

Online, Open, and Equitable Education

Lessons from Teaching and Learning
during the Global Pandemic

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CHAPTER 7

The Transition to Online Education amid the COVID-19 Pandemic and the Impact on International Students' Mental and Physical Health and Well-Being

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The sudden transition to online learning with the outbreak of the pandemic had an unavoidable impact on the higher education experiences of postsecondary students (Besser, Flett, and Zeigler-Hill 2022; Statistics Canada 2020). Notably, international students have been disproportionately impacted, and concerns have been raised regarding the relatively little support available to assist them (Cheng 2020; Sharp 2020). Over the past decade, a growing body of literature has focused on international students' experiences of pursuing their education abroad (Nilsson and Ripmeester 2016; Smith and Khawaja 2011; Zhang and Zhou 2010), but there are still gaps to be addressed. Not only is there a dearth of research conducted in the Canadian context, there is also insufficient literature on the impacts of international students' online learning experiences on their mental and physical well-being. With international students making up more than 20% of students enrolled in Canadian postsecondary institutions (Canadian Bureau for International Education 2018), combined with the sudden online transitions during the COVID-19 pandemic, this is a gap that warrants further exploration.

Even before the pandemic, prior studies have consistently documented evidence that resettling and making the academic transition to a new country often expose international students to various psychological stressors that may have a detrimental impact on their overall health and well-being (Mori 2000; Park and Rubin 2012). Moreover, studies have found that increased stress is also associated with unhealthy lifestyle behaviours (e.g., poor diet, lack of physical activity, sleep disorders, etc.) that may also undermine one's overall health and well-being (Dodd et al. 2010; Laska et al. 2009; Voelker 2004). International students are more vulnerable to social isolation and may also experience a reduced sense of belonging to the country where they are pursuing their education, both of which are associated with adverse mental and physical health outcomes (de Moor, Denollet, and Laceulle 2018; Teo, Choi, and Valenstein 2013). The transition to online learning may exacerbate the severity of such issues.

In this chapter, we draw upon a mixed methods research design that reports quantitative findings (descriptive results) from the Nova Scotia International Student (NSIS) survey and qualitative findings based on focus group interviews. Our aim is to better understand how the transition to online education amid the COVID-19 pandemic impacted international students' higher education experiences, what their challenges and specific needs are, and what implications this might have on their mental and physical health and well-being.

Literature Review

Prior to the pandemic, online learning was identified as a flexible delivery method that provides higher education opportunities to students who are unable or prefer not to engage in in-person learning environments (Boling et al. 2012; Edmunds et al. 2021; Gillett-Swan 2017; Napier, Dekhane, and Smith 2011; Schmidt, Tschida, and Hodge 2016). Though this flexibility allows for a greater diversity and inclusivity in higher education, several challenges have been identified. Some of these challenges relate to low retention rates (Simpson 2004), concerns regarding insufficient interactions with

professors and peers (Kim, Liu, and Bonk 2005; Swan 2001, 2003), and a lack of student community development and institutional connectedness (Rovai, Whiting, and Liu 2005). For some, online education creates an environment where students who lack independence, self-discipline, time management skills, and intrinsic motivation may be less likely to succeed academically (Abouchdid and Eid 2004; Chaney 2001; Savenye 2005; Sit et al. 2005; You and Kang 2014). Furthermore, the online learning environment may also contribute to feelings of isolation and disconnection, as students find it more difficult to develop peer/professor relationships (Haigh 2004; McManus, Dryer, and Henning 2017; Zembylas 2008). This isolation may lead to learning disengagement, which can affect retention and degree completion (Haigh 2004).

