

Resilience and Despair: Exploring the Educational Experiences of Graduate Students during the COVID-19 Pandemic to Guide Strategies for Action

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The purpose of the current study was to explore graduate students' mental health and educational experiences during the COVID-19 pandemic. Graduate students (N = 28) in Canada completed an online survey consisting of both closed- and open-ended questions related to their mental health, degree progress, and access to campus workspace. Data were analyzed using both quantitative and qualitative approaches before being synthesized through a pillar integration joint display to merge study findings. Based on self-report data, approximately 60% of participants were experiencing poor-to-moderate mental health at the time of the survey. Participants also expressed dissatisfaction with online learning and felt uncertain about their degree trajectory due to changes and restrictions associated with the pandemic. Based on the participants' responses, recommendations for assisting graduate students during the pandemic were presented. Highlighted by these recommendations was the importance of accessing workspace on campus and the challenges associated with university mental health resources. Overall, nearly 16 months into the pandemic, participants' mental health was negatively impacted by the restrictions. Although the study findings may not be generalizable to all post-secondary institutions, they could be used to inform university administrators regarding the continued challenges faced by graduate students during the pandemic.

Keywords: graduate students, mental health, coronavirus, higher education

On March 11th, 2020, the World Health Organization (WHO) characterized COVID-19 as a pandemic (WHO, 2020). Many countries across the world closed non-essential buildings, restricted gatherings, implemented physical distancing protocols, and ordered shelter-in-place mandates to reduce further spread of the virus (Dodds & Hess, 2020; Maranda & Yakubovich, 2020). Individuals rapidly shifted from in-person interaction to physically distanced or online methods (Jenei et al., 2020). Abiding by restrictions presented difficulties in many facets of life (e.g., personal, social, professional). As the calendar turned to 2021, COVID-19 restrictions and stay-at-home orders continued to present challenges for individuals globally; yet the conversation began to change. Rather than focusing solely on restrictions, the conversation extended to the impact such restrictions were having on various aspects of life, such as education and mental health (Cheng et al., 2020; Elmer et al., 2020).

One population that may have been susceptible to the challenges presented by such restrictions were graduate students. Limited research pertained to graduate students' experiences during the COVID-19 pandemic; the majority was based in China, Switzerland, and the United States with few studies examining graduate students in Canada. Although Canada shared similarities with these countries, findings from other countries may not have been generalizable (Son et al., 2020). For example, as of June 2021 in the United States, some states had removed many COVID restrictions like shelter-in-place and mask mandates (The New York Times, 2021), while many provinces in Canada remained under stay-at-home orders with masks mandated in all indoor spaces (Government of Ontario, 2021)¹. Such variations in restrictions between countries demonstrated a need to consider the educational experiences of graduate students in specific geographic locations. From the lens of comparative education, such understandings were critical to ensure graduate students were not 'left behind' while others entered a new normal (Oleksiyenko, 2020; Oleksiyenko et al., 2021).

Additionally, it was important to consider the mental health and educational experiences of graduate students from specific Canadian provinces, as restrictions differed from province-to-province. In particular, the educational experiences of graduate students in Ontario was of interest given it is the most populated province in Canada (Statistics Canada, 2021) and faced extended restrictions (Government of Ontario, 2021). For example, on April 3rd, 2021, Ontario entered its third state of emergency, initiating a province-wide stay at home order and on January 5th, 2022, restrictions for businesses, gatherings, and public events were reinstated. Understanding the challenges faced by graduate students in Ontario may provide graduate program administrators with insight to inform strategies to support their students for the duration of the pandemic (Cohen et al., 2021; Imeri et al., 2020).

This study focused on the experiences of graduate students from one university located in Southwestern Ontario that took a robust approach to dealing with COVID-19. While many universities initiated extensive return-to-campus restrictions (Oleksiyenko, 2020), the university in the current study maintained such restrictions well into the 2021-2022 academic year for a variety of reasons (e.g., consultation with the local health unit, regional increases in positive COVID-19 cases). However, as gradual return-to-campus measures were initiated, it was unclear which departments and individuals (e.g., faculty, staff, undergraduates, or graduate students) would be granted access to the campus. While the experiences of graduate students from this university may not be reflective of graduate students at all other universities, understanding their perspective may provide critical insight regarding the impact of pandemic-related restrictions.

Maintaining restrictions into 2022 may have been in the interest of community health and reducing the spread of the virus. However, the impact these extended restrictions had on graduate students' mental health and educational experience/progress overtime was unknown. The purpose of this study was to explore graduate students' educational experiences at a university in Southwestern Ontario that took a robust approach to health and safety during the

pandemic. The following objectives were addressed: (1) to determine the state of mental health among graduate students; (2) to examine how the mental health of graduate students was affected by the pandemic; and (3) to understand how the pandemic impacted graduate students' degree progress and educational experiences.

