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Medical student stress and burnout: Before and after COVID-19

Le stress et l'épuisement professionnel vécus par les étudiants en médecine : avant et après la COVID-19

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Background

Leaders and researchers have been concerned about medical student mental health for many years¹⁻³ and many believe that both individual and environmental factors are at play.⁴⁻⁷ The COVID-19 pandemic and resulting public health response have caused disruption and uncertainty in the way we live, work, and learn. Therefore, we would expect that medical students would be reporting even higher levels of stress and burnout during this time. Such findings should propel medical school leaders to address the potential harmful effects of the pandemic.

During the summer of 2019 we surveyed students who had accepted an offer to attend medical school at the University of Saskatchewan and medical students who had completed their first year. We used the Perceived Stress Scale (PSS)⁸ and the Maslach Burnout Inventory – General Survey for Students (MBI-GSS).⁹ The PSS is the most widely used instrument for assessing perceived stress.⁸ The PSS has demonstrated good internal consistency and test-

retest reliability and has demonstrated substantial validity. Similarly, the MBI is recognized as the leading measure of burnout. The MBI conceptualizes burnout as a psychological response to elements of daily experiences and measures these responses in three sub-scales.

Thirty-eight medical students completed our 2019 survey (21 of those were entering first year and 17 of those were entering second year). In comparison to established norm groups we found high levels of stress and burnout among those students entering medical school, and even higher levels of stress and burnout among students entering their second year. Our results were mixed in terms of statistical significance (two of four hypotheses were supported) and effect sizes, calculated using Cohen's *d*, ranged from small to large. We believe it is important to substantiate and measure any changes in stress and burnout that may have been caused by the COVID-19 pandemic and associated challenges and continue to monitor these constructs longitudinally over the course of medical training. This study was approved

by the Behavioural Research Ethics Board at the University of Saskatchewan.

Methods

We intend to administer the same instruments (PPS and the MBI-GSS) in the summer of 2020 to students about to enter medical school and those who have just completed their year at medical school (first, second, third, and fourth). We also plan to collect data in 2021 and 2022 to determine and record any changes in levels of stress and burnout over time. We are interested in making this a multi-site study to both compare the situation at different medical school and, if possible, to aggregate the data.

For those students who are about to enter medical school and those who have just completed their first year and are entering their second year, we will be able to compare their scores to a similar cohort from 2019 when there was no experience of COVID-19. We will also compare the medical students entering their second year with the same cohort scores when they were just entering their first year in 2019. Both comparisons will allow us to make some conclusions about the effect of COVID-19 on the stress and burnout of medical students. We will calculate ANOVA's for both situations and then, if warranted, perform *post hoc t*-tests to determine where the differences lie. Statistical power calculations were conducted with the intention of identifying a small to moderate effect (power of .80) and suggested required a total sample size of 34 participants, given an alpha level of .05.

Summary

Medical student mental health has been and continues to be a serious issue even before the onset of the COVID-19 pandemic and the multiple stressors left in its wake. Comparing levels of stress and burnout in medical students in the summer of 2020, 2021 and 2022 (when we hope we will have put the COVID-19 pandemic behind us) with the data we have from last year before COVID-19 arrived, will allow us to determine the nature and severity of the effects of

the COVID-19 pandemic. These research results will help medical education leaders take appropriate action.

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