With the abrupt change of course delivery due to the outbreak of the COVID-19 pandemic, there has also been a growing interest in whether students experienced greater challenges in adjusting to and navigating the sudden transition to online learning. Studies reported similar findings to the previous literature—that students faced challenges related to motivation, engagement, and time management (Getenet et al. 2024; Xiao et al. 2020; Kim, Liu, and Bonk 2005; Oswal and Meloncon 2014; Rovai, Wighting, and Liu 2005). However, these challenges were further exacerbated during the pandemic due to the combined stress of having to adjust to and navigate such a sudden transition in education delivery and the general uncertainties during this period (Al-Kumaim et al. 2021; Rahiem 2021; Biwer et al. 2021; Maqableh and Mohammad 2021).

Prior empirical research has consistently found evidence that international students (particularly those from non-Western countries) experience greater academic challenges than domestic students—as they struggle to adjust to and navigate the education system in a new context. Further, these studies reveal that non-Western international students tend to struggle more with online learning than international students from Western countries (Chen, Bennett, and Maton 2008; Hughes 2013; Liu et al. 2010; Karkar-Esperat 2018). More specifically, international students from non-Western

countries (particularly those from East Asia) not only experience greater communication issues (with their professors and peers) due to language barriers, but also experience cultural challenges and struggle to grasp the different academic conduct and assessment structures at Western institutions (Hughes 2013; Liu et al. 2010).

Moving to a new country and making adjustments to a new environment often exposes international students to various psychological stressors (Mori 2000; Park and Rubin 2012). Also referred to as acculturative stress, their stress is often related to re-establishing social capital, making cultural adjustments, navigating a new environment, and dealing with various forms of racial/ethnic discrimination (George et al. 2015; Orjiako and So 2014). The COVID-19 pandemic may have presented international students with an even more challenging integration process. Due to the restrictions related to the pandemic, international students may also have been more vulnerable to social isolation, as they had limited opportunities to establish social networks and build a sense of belonging in the new context. Combined with other uncertainties experienced during the pandemic, social isolation and a lack of a sense of belonging may have exacerbated their risk of experiencing psychological distress and depressive symptoms (de Moor, Denollet, and Laceulle 2018; Teo, Choi, and Valenstein 2013). Increased acculturative stress could potentially result in adverse health outcomes. However, this still remains as a gap in the current literature.

In addressing such a notable gap, we aim to provide a better understanding of how the transition to online education amid the COVID-19 pandemic affected international students' learning experiences, what their challenges and specific needs are, and what implications this had on their mental and physical well-being. By shedding light on these implications, our chapter aims to provide a more nuanced understanding of the particular needs of international students in their pursuit of online learning. Our findings offer insights that could be utilized to implement more targeted support systems and responsive strategies aimed at supporting international students' online education.

Methods

In this chapter, we present research findings drawn from the Nova Scotia International Student (NSIS) Survey (n=775) and focus group interviews with fifty-seven international students in Nova Scotia. A mixed-method approach was employed for this research. These data were collected as part of a larger research project that aimed to examine the impact of the changing nature of work and learning during the COVID-19 era on international students' health and well-being. A research ethics approval was obtained from a university ethics board for all phases of the data collection.

1. NSIS Survey, 2020-2021

This survey consisted of eighty questions covering a wide range of topics, such as: socio-demographic characteristics, general academic and remote learning experiences, career preparedness, labour market mobility, future plans in Canada, and health and well-being. The primary objective of the survey was to seek better understanding of international students' experiences during the COVID-19 pandemic and how it affected their mental health, physical health, and other aspects related to their well-being. Data collection started in October 2020 and went through March 2021 via the online-based survey platform Qualtrics. A convenience sampling method was used by distributing the online survey link to various stakeholders that work closely with international students in Nova Scotia.

To participate in this survey, the participant had to be at least sixteen years of age and be an international student in a postsecondary institution in Nova Scotia OR a recent graduate (within the past two years) from a postsecondary institution in Nova Scotia. The survey took approximately 30–45 minutes to complete, and participants were given the option to opt in for a prize drawing for an Apple iPad. Out of all the collected responses, incomplete questionnaires and those with duplicate completion were removed from the data, leaving 775 participants. For our descriptive results, the total sample size may vary by variable due to missing responses in certain survey questions. A statistical tool called Stats iQ, which

is accessible via the Qualtrics platform, was used for our descriptive results provided in this chapter.