Literature Review

As many North American universities transitioned from in-person to online education (e.g., VanLeeuwen et al., 2020), students faced significant challenges like interruptions to degree progress, financial insecurity, isolation from peers and professors, and uncertainty about the future (Jenei et al., 2020; Kee, 2021; Maranda & Yakubovich, 2020; Oleksiyenko, 2020; Stuart et al., 2021). These challenges prompted universities across the globe to consider online pedagogy and its effectiveness, and the financial impact faced by students (Oleksiyenko, 2020; Oleksiyenko et al., 2021). Moreover, the general uncertainty surrounding the pandemic did impact individuals' mental health (Usher et al., 2020). While students were at a heightened risk for poor mental health before the pandemic (Son et al., 2020), trying to navigate the ever-changing mitigation responses to the spread of COVID-19 may have amplified the potential for poor mental health among post-secondary students (Cheng et al., 2020; Kee, 2021). Additionally, post-secondary students experienced increased mental illness during the pandemic, particularly when struggling to adapt to remote learning (Chirikov et al., 2020). In the United States, a survey of 195 undergraduate students showed the majority experienced heightened stress and anxiety, disrupted sleep, social isolation, and had concerns about academic performance due to the pandemic (Son et al., 2020). Taken together, many university students experienced difficulty responding to the changes that occurred during the pandemic.

While undergraduate students comprise much of the post-secondary student population, graduate students make up roughly 14% (Statistics Canada, 2020) and 19% (National Center for Education Statistics, 2021) of all post-secondary students in Canada and the United States, respectively. Interestingly, when compared to undergraduate students, graduate students often occupy dual positions at their institutions as both students and employees (e.g., teaching assistants, research assistants) (Zahneis, 2020). Thus, graduate students may have experienced unique challenges during the pandemic, given their dual role (Jenei et al., 2020; Zahneis, 2020). Imeri et al. (2020) reported that pharmacy graduate students experienced several negative effects after shifting to online learning, including limited professional and social support, reduced collaboration with peers, cancelled or modified research projects, a lack of mentorship, and difficulty maintaining work-life balance.

Recently, researchers in Canada explored how the pandemic impacted graduate students and postdoctoral fellows engaged in laboratory-based research programs (Stuart et al., 2021). The participants reported high levels of distress, poor communication from administrators and supervisors, barriers to working from home, and concerns regarding future employment opportunities (Stuart et al., 2021). While highlighting important effects the pandemic had on graduate students, the study targeted only individuals in laboratory-based research programs. However, graduate students who conducted research outside of a laboratory, or who were enrolled in course-based programs, may have experienced challenges during the pandemic.

Furthermore, the numerous ways in which the pandemic impacted graduate students may have significant psychological consequences (Cheng et al., 2020; Jenei et al., 2020). Prior to the COVID-19 pandemic, graduate students were six times more likely to suffer from anxiety or depression when compared to the general population (Evans et al., 2018). Of further concern, in a one-year span from pre- to early-pandemic (2019-2020), the prevalence of generalized anxiety disorder was reported to be 1.5 times greater and major depressive disorder doubled among graduate students within the United States (Chirikov et al., 2020; Imeri et al., 2020). Graduate students across

disciplines reported difficulty concentrating, and felt socially isolated, fearful, angry, anxious, and helpless (Kee, 2021; Stuart et al., 2021). This early evidence lent support for debilitating mental health among graduate student populations. Further, graduate students reported feeling overlooked by their institutions (Kee, 2021; Stuart et al., 2021; Zahneis, 2020), and in some cases needed to request that their universities established mental health hotlines (Oleksiyenko, 2020). Taken together, investigation into the challenges faced by graduate students during the pandemic is both timely and imperative.

Method

Study Design

Pragmatism suggests that using multiple approaches will lead to enhanced understanding of a phenomenon (Onwuegbuzie & Leech, 2005). Using a pragmatist perspective, a survey design was employed to explore graduate students' educational experiences during the pandemic. The survey included a series of quantitative items to explore students' educational experiences during the pandemic and qualitative open-ended questions to gather a more comprehensive understanding of the quantitative data (Hagger & Smith, 2019). The sample was limited to a Kinesiology department at one university to control for the resources offered to, and restrictions on, graduate students during the pandemic. All authors consisted of graduate students or faculty members who were well-versed in the institution and government restrictions faced by the participants.

Participants

Participants included 28 graduate students ($M_{\text{age}} = 25.63$; $SD = 2.87$) from a Kinesiology department at a university in Ontario, Canada; representing 40% of this program's enrollment. Most participants identified as male ($n = 15$; 53.6%), White ($n = 11$; 39.3%) or Caucasian ($n = 12$; 42.9%) and were enrolled in a dissertation/thesis-based program ($n = 20$; 71.4%; see Table 1 for complete demographic information).

Table 1

Complete demographic information

<i>Participant Demographic Information (N = 28)</i>	
Demographic Categories	Frequency n (%)
Gender	
Female	13 (46.4)
Male	15 (53.6)
Race	
White	11 (39.3)
Caucasian	12 (42.9)
Arab	1 (3.6)
Black	1 (3.6)
Métis	1 (3.6)
Mixed Race	2 (7.1)
Living Situation	
Alone	8 (28.6)
Family	17 (60.7)
Partner	2 (7.1)

Housemates/Roommates	1 (3.6)
Caregiver	
Yes	2 (7.1)
No	26 (92.9)
Level of Study	
Master's	24 (85.7)
PhD	4 (14.3)
Program Type	
Thesis/Dissertation	20 (71.4)
Internship	8 (28.6)
Year of Study	
1	7 (25.0)
2	17 (60.7)
3	4 (14.3)
4	0 (0.0)

Procedure

Following university research ethics board clearance, an anonymized online survey was distributed to graduate students. Recruitment occurred via social media posts from the department's graduate student association and an email sent by the department. The survey was administered through Qualtrics™ and took approximately 30 minutes to complete. Midway into data collection, a second email was circulated by the department to recruit additional participants. Data collection occurred from May 26 to June 16 of 2021. For most of this time, the province of Ontario was in a lockdown (i.e., April 8 to June 11, 2021; Government of Ontario, 2021). This lockdown consisted of a province-wide stay-at-home order wherein citizens were only permitted to leave their homes for essential services (e.g., groceries, pharmacies). On June 11, 2021, Ontario moved into Stage One of its "Roadmap to Reopen" framework (Government of Ontario, 2021). In Stage One, residents were provided access to some previously closed services, such as outdoor dining; however, many indoor services remained closed (e.g., indoor dining, gyms).

