil

**Conflict of interest:** The authors declare no conflict of interest.

### **Authors' contributions**

Akorede Seun developed the manuscript; Ajayi Edward developed the instrument; Atanda Toyin analyzed the data; and Gilbert Udomi collected the data.

### **References**

- Bhat R, Singh VK, Naik N, Kamath C, Mulimani P and Kulkarni N 2020 COVID-19 outbreak: the disappointment of Indian teachers. *Asian J. Psychiatry* 50: 102047
- Braimah AI 2020 On the politics of lockdown and lockdown politics in Africa: COVID-19 and partisan expedition in Ghana. *J. Polit. Sci. Int. Rel.* 3(3): 44-55.
- Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N and Rubin GJ

- 2020 the psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 395: 912-920.
- Coker AO, Coker OO and Sanni D 2018 Socio-demographic correlates and symptoms of depression, anxiety and stress among a sample of Nigerian medical students. *Nigerian J. Basic Clin. Sci.* 15(1): 58-62.
- Cowan KC, Vaillancourt K, Rossen E and Pollitt K 2013 A framework for safe and successful schools [Brief]. Bethesda, MD: National Association of School Psychologists. Retrieved from <https://www.nasponline.org/resources-and-publications/resources/school-safety-and-crisis/a-framework-for-safe-and-successful-schools><https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
- Gulliver A, Griffiths KM and Christensen H 2010 Perceived barriers and facilitators to mental health help-seeking in young people: a systematic review. *BMC Psychiatry* 10: 113.
- Liu YC, Kuo RL and Shih SR 2020 COVID-19: The first documented coronavirus pandemic in history. *Biomed. J.* 43(4): 328-333.
- Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, Sadavoy J, Verhaeghe LM, Steinberg R and Mazzulli T 2020 The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ* 168: 1245-1251.
- Montemurro N 2020 The emotional impact of COVID-19: from medical staff to common people. *Brain Behav. Immun.* 87: 23-24.
- Sharma S, Sharma M and Singh G 2020 A chaotic and stressed environment for 2019-nCoV suspected, infected and other people in India: fear of mass destruction and causality. *Asian J. Psychiatry* 51: 102049
- Torales J, O'Higgins M, Castaldelli-Maia JM and Ventriglio A 2020 The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int. J. Soc. Psychiatry* p. 0020764020915212. <https://doi.org/10.1177/0020764020915212>
- Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS and Ho RC 2020 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* 17(5): Article 1729.
- World Health Organization (WHO) 2020 Novel Coronavirus (2019-nCoV), Situation Report 1. 21 January 2020. Available online: <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf> (accessed on 25 March 2020).
- Wu Y, Xu X, Chen Z, Duan J, Hashimoto K, Yang L, Liu C and Yang C 2020 Nervous system involvement after infection with COVID-19 and other coronaviruses. *Brain Behav. Immun.* 87: 18-22.
- Xiang Y, T, Yang Y, Li W, Zhang L, Zhang Q, Cheung T and Ng CH 2020 Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatr.* 7: 228-229.
- Zhai Y and Du X 2020 Addressing collegiate mental health amid COVID-19 pandemic. *Psychiatry Res.*, p. 113003.