2. Focus group interviews with 57 international students (and recent graduates)

In the NSIS Survey, the last question asked respondents about their interest in being contacted for a follow-up focus group interview, and those that expressed their interest in participation were contacted to participate in a focus group. From February 10, 2021 to February 27, 2021, a total of nine focus group sessions (one pilot session and eight regular sessions) were conducted. All of the focus group sessions took place virtually via Zoom, and a total of fifty-seven students took part in this data collection.

Focus group participants were asked to share their general experiences of being an international student, particularly in the COVID-19 context. The focus group sessions were semi-structured in nature with questions and probes covering various themes, such as: (1) health and well-being, (2) remote and online learning, (3) career and labour market mobility, (4) finances, and (5) social integration. With the participants' consent, all focus group sessions were recorded. Each focus group session was about two hours in length, and the recordings were transcribed for coding. We used the software QDA Miner for coding and analysis. After the initial coding using grounded theory, we adopted an open coding strategy (Corbin and Strauss 1990) to identify the broader themes inductively. Moreover, we used focused coding strategy to further refine the themes into various sub-themes (Lofland et al. 2006).

Findings and Discussion

International students' general online learning experiences during the COVID-19 pandemic

Our survey included several questions that provide insights into international students' online learning experiences during the pandemic, such as: the mode of course delivery in the 2020–2021 academic year, their ability to communicate with professors and

classmates, and their experiences of practicing their English, being exposed to Canadian culture, and making friends in Canada during the pandemic (table 7.1). The emerging themes from the focus group interviews complement our understanding of the sweeping impact that the sudden transition to online learning had on international students.

Variables	% (n)
Mode of course delivery (n=699)	
Online	71 (496)
Hybrid/Blended	27.3 (191)
In-person/Other	1.7 (12)
Online learning has made it difficult to communicate with professors. (n=686)	
Strongly disagree	7.6 (52)
Somewhat disagree	11.8 (81)
Neither agree nor disagree	16.5 (113)
Somewhat agree	33.2 (228)
Strongly agree	30.9 (212)
Online learning has made it difficult to communicate with classmates. (n=683)	
Strongly disagree	3.4 (23)
Somewhat disagree	7.5 (51)
Neither agree nor disagree	13.3 (91)
Somewhat agree	28.3 (193)
Strongly agree	47.6 (325)

Variables	% (n)
Because of the COVID-19 pandemic, I find it difficult to practice my English. (n=703)	
Strongly disagree	27.3 (192)
Somewhat disagree	16.5 (116)
Neither agree nor disagree	25.6 (180)
Somewhat agree	18.2 (128)
Strongly agree	12.4 (87)
Because of the COVID-19 pandemic, I find it difficult to make friends in Canada. (n=708)	
Strongly disagree	3.1 (22)
Somewhat disagree	12.0 (85)
Neither agree nor disagree	21.9 (155)
Somewhat agree	30.8 (218)
Strongly agree	32.2 (228)
Because of the COVID-19 pandemic, I find it difficult to be exposed to Canadian culture. (n=704)	
Strongly disagree	8.5 (60)
Somewhat disagree	9.7 (68)
Neither agree nor disagree	19.2 (135)
Somewhat agree	36.4 (256)
Strongly agree	26.3 (185)

Table 7.1. Descriptive analysis of variables related to online learning experiences, Nova Scotia International Student (NSIS) Survey, 2020-2021
Note: The total percentage for certain variables does not add up to 100% due to rounding. The rounding does not systematically bias the results.
Source: Nova Scotia International Student (NSIS) Survey, 2020-2021.