Measures

Participants were asked to complete a survey including 16 closed- and nine open-ended questions to assess their mental health, online learning, degree progress, and access to campus facilities during the pandemic.

Mental Health

The Mental Health Inventory-5 (MHI-5) contains five items that measured current states of mental health (Berwick et al., 1991). Specifically, the frequency with which participants felt happy, calm and peaceful, nervous, downhearted and blue, and so down in the dumps that nothing could cheer them up in the previous month. Items were scored on a 6-point Likert scale ranging from 1 (*none of the time*) to 6 (*all of the time*). Scores were transformed into a variable ranging from 0-to-100, wherein higher scores indicated optimal mental health (Theunissen et al., 2011), with those less than or equal to 60 reflecting poor-to-moderate mental health (Kelly et al., 2008). The validity and reliability of the MHI-5 have been tested with post-secondary students (Faisal et al., 2021), wherein construct validity (Elovania et al., 2020), internal reliability (Trainor et al., 2013), and predictive validity (Thorsen et al., 2013) were supported.

Additionally, three closed-ended items were administered regarding participants' mental health and access to resources related to mental health. These reflected self-reported changes in mental health throughout the pandemic, usage of mental health resources provided by the university during the pandemic, and changes in mental health due to restricted access to the university and its resources. Further, participants were asked three open-ended questions on mental health. Specifically, they were asked to elaborate on any mental health changes, report whether the provincial government's restriction changes affected their mental health and share how they believed the university, department, and graduate student association could have helped their mental health.

Degree Progress and Online Learning

Participants completed five closed-ended questions on their degree progress during the pandemic and their experiences with online learning. These included whether participants considered ending (or ended) their graduate studies permanently and/or temporarily, if they would end their studies temporarily or permanently if the 2021-2022 academic year remained online, and if their anticipated degree completion had been affected by the pandemic. If participants reported anticipating delayed degree completion, they were asked to report the number of extra semesters they required. One item assessed participants' level of satisfaction with online learning. Further, open-ended questions assessed the challenges of completing their degree during the pandemic, the challenges associated with online learning, the impact of online learning, and whether and how they felt the university, department, and graduate student association could have removed or alleviated these challenges.

Access to Building

Participants were asked to report when they last accessed the department building. Further, closed-ended questions related to department building access were asked. These included (1) their status for applying and/or receiving access to return to conduct research on campus, (2) their interest in working in the department building, and (3) how likely they were to return to the department building if allowed. Participants were administered one open-ended question regarding any benefits they perceived to being in the department building.

Data Analysis

Descriptive statistics were calculated to analyze responses to closed-ended questions. Means and standard deviations were calculated to determine levels of satisfaction with online learning and interest in returning to the department building. Frequencies were calculated for the remaining closed-ended questions. Scoring of the MHI-5 was explained above.

Open-ended questions were analyzed using a reflexive thematic analysis (RTA; Braun & Clarke, 2019). RTA is an approach used to identify, analyze, and report themes across a dataset allowing for a conceptual story to be told from the data (Braun & Clarke, 2006, 2019) and a tool for researchers to explore people's perceptions and experiences. The goal of RTA is for researcher(s) to engage with the data in a reflexive and thoughtful way throughout the analytic process. Conducting an RTA has been conceptualized through six phases wherein researchers (1) familiarize themselves with the entire dataset, (2) engage in coding, (3) generate initial themes, (4) develop and review such themes, (5) refine, define, and name themes, and (6) write up findings (Braun & Clarke, 2006, 2019). In sum, this process acknowledges and appreciates the researchers' role wherein codes and themes are not *found*, but rather *develop* through a reflexive, and often collaborative, analytic process.

Following the analysis of closed- and open-ended questions, both types of data were integrated together through a joint display (e.g., Johnson et al., 2019). Researchers have advocated for using

a joint display when sharing data from multiple forms of analysis to integrate the data in a meaningful way (Guetterman et al., 2015). The present study utilized a pillar integration which is a joint display method that synthesizes the findings by visually organizing and combining data from multiple methods. This process was particularly helpful to answer the second research question - "how graduate students' mental health has been affected by the pandemic?" - as responses from questions related to both mental health and educational experience (i.e., degree progress and online learning, access to building) were used to address the question. Research questions one and three were addressed by mental health questions and educational experience questions, respectively.

Results

Mental Health

Scores of the MHI-5 reflect that many participants ($n = 16$; 57.1%) had poor-to-moderate mental health ($M = 58.33$; $SD = 17.92$). When reflecting on the previous 16 months, more than a third ($n = 10$; 35.7%) of participants reported their mental health had fluctuated, while half ($n = 14$; 50.0%) indicated it had worsened. While some participants ($n = 8$; 28.6%) experienced changes to their mental health in relation to a perceived lack of support from on-campus mental health services, the majority ($n = 15$; 53.6%) had not attempted to access these services; others experienced no change ($n = 2$; 7.1%) or were unsure ($n = 3$; 10.7%). Regarding the resources that were offered by the university, only a few participants ($n = 5$; 17.9%) mentioned utilizing these services, while the majority ($n = 23$; 82.1%) had not.

Open-ended responses from participants reflected several themes around mental health, such as poor mental health, challenges working from home, and confusion regarding restrictions. Poor mental health was seen through participants having difficulty with daily functioning (e.g., getting out of bed, dressing), experiencing symptoms of anxiety and depression, feeling hopeless, lacking a sense of purpose, and having poor work-life balance. Participant 14 illustrated how COVID-19 impacted various aspects of their life and well-being:

My mental health has decreased significantly . . . I have seen a therapist throughout this time to mitigate the impact it has had. I've struggled with drinking . . . to get out of bed . . . to see the point in anything. I've struggled maintaining relationships with friends and family due to my depression. I rarely find joy in things that I used to. I have lost sight of why I'm even pursuing this degree and its overall significance.

Participant 18 attributed their mental health challenges with working from home, which was further compounded by issues such as the closure of mental health outlets:

It has been nothing but negative. Trying to balance everything while only being online, and at home with no proper workspace and separation from work and personal life is nearly impossible to manage while trying to maintain decent academic success. While being completely online is one challenge, the compound effect of gym closures, social event closures, and anything that can help improve mental wellness being closed completely derailed everything.

These quotes demonstrated participants' mental distress and the ways in which restrictions negatively impacted the well-being of graduate students. While Participant 14 noted they had been seeing a therapist to cope, Participant 18 highlighted the loss of coping strategies due to COVID-19 restrictions (i.e., closed gyms, restricted social engagements). The inability to access previously established coping resources may have contributed to decreased mental well-being reported in this study and the literature (e.g., Imeri et al., 2020; Stuart et al., 2021).

Moreover, participants described the changes to the Ontario COVID-19 response framework as confusing, frustrating, and disappointing, and had difficulty navigating such changes. For example, Participant 13 expressed distrust in the loosening of restrictions: "... even when things are open, I have not wanted to go out - why bother trying to go out and get used to it when we're just going to go into another lockdown." Additional sentiments of distrust and hopelessness towards restrictions were articulated by Participant 8: "The switching back and forth [between different restrictions] has negatively impacted my mental wellness. I would say it has completely erased any sense of hope." Difficulties navigating the framework and restrictions led some respondents to disengage from actively staying up to date with changes to restrictions. For example, Participant 6 mentioned, "I honestly can't keep up with the restrictions so I just assume we can't do anything." Frustrations with Ontario's COVID-19 response framework may have exacerbated poor mental health by fostering feelings of distrust and hopelessness met with disengagement that led to participants self-imposing or making assumptions about restrictions. While the government's response to the pandemic needed to be dynamic and flexible, participants' responses potentially indicated a desire for organizations, such as the provincial government and universities, to produce guidelines that were clear, stable, and easily understood.

Degree Progress and Online Learning

When asked about their satisfaction with the online learning environment, most participants indicated they were unsure ($n = 11$; 39.3%) or dissatisfied ($n = 11$; 39.3%). Many participants considered ending their graduate studies temporarily during the 2020-2021 academic year ($n = 12$; 42.9%), while others contemplated the prospect of both a temporary and permanent leave at some point in the last 16 months ($n = 5$; 17.9%); however, no participants indicated ending their studies during the pandemic. However, despite most participants suggesting they considered ending their studies, 89.3% ($n = 25$) reported they would continue their studies during the 2021-2022 academic year if it continued online. Nonetheless, most participants ($n = 17$; 60.7%) anticipated they would require additional semesters to complete their degrees due to the pandemic.

Several themes related to participants' degree progress and experiences with online learning were noted, including a lack of social connection, barriers impeding degree requirements, and technical and logistical challenges. As demonstrated by the following quote from Participant 14, online learning hindered formal and informal social connection, and learning experience:

It has made the learning experience lifeless. By which I mean lacking experiences and conversations inside or outside of the classroom that hold a great deal of value to me . . . it has hindered my motivation to the point of apathy.

Further, participants mentioned how restrictions created barriers that prevented them from completing their degree requirements. Participant 9 described the impact the pandemic had on fulfilling internship and research requirements:

My internship was scheduled for the summer of 2020 and was completely cancelled before it began. I considered a leave of absence, but instead enrolled in a summer course. My internship was rescheduled for summer 2021, but again has been cancelled . . . This does threaten my ability to graduate on my hoped-for timeline.

In addition, several participants provided examples of technical and logistical issues associated with online learning and meetings. Examples included inefficient communication with peers, poor internet connection, difficulty navigating software, extensive screen time, difficult/distracting living situations, and financial burden. To illustrate, Participant 2 cited communicating virtually as a challenge:

I think the delay in communication may have been a challenge. Online you can't just pop into someone's office to ask a quick question or have colleagues available in lab. Everyone is a text or email away but there is a mental barrier with asking quick questions over tech.

The challenges associated with the virtual environment were reiterated by Participant 19 who experienced anxiety when navigating online interfaces: "It was a huge challenge and very anxiety inducing to present online as it was incredibly difficult to gauge others' emotions and social cues during class." By limiting their ability to access and engage in formal (e.g., feedback, internships, presentations) and informal (e.g., conversations with peers) learning opportunities, COVID-necessitated online learning may have devalued the educational experience for graduate students. The negative feelings and barriers encountered by participants may have led to several negative outcomes for graduate students, such as reduced mental health, delayed degree completion, financial instability, and general uncertainty surrounding their future (Jenei et al., 2020; Stuart et al., 2021).