Mode of course delivery

The findings from both the survey and the focus group interviews showed that although a significant proportion of international students' courses were delivered fully online, there were several who were enrolled in hybrid/blended courses. At the time of the survey, 71% of the international students from our survey responded that their courses were being delivered fully online, followed by 27.3% enrolled in hybrid/blended courses, and 1.7% that responded that their courses were being delivered "in-person/other" (table 7.1). The sample characteristics of the focus group participants were somewhat consistent with the survey. At the time of the focus group interview, 61% of the participants responded that all their classes were delivered completely online, 26% responded that it was being delivered in a combination of in-person and online (hybrid/blended), and less than 2% responded that all of their classes were being delivered in-person. About 11% did not disclose the mode of course delivery at their institution.

Relationships with professors in the online learning environment

To a survey question that asked whether online learning has made it difficult for them to communicate with their professors, 31% responded that they strongly agree and 33% responded that they somewhat agree (table 7.1). Similar to the survey findings, several of our focus group participants also shared that the sudden transition to online learning was accompanied by challenges in communicating with their professors. For some, these communication challenges were difficulties that international students experienced in articulating their inquiries and questions via email (e.g., challenges in asking clarification questions for course materials).

For the first few weeks, I just really struggled with it. I had a lab, which involved so many small details to it, and is really hard to ask (my questions) through emails. Like you kind of just like, you really have to see

what's on the screen to figure out (on your own) what is wrong or right. (*James, pilot focus group*)

There were several participants who felt that they received inadequate resources or support from some of their professors, and they expressed frustration that they had to navigate the online learning themselves by reviewing the course materials on their own.

I know for one of my classes, the professor didn't even have any classes. And she didn't post any material. (*Akeem, focus group 3*)

There were a few courses where I felt like I did not have the adequate support from the professor. It felt like I was self-teaching the course to myself, because he just told us to purchase the textbook and he just gave us assignments. And he did not put any lectures or course notes or anything. So that is what has been really difficult. (*Michie, focus group 5*)

As online learning was also an abrupt change for professors, it seemed that there were inconsistencies in the quality of the courses being delivered online. In contrast to the above experience shared by the participants like Akeem and Michie, there were several other participants who shared about the increased workload during the pandemic. It was discussed that some professors tried to compensate for the lack of in-class experience with more deliverables (e.g., more assigned readings, weekly quizzes, and ongoing discussion forums), which made the course workloads overwhelming for many.

I kind of agree about the online school, I think the professors are trying to overcompensate with everything. . . . You have things to do before class, things to do after class. (*Emma, focus group 4*)

Right now, this semester has been quite crazy because of the way the professors have designed the system. They give assignments almost every day, and it feels

like the professors are unaware that you have other classes or other work to do. . . . So, I feel like that really affects our mental health. (*Michie, focus group 5*)

It's kind of sad because my university is famous and renowned for small size classroom which university students can communicate with their professors. But during the COVID pandemic, it seems like it's challenging for me and for all the international students to communicate with their professors and with the classmates. . . . It just like feels suddenly stopped, paused. And they're extremely different from my previous experience when I was taking in-person classes before the pandemic. (*Cory, focus group 3*)

These statements are consistent with recent studies that revealed how the overall academic workload increased for students during the pandemic, and that students spend more time completing their coursework in the online setting (Maqableh and Mohammad 2021; Al-Kumaim et al. 2021). These findings also relate to prior research that was conducted pre-pandemic, which discussed how online education benefits students by providing greater accessibility and flexibility, but how it also creates an environment where burnout and stress becomes more prevalent as the classes often do not have fixed schedules (Clark 2003; Heo and Han 2018).

Relationships with peers in the online learning environment

As mentioned above, the lack of in-person interactions not only seemed to hinder the student's communication with their professors, but also their ability to interact and build social relationships with their peers. Our survey asked whether online learning has made it difficult for them to communicate with classmates, and 48% responded that they strongly agree and 28% responded that they somewhat agree (table 7.1). A similar experience was also shared among the focus group participants.