Access to Campus

Most participants ($n = 22$; 78.6%) had not accessed the department building since March 2020 or earlier; one participant (3.6%) had never accessed the building during their graduate degree. While three students (10.7%) reported receiving clearance to conduct research on campus and five (17.9%) had submitted applications for clearance but were awaiting approval, the majority ($n = 20$; 71.4%) had not applied. Although few students applied for, or were granted, access to campus facilities, most participants ($n = 16$; 57.1%) were interested in working from the department building such as a graduate student workspace. Four participants indicated they had no interest in working from campus (14.3%) and eight were unsure (28.6%). Most respondents suggested they were very likely ($n = 17$; 60.7%), likely ($n = 3$; 10.7%), or somewhat likely ($n = 4$; 14.3%), to work from the department building at least once per week if granted permission; while two were not likely (7.1%), and two would never (7.1%) work from the department building.

The researchers established themes associated with access to the graduate students' department building which included benefits to campus access, achievement of a work-life balance, and reasons why some participants did not intend to access campus moving forward. Beginning with the benefits to accessing the department building, participants believed access would provide them a sense of purpose, research preparation, opportunities for socialization, and improved concentration, motivation, and productivity. Participant 5 indicated that:

Getting to go work in the [department] building, even if only a couple times a week, would increase my productively, sense of purpose, and help with my routine. I think this may be the single thing that would drastically improve my overall mental health and productively.

Further, Participant 8 discussed how returning to the department building would positively influence their work-life balance:

It would help me separate work from home life. When I work from [the department], I am able to leave the stress and anxiety at the school and enjoy being home. Only working from home has made it nearly impossible for me to relax as I am constantly reminded of the things I could be working on.

Although most participants indicated a desire to access the department building, some respondents expressed they would not access campus as they had moved home (i.e., away from the university), had childcare considerations, or simply did not have a need. As illustrated by Participant 21: "I moved back in with family so the [department] building is an hour drive. My


research is ongoing, completely virtual, and I plan on being finished within the next few months so I probably wouldn't return to the building.”



Prior to the pandemic, some graduate students had the option to work from home or on campus, which allowed them to choose the location that best suited their wants or needs. The students who preferred to work from home prior to the pandemic may have encountered fewer challenges when restrictions forced universities to close classrooms and lab spaces and shift to online education. While some participants noted they preferred to work from home, most participants expressed a desire to work from the department building noting that it would have improved their mental well-being. The participants who wanted to work from campus, but were unable due to restrictions, had trouble achieving work-life balance potentially further contributing to reports of poor mental health that were evident within this study.

Data Integration

A pillar integration joint display was created to synthesize and merge the study findings (e.g., Johnson et al., 2019; see Table 2 and 3). The open-ended questions often provided additional support or explanation to the closed-ended questions. The overarching themes will be explained in the discussion.

Table 2
Integration of closed- and open-ended questions organized by research question

Closed-ended category	Pillar building themes	Open-ended category
		
<i>Research Question #1:</i>		
<i>The state of mental health among graduate students in one academic department in Ontario for the month of May 2021</i>		
MHI-5 - Finding: 57% of participants scored 60 or less Description: Almost 60% of participants were experiencing poor-to-moderate mental health for the past month.	Mental health during the pandemic was poor with feelings related to anxiety and depression.	Quote: "At least every other month, there are 1-2 weeks where I feel severely depressed." Description: Participants felt hopeless and depressed, while struggling to find purpose.
<i>Research Question #2:</i>		
<i>How the mental health of graduate students has been affected by the pandemic</i>		
Online Learning - Findings: Very satisfied (0%) Satisfied (22%) Unsure (39%) Dissatisfied (39%) Very dissatisfied (0%) Description: Most participants were dissatisfied (or unsure) with the online learning environment.	Dissatisfaction with online learning relative to in-person learning.	Quote: "It has made the learning experience lifeless . . . lacking experiences and conversations inside or outside of the classroom that hold a great deal of value to me . . . it has hindered my motivation to the point of apathy." Description: Participants felt online environments stripped their learning experiences.
Long-term Academic Enrollment Impact - Findings: End degree permanently (0%) End degree temporarily (7%) Continue degree (89%) Unsure (4%) Description: Most participants indicated they would continue their degree, even if the 2021-2022 academic year remained online.	Students remained committed to pursuing strategies and adaptations to maintain academic trajectory.	Quote: "My internship was rescheduled for summer 2021, but again has been cancelled . . . I am, however, staying with the organization and have reconfigured my role to be one I can complete from home... This does threaten my ability to graduate on my hoped-for timeline." Description: Despite challenges to degree progress, participants continued to pursue their degrees by attempting to adapt their studies.

Closed-ended category	Pillar building themes	Open-ended category
 <p>Changes in Mental Health since Restrictions - Findings: Improved (4%) Worsened (50%) Fluctuated (36%) No change (11%) Prefer not to answer (0%) Description: Most participants perceived their mental health worsened or fluctuated since restrictions began.</p>	<p>Unstable mental health due to and compounded by pandemic related restrictions.</p>	 <p>Quote: "It has been nothing but negative. Trying to balance everything while only being online, and at home with no proper workspace and separation from work and personal life is nearly impossible to manage while trying to maintain decent academic success. While being completely online is one challenge, the compound effect of gym closures, social event closures, and anything that can help improve mental wellness being closed completely derailed everything." Description: Constraints of working from home, compounded by closures of mental health outlets, deteriorated students' mental health and academic success.</p>
<p align="center">Research Question #3: <i>How the pandemic impacted graduate students' degree progress and educational experience</i></p>		
<p>Academic Enrollment Impact – Findings ^a: Considered temporarily ending their degree (43%) Considered temporarily and permanently ending their degree (18%) Continued their degree without interruption (39%) Description: More than 60% of participants considered taking a temporary leave from their degree.</p>	<p>Many students face a turbulent academic trajectory due to the pandemic.</p>	<p>Quote: "My internship was scheduled for the summer of 2020 and was completely cancelled before it began. I considered a leave of absence, but instead enrolled in a summer course." Description: Uncertainty of participants' ability to achieve degree progress led to contemplations of degree termination.</p>
<p>Impact on Degree Completion - Findings: Believe degree will be completed later than expected (61%) Degree will be completed on-time (18%) Unsure (21%) Description: Most participants felt that their degree would be delayed due to the pandemic.</p>	<p>Students believed their degree progress would be, or has been, negatively impacted.</p>	<p>Quote: "My hours will take longer to complete, my research ethics application for my original study needed to be amended, and the delivery of my survey for my research is being setback." Description: Various constraints such as internship availability, revision to ethics applications, and ability to conduct research all impacted participants' ability to complete their degree.</p>




Closed-ended category	Pillar building themes	Open-ended category
		
<p>Extra Semesters - Findings:</p> <ul style="list-style-type: none"> None (18%) 1 - 2 (46%) 3 + (14%) Unsure (4%) Missing data (18%) <p>Description: 60% of participants believed they would require at least one additional semester to finish their degree.</p>	<p>Degree completion was expected to be prolonged due to adaptations necessitated by the pandemic.</p>	<p>Quote: "I've completed my coursework and am now focused on my thesis. If everything continues to be online, I will have to significantly adapt my research idea or take time off until it is safe to complete research again."</p> <p>Description: Uncertainty surrounding degree progress left students contemplating future studies with a need to create contingency plans.</p>
<p>^a No students reported ending their degree or considering ending degree permanently.</p>		

Table 3
Integration of closed- and open-ended questions organized by research question

Closed-ended category	Pillar building themes	Open-ended category
		
<p align="center">Recommendation #1: Remove ambiguity around, and provide access to, graduate student workspace on campus</p>		
<p>Approval to conduct research or work on campus -Findings:</p> <ul style="list-style-type: none"> Yes (11%) Applied with no approval (18%) No (71%) Prefer not to answer (0%) <p>Description: Almost 90% of participants did not have access to work from the department building, more than a year after pandemic related restrictions were put in place.</p>	<p>Ambiguity related to access of the department building and the criteria for receiving access.</p>	<p>Quote: "I know some departments on main campus . . . already have a lot of their students back on campus because they can claim they need to be for research purposes. However . . . some of the students that have campus approval go to campus to work even if they do not need to be there for research . . . I think the department could advocate for students who want to be on campus even though their research can be done from home."</p> <p>Description: Participants expressed a desire for campus access above and beyond research purposes demonstrating confusion regarding restrictions to accessing campus facilities.</p>
<p>Interest in working from campus - Findings:</p> <ul style="list-style-type: none"> Yes (57%) No (14%) Maybe (18%) Unsure (11%) <p>Description: The majority of participants expressed an interest in working from the department building.</p>	<p>Students have interest in working from the department building and feel it would have a variety of benefits.</p>	<p>Quote: "It would help me separate work from home life once again. When I work from [the department], I am able to leave the stress and anxiety at the school and enjoy being home. Only working from home has made it nearly impossible for me to relax as I am constantly reminded of the things I could be working on. Moreover, working in [the department] would help me feel more connected with other students again . . . knowing other people are around helps me feel connected and engaged in learning."</p> <p>Description: Access to the building could help foster work-life balance and mental health, not just a means for conducting research.</p>

Closed-ended category →	Pillar building themes	← Open-ended category
<p>Likelihood of attending campus at least once a week</p> <p>- Findings:</p> <ul style="list-style-type: none"> Very likely (61%) Likely (11%) Somewhat likely (14%) Not likely (7%) Never (7%) <p>Description: Most participants would choose to work from the department building at least once a week if provided access.</p>	<p>Students are willing to be flexible and accommodating in attaining access to workspace in the department building.</p>	<p>Quote: "I am having a hard time separating my personal from work life. . . . work[ing] in the [department] building, even if only a couple times a week, would increase my productivity, sense of purpose, and . . . routine. I think this may be the single thing that would drastically improve my overall mental health and productivity."</p> <p>Description: Participants expressed a desperation for even limited access to campus workspace.</p>
<p align="center">Recommendation #2: <i>Ensure university mental health resources and services are meeting the needs of graduate students</i></p>		
<p>University resources - Findings:</p> <ul style="list-style-type: none"> Have used (18%) Have not used (82%) <p>Description: Most participants have not utilized any mental health resources provided/offered by the institution.</p>	<p>University mental health resources were unutilized.</p>	<p>Quote: "The counselling services is quite busy with long wait times, so I have gone elsewhere."</p> <p>Description: Some participants noted the use of mental health resources internal (e.g., student counseling services) and/or external (e.g., therapist) to the university</p>
<p>Changes in mental health due to restricted access to university resources or services - Findings:</p> <ul style="list-style-type: none"> Yes (29%) No changes (7%) No attempt to seek services (54%) Not sure (11%) Prefer not to answer (0%) <p>Description: More than half of participants had not attempted to utilize mental health resources provided/offered by the institution.</p>	<p>Students cited several concerns regarding the use of university resources</p>	<p>Quote: "I think offering counselling services in person would be more beneficial than online. I felt like the services did help a lot but I felt like I had to whisper in my house for no one to hear my confidential information and that maybe my emotions and body language did not transfer the same as in person. I believe there is a safe way to set this up, I don't understand how you can get a massage or go to the chiropractors to get physical treatment but cannot meet with a therapist in person."</p>
<p>Description: More than half of participants had not attempted to utilize mental health resources provided/offered by the institution.</p>		<p>Description: Restrictions or modifications to university services left participants' feeling vulnerable about speaking from their home, confused about why such restrictions were in place, and detached from the therapists whom they saw.</p>