And you know, like sometimes, you just sit in class and ask your colleague sitting next to you, oh how do you solve this problem? In an online environment, that doesn't happen. And when it happens, like, it's a really rare event, like, in some classes. (*Matt, focus group 1*)

The challenges with peer communication were particularly difficult for international students as many relied on in-person classes to make friends in a new country. However, with the transition to online learning, there are no "water cooler" conversations among classmates to help them broaden their social network and also be exposed to Canadian culture.

It is kind of difficult (to make friends) because as soon as the Zoom classes finish, everybody just leaves. And you don't have somebody to ask for help, unlike as if you were in actual classes, but yeah, it's different. (*Shaylah, focus group 7*)

Because of the pandemic, we couldn't get really close to our classmates because we are having all the courses online. So, I feel that it is harder for me to immerse myself into Canadian culture and network. (*Sunny, focus group 8*)

As previous studies (Haigh 2004; McManus, Dryer, and Henning 2017; Zembylas 2008) noted, our research participants also shared that they find it more difficult to develop relationships with peers in the online learning environment. In such contexts, international students may particularly be more susceptible to social isolation and disconnection from peers.

Challenges specific to international students

Several of our focus group participants, as mentioned in the quote above, shared that the online nature impeded their ability to experience Canadian culture and make local friends. The descriptive results from the survey also reported similar findings, revealing that international students experienced difficulties in: (1) practicing

English, (2) being exposed to Canadian culture, and (3) making friends in Canada (table 7.1). Approximately 31% responded that they somewhat or strongly agree that it is difficult to practice their English because of the COVID-19 pandemic. To a question asking whether they find it difficult to be exposed to Canadian culture because of the COVID-19 pandemic, 62.7% responded that they somewhat or strongly agree. Further, 63% responded that they somewhat or strongly agree that they have a difficult time making friends in Canada because of the COVID-19 pandemic. Although these survey questions did not specifically ask whether these difficulties were related to online learning, the qualitative findings from the focus group interviews provided insights that this might be related to the lack of interaction with their professors and peers due to the online transitions. Overall, our findings revealed that online learning provides insufficient opportunities for international students to be exposed to Canadian culture and environments where they can practice their English and establish new social networks. Such context may negatively impact their higher education experiences, and also have implications on their health and well-being.

Health and well-being of international students during the online learning transition amid the COVID-19 pandemic

Mental health and psychological well-being

We asked international students questions about their mental health and experiences of stress. With respect to mental health, about 38% rated their current mental health as “good/excellent,” with 31.5% who rated as “average,” and 30.9% who rated as “terrible/poor.” For experiences of stress during the pandemic, the findings from the survey indicate that 80.3% of the survey respondents are experiencing “more stress now” compared to before the pandemic (table 7.2).

Variables	% (n)
How would you rate your current mental health? (n=693)	
Terrible	8.7 (60)
Poor	22.2 (154)
Average	31.5 (218)
Good	26.6 (184)
Excellent	11.1 (77)
Compared to before the COVID-19 pandemic, do you experience more stress now? (n=697)	
Yes	80.3 (560)
No	17.4 (121)
Prefer not to say	2.3 (16)
How would you rate your current physical health? (n=695)	
Terrible	1.4 (10)
Poor	8.5 (59)
Average	32.5 (226)
Good	38.3 (266)
Excellent	19.3 (134)
How would you rate your current physical activity involvement? (n=694)	
Terrible	9.1 (63)
Poor	26.8 (186)
Average	28.1 (195)
Good	25.4 (176)
Excellent	10.7 (74)

Table 7.2. Descriptive analysis of variables related to health and well-being, Nova Scotia International Student (NSIS) Survey, 2020-2021
Note: The total percentage for certain variables does not add up to 100% due to rounding. The rounding does not systematically bias the results.
Source: Nova Scotia International Student (NSIS) Survey, 2020-2021.