Discussion

This study explored graduate students' educational experiences approximately 16 months into the pandemic. The educational experience of graduate students was overwhelmingly and negatively impacted during the pandemic, evidenced through poor mental health and challenges with online learning. Importantly, participants expressed ways in which their educational experience and mental health could have been improved. These included removing ambiguity around access to campus workspaces and ensuring the university's mental health resources and services met the needs of graduate students.

Participants reported experiencing poor mental health at the time of the survey. These findings were consistent with research wherein graduate students reported poor mental health (Chirikov et al., 2020), heightened stress (Imeri et al., 2020), and anxiety (Kee, 2021; Suart et al., 2021) during the pandemic. Moreover, these previous studies featured a data collection period of April to June 2020 (e.g., Suart et al., 2021). As such, these studies recorded the mental health of graduate students shortly after the pandemic began. In contrast, data were collected in this study nearly one year later (May to June 2021) and suggested that graduate students experienced poor mental health well into the pandemic. Suart et al. (2021) cautioned that with time and distance from the onset of the pandemic and initial lockdown, negative feelings from the pandemic may continue to persist and deepen among graduate students.

While these findings indicated that feelings of poor mental health were persistent among graduate students 16 months into the pandemic, the source of mental health challenges may have changed from early in the pandemic. Based on data collected in 2020, graduate students were fearful and anxious regarding the health-related implications of COVID-19 for themselves and their families (Kee, 2021; Suart et al., 2021). However, the current study may suggest the root of continued mental health concerns was based on how the pandemic impacted the educational experience of graduate students. Specifically, graduate students remained dissatisfied with online learning (Imeri et al., 2020; Kee, 2021) with some describing their learning experience as "lifeless" and/or purposeless. Such feelings align with work by Kee (2021) wherein graduate students preferred in-person learning environments, suggesting online learning had not replicated the interactive experiences students desired.

Despite dissatisfaction with online learning, almost 90% of participants reported that they would continue their studies even if online learning continued. Thus, it could be postulated that graduate students accepted online learning as their new reality. One way to interpret this idea of acceptance is through the Kübler-Ross model of grief. The Kübler-Ross model of grief outlines five stages of grief individuals experience when faced with tragic or difficult life changes (Craytor & Kübler-Ross, 1969). These include denial (i.e., disbelief to unexpected news), anger (i.e., frustration due to the unfairness of the situation), bargaining (i.e., focusing on what could have been done to change/prevent the situation), depression (i.e., a sense of loss once one acknowledges the situation cannot be changed), and acceptance (i.e., learning to live with this new reality) (Craytor & Kübler-Ross, 1969). Suart et al. (2021) used this model to explain the reactions of graduate students following the closure of laboratory spaces due to the pandemic. They suggested that graduate students were largely in the bargaining stage following laboratory closures, but that participants also felt depression in relation to working from home. Roughly 16 months into the pandemic, the graduate students in this study seemingly moved-on from the bargaining stage and were balanced between the stages of depression and acceptance. That is, graduate students remained in the depression stage (manifested through feelings of apathy and helplessness) but were also trying to accept the new reality that was online learning (evidenced by continuing their studies). However, the acceptance stage is often characterized by feelings of calmness and being at peace (Craytor & Kübler-Ross, 1969), which did not seem to be present among participants. Acceptance without the presence of positive feelings may be concerning as graduate students could have accepted online learning, despite the dissatisfaction they feel

towards the experience. If graduate students felt a need to accept this new reality, despite the negativity they perceived towards the online learning experience, this could foster decreased mental health and cause serious challenges to graduate students having a positive educational experience.

The pandemic also appeared to impact the degree progress of graduate students. Many participants reported facing a turbulent academic trajectory, evidenced by thoughts of leaving their academic program or the cancelation of internship opportunities. Such experiences could have been indicative of graduate students' uncertainty towards their future academic and professional careers (Jenei et al., 2020). Graduate students believed their degree would be, or had already been, negatively affected by the pandemic, resulting in delayed graduation for most participants. Unfortunately, such delays in degree completion were seen in other studies (e.g., Suart et al., 2021; Zahneis, 2020). Researchers have suggested that changes to the learning environment (Kee, 2021), forced adaptations to research projects (Imeri et al., 2020), and limited access to research materials (Zahneis, 2020) contributed to the challenge of fulfilling degree requirements during the pandemic. These circumstances demonstrated the difficulty the pandemic, and the variability of its associated restrictions, had on graduate students and their ability to progress in their academic careers. This lack of, or delayed, progress could have placed graduate students in difficult financial situations (Jenei et al., 2020) and increased feelings of stress towards their future (Suart et al., 2021).

These results can be used as leverage to make recommendations for actions that will best support graduate students. To begin, although restricted access, complete closures, and lockdowns play an important role in mitigating physical risk, graduate students may have been primarily concerned with the psychological harm caused by ongoing isolation from their department workspaces (Suart et al., 2021). To offset this, our *first recommendation* is to prioritize graduate students' access to workspace within their department building; within the constraints of capacity limits. Prioritization usually follows: 1) essential workers, 2) students attending in-person class and their instructors, and 3) occasional staff, faculty, and students. Having the latter category formally include graduate student access to workspace, outside of cleared research space, could have been an important strategy moving forward. Researchers in comparative education have suggested that the actions and inactions of universities in response to the pandemic could, in part, have demonstrated the value placed on certain groups over others (Cohen et al., 2021; Oleksiyenko; 2020). These new pandemic-created norms in higher education may have unintentionally created new inequalities that needed to be considered and alleviated (Oleksiyenko et al., 2021). For example, Suart et al. (2021) found that over half of graduate students and postdoctoral fellows did not have their own dedicated workspace at their home; thus, it would seem having space on campus would have been helpful to provide equal opportunity to all graduate students. Further, participants highlighted a variety of benefits associated with working from their department building, such as fostering a work-life balance and improving their mental health.

Graduate students were aware of the logistical challenges surrounding the re-opening of campus workspace and reported a willingness to be both flexible and accommodating in attaining access. While it was apparent that there was no 'one way' to re-open university facilities, laboratories, and workspaces (Suart et al., 2021), there was a need for university administrators to be transparent and intentional when communicating such information (Chirikov et al., 2020; Kee, 2021). Participants felt ambiguity related to who can access their department building and the criteria required to receive access. To offset feelings of jealousy or frustration towards individuals who were permitted access (Suart et al., 2021) and mitigate the perception that their role at the university is of lesser importance than their peers (Zahneis, 2020), administrators should have communicated a clear and transparent process for graduate students to access department workspace.

A *second recommendation* is related to the use of university mental health resources. Graduate students may choose not to engage in psychological counseling for a variety of reasons, such as stigmatization or a lack of awareness (Liu et al., 2020). During the pandemic, researchers found similar trends, with low engagement in mental health services among post-secondary students (Liang et al., 2020). Similarly, more than 80% of participants in this study did not attempt to access university mental health resources, despite the prevalence of poor mental health among participants. On one hand, it was apparent universities could not mandate the use of such resources. On the other hand, one should consider *why* graduate students were not utilizing such resources (Chirikov et al., 2020; Kee, 2021). One explanation was the potential barriers associated with virtual counseling sessions, as participants noted not having a safe space in their home from which to speak openly. Kee (2021) suggested that if traditional face-to-face counseling services were not possible, universities needed to be creative in how these services could be provided (e.g., virtual communication). However, offering online mental health resources and services may not have been enough (Chirikov et al., 2020), especially if what was provided was not in a modality that worked for graduate students. Thus, we recommend that university administrators (e.g., graduate coordinators) work with graduate students to develop strategies that could be utilized and increase awareness of mental health services. This aligns with discussion in comparative education to “build back better” as we continue moving through the pandemic (Cohen et al., 2021). That is, to take this opportunity to update the ways in which certain aspects of our universities operate as opposed to simply re-installing the pre-pandemic systems.

Although this study offers insights into the experiences of graduate students, institution- and department-specific factors may have limited the generalizability of the findings. While these recommendations may not be directly generalizable to every university, they demonstrated the need for universities to consider the unique needs of their graduate students (Suart et al., 2021). Further, the geographic location of the university may have also affected the experiences of graduate students and the response the university took towards navigating the pandemic. Suart et al. (2021) suggested that institutions needed to deliberately tailor how they address COVID-19 issues based on the needs of their specific university. Thus, institutions should have been mindful of the circumstances their graduate students faced and understand graduate students may have been impacted differently across the world. Another issue of generalizability was the lack of diversity among participants, who, while representative of their department’s graduate student population, predominantly self-identified as White or Caucasian. Researchers have noted that minority graduate students may have experienced exacerbated mental health issues due to inequalities or discrimination within their program (Miller & Orsillo, 2020). Therefore, these results may not be reflective of the experiences of diverse populations of graduate students.

There are areas of future research related to the educational experiences of graduate students during the pandemic. Researchers could explore if the experiences documented in this study were similar to other universities; providing knowledge on strategies that best address pandemic-related challenges from multiple perspectives (Suart et al., 2021). Also, of interest is whether graduate students who had been brought back to campus had improved mental health compared to those who continued to work from home. Further, researchers could explore if one’s living situation (e.g., live with family, live independently) had an impact on mental health when working from home. Again, such insights could inform universities on the importance of allowing on-campus workspace, and how this may have affected graduate students’ mental health. Last, researchers should more closely examine why graduate students remained committed to their degree, despite their apparent dissatisfaction with online learning.

Conclusion

In summary, nearly sixteen months into the pandemic, graduate students' mental health, degree progress, and educational experiences were negatively impacted due to the pandemic and related restrictions. Recommendations for assisting graduate students during these times include: (1) prioritizing graduate student access to workspace within the constraints of current capacity limits in university buildings, and (2) collaborating with graduate students to develop effective mental health strategies with a high potential for uptake.


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