From the focus group interviews, it was evident that some of our participants were going through a challenging time and experiencing various psychological stressors accompanying the online transition and navigating the changes to the different ways of learning. One of the frequently recurring topics during our focus group discussions was the increased levels of stress, anxiety, and depression that they experienced in the online learning environment.

So I feel like it has taken a toll on me, because I don't have as much time to do what I want to do. . . . I find myself to be more anxious now than I used to be prior to online learning. So, I think that's how it has affected me. (*Michie, focus group 5*)

We can only go to classes online—all the discussions, and all the projects, that we need to do . . . Everything online. All of sudden, I feel like my life had a lack of that human touch. . . . So, I was kinda very depressed at that moment. We changed a lot because before COVID, there was lots of supports in school and you can easily see your professor and reach out to people. But after COVID, everything is on the internet. (*Lola, focus group 6*)

Change can be hard for many to deal with, and it can negatively influence one's overall psychological well-being, even more so when it is abrupt and unexpected. This sentiment was expressed by several participants from the focus groups. A frequently emerging theme was study-related burnout, as the participants discussed academic challenges they experienced. More specifically, they mentioned lack of motivation and diminishing productivity that accompanied their online learning experiences.

I find it really hard to focus on online learning because especially like, if you have something like calculation, you prefer it to be like in class. Um, it is especially difficult when you're looking at a screen for like ten

hours a day, because I have like assignments due every day. And then I'm also working. So, uh, when you look at a screen for too long, you tend to get tired. So that also affects like your ability to focus. So that's what I find really challenging about the online classes. (*Michie, focus group 5*)

I can notice that my productivity in the college when I go [to in-person classes], it is way better. Way better than when I am at home. (*Matt, focus group 1*)

I find it can be stressful, of, like sitting in the family computer for, like, a really long time and just seeing the screen. (*Yanquin, focus group 1*)

The findings revealed that making such rapid adjustments and navigating the online learning environment had a significant impact on students' mental health and well-being. Nonetheless, several participants also showed resiliency and quickly adapted to the changes.

For the first few weeks I just really struggled with it. . . . I think I'm getting used to it now, but, looking back at September, it was pretty difficult. . . . It also ties up with disciplines too, right. Like you try to keep a habit, but then, you know, just one day you mess it up and, and just kind of have to build it up again. (*James, pilot focus group*)

So, this [online learning] was very unique experience for me because I have not attended any classes online previously. . . . Doing everything online was a new thing altogether for me, so I think this was posed as a challenge at first, but as things are progressing, we are adapting to it. (*Maverick, focus group 2*)

[Since the start of online classes] I feel like it's much harder because there's so much information. I just

cannot used to it, and I feel a lot of stress with a lot of homework and those stuff. But then, I use meditation to relax myself, calm myself down and then remove the stress. (*Jenny, focus group 7*)

Our findings resonate with a few recently published studies that revealed how a growth mindset helped college students to be more engaged in online learning during the pandemic (e.g., Zhao et al. 2021). In another study, Parpala et al. (2021) also showed that less organized and less reflective students were more likely to experience exhaustion from online learning and were more susceptible to study-related burnout. As these studies have also suggested, providing more sufficient academic support and guidance on how to improve study practices (e.g., time management skills and self-efficacy) is recommended for preventing study-related burnout among students who struggle academically.

Physical health and well-being

In addition to concerns related to mental health and psychological well-being, several participants identified issues with their overall physical health and other lifestyle aspects. According to our survey findings, only about 10% rated their current physical condition as “terrible/poor,” while 32.5% rated as “average,” and 57.6% rated as “good/excellent.” However, our survey data showed that there were significant proportions of respondents (36%) that indicated that their current physical activity involvement was “terrible/poor” (table 7.2).

In analyzing our focus group data, issues related to ergonomics emerged frequently among the participants. Due to the rapid and unexpected nature of the transition from in-person classes to online education, students had to quickly find a workspace at home to continue their online learning. Although this transition may not have been a significant issue for those who already had a proper home workspace, there were several participants who shared various physical issues that emerged due to not having a proper space and lacking ergonomically friendly equipment to study at home. These

issues added further constraints to several of our participants' physical health and impeded their productivity and academic performances.

Working from home was a big challenge for me. It felt like my productivity had gone down, because you know, I didn't have a good office in my house. I didn't have a good table or chair or anything like that and even having, like an ergonomic set-up. So I kind of like, started getting body pains too. I started overextending my hands and my shoulders to use keyboard and mouse without a proper table so those were my biggest challenges. (*Natash, focus group 4*)

Ergonomics . . . I was not paying attention to this before. August, September, October was all OK. In November, I started having problem [circulation problem for hands and feet] and it took a while to understand what is happening, so now I'm really aware that I need to watch out. We bought a new [ergonomic] chair. I had late assignments because of this problem in my hands, so the consequences were not only physical. I also got school work piled up. (*Isabella, focus group 7*)

Beyond ergonomic issues, several of our focus group participants shared that their physical activity involvement significantly diminished during their online learning. However, this was somewhat interrelated to the pandemic situation as a whole (e.g., closure of gym facilities, limited activities and gathering due to stay-at-home order).

For physical health . . . I feel like with the pandemic, it's hard for me to go out. First, I don't have reason to go out, I don't work, and it's all online course now. So I am just stuck at home all day. . . . But yeah, that kind of affected my physical health and there's not much activity I can do at home. (*Nina, focus group 4*)

I gained weight and the gym is sometimes open, and sometimes it is not. The fact that you have to make an appointment even when it is open—is actually making it less likely and more difficult for me to go. . . . I am also engaged in less outside activity just because it’s winter. (*Eleanor, focus group 8*)

In contrast, there were a few others who shared how they started to exercise more during the pandemic and how it helped them to maintain their mental health and psychological well-being. Grace, for example, shared how she managed her mental health and psychological well-being by continuing to stay physically active:

My physical . . . I did some running with my roommate, yeah but I did mainly “at-home” workouts. YouTube was like my best friend. . . . And hikes as well. Not too often, but still like nice like lengthy hikes to get out and clear my mind. (*Grace, focus group 3*)

Interestingly, while some had identified the lack of time due to increased workload involved with online learning, there were others who mentioned how the transition to online learning improved how they manage their health and overall lifestyle by saving them the commute time. Overall, the findings reveal that the physical health, lifestyle aspects, and mental health are all closely interrelated, simultaneously influencing each other and holistically shaping one’s well-being. For example, Jenny discussed:

I don’t have to take too much time to travel to school which is, I guess it saves me a lot of time because my commute was like 45 minutes bus ride. So, now that things are online, there’s a lot of time that I can spend to study, and also extra time for exercise and I trying to do meditation, just like recently now and I think my eating habit is a lot of better, better than before. (*Jenny, focus group 7*)

While the challenges related to online learning had a notable influence on international students' physical health and well-being (e.g., ergonomic issues, taking time away and energy to manage a healthy lifestyle due to increased workload), it was evident that the direction of this relationship could also be reversed. As outlined in the findings from this chapter, health issues (both physical and mental) could also, in turn, hinder students' higher education experiences and academic performances.

Conclusion

Making such rapid adjustments and navigating the sudden transition to the online learning environment amid the pandemic had a notable impact on the health and well-being of postsecondary students (Statistics Canada 2020). Nonetheless, there was relatively little research that specifically focused on international students' experiences. In addressing such a gap, this chapter aimed to provide a better understanding of the online learning experiences of international students during the COVID-19 pandemic, and what implications this had on their physical and mental health and well-being.

In sum, a confluence of factors shaped international students' online experiences. Not only did international students in our study experience greater challenges in communicating with professors and interacting with peers (often due to exacerbated challenges related to language and cultural barriers), the abrupt transition to online learning also created an environment that made it more difficult for them to practice their English, establish local social networks, and be exposed to opportunities to learn more about Canadian culture. In addition, our findings revealed that various challenges related to online learning (e.g., diminishing motivation and productivity) were accompanied by various mental health and psychological issues (e.g., burnout, depression, anxiety). Furthermore, the unexpected shift to an online learning environment also had implications on students' physical health. Our findings identified issues related to ergonomics and the sedentary lifestyle (e.g., diminished physical

activity involvement). Although some students demonstrated resilience to such a challenging situation, it is important for institutions and policymakers to consider response strategies that can be more inclusive to international students' specific needs, to ensure the successful academic life and well-being of the international population amid the pandemic.

The transition to online education was necessary, and the institutions had to adapt quickly, however it is of utmost importance that at-risk student populations, like international students, have sufficient access to resources to ensure their mental and physical health and their overall well-being. Past studies show evidence that migrants (including international students) are more likely to experience barriers in accessing health and wellness resources (Ra 2016; Dombou et al. 2023). This is problematic, given the effectiveness of social support resources (Kristiana et al. 2022; Ra 2016). Our findings provide valuable insights that can be utilized by relevant stakeholders to implement adequate response strategies that go beyond the "one-size-fits-all" approach, with plans specifically tailored to offer better support and resources for international students. Notably, an inadequate response to the needs of international students during these difficult times may adversely affect future recruitment and retention rate in Canada, and Nova Scotia in particular. This is an issue that must be considered, given international students' contribution to Canada's economy and to the diversity of our higher education system. For example, Monterio (2020) recently identified the vital role of international students in Canada's post-COVID recovery plan. This is not a surprise, considering that international students contributed about \$21.6 billion to Canada's GDP in 2018 (Government of Canada 2019).

Recommendations and Implications

Prior to the pandemic, research had explored how to alleviate the challenges that students were facing in online learning, and what should be implemented to ensure student success within an online environment. When considering the current state of higher

education, and the number of institutions that had to integrate to online learning during the pandemic, institutions would benefit from understanding the core literature that already exists. First, ensuring that courses are designed adequately, are easy to navigate, and are engaging to students will help flatten learning curves (Hill 2002; Hooper and Rieber 1995; Song et al. 2004). As there are many personal adjustments that were made by students during the COVID-19 pandemic, ensuring that the courses are designed and delivered in an impactful way will alleviate stress and allow the students to be successful. Second, implementation of time management strategies within courses is a way to ensure that students can interact with the course materials more effectively (Hill 2002; Tabvuma et al. 2022), and that they can even gain an important life skill useful beyond their academic life. Most importantly, the university should ensure that international students have resources and opportunities to connect to peers, instructors, and the campus. Such resources will stimulate their campus engagement and sense of belonging to the university (Kim, Liu, and Bonk 2005; Slaten et al. 2018; Song et al. 2004).

Even though our sample was restricted to international students in Nova Scotia, our study provides a better understanding of the online learning experiences and the needs of international students, as well as its implications for their mental and physical well-being. Focusing on Nova Scotia as our research context also allowed for a diverse pool of participants, as well as a better understanding of the experiences of those in mid-sized Canadian cities. Nevertheless, we would like to note that we are unable to generalize our findings. One of the limitations of our study is that we are unable to speak to the experiences of domestic students or international students in other Canadian provinces. That being said, future research could also consider the experiences of other domestic students in Nova Scotia or international students across Canada for more comparative insights. Moreover, consideration should be given to recognizing the heterogeneity of the international student population. Further consideration of how their experiences may further vary by various socio-demographic characteristics (e.g., gender, country of origin,

socioeconomic status, age of arrival and more), may also be a valuable direction for future research.

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