International Education Studies; Vol. 15, No. 3; 2022
ISSN 1913-9020 E-ISSN 1913-9039
Published by Canadian Center of Science and Education

The Impact of the COVID-19 Pandemic and Transition to Distance Learning on University Faculty in the United States

Melvina Brandau[1], Marjorie Vogt[2] & Mary Lou Garey[2]

[1] School of Nursing, Ohio University, Athens, Ohio, USA

[2] School of Nursing, Ohio University, Dublin, Ohio, USA

Correspondence: Melvina Brandau, School of Nursing, Ohio University, Athens, OH, USA, 45671. Tel: 1-740-597-9016. E-mail: brandaum@ohio.edu

Received: January 3, 2022 Accepted: March 6, 2022 Online Published: May 4, 2022

doi:10.5539/ies.v15n3p14 URL: https://doi.org/10.5539/ies.v15n3p14

Abstract

Background: The unexpected COVID-19 pandemic impacted not only students at institutions of higher learning, but also faculty who often made rapid transitions from face-to-face to online or distance learning. Distance learning has been shown to negatively impact college students' physical activity, screen time, and mental health concerns. Little is known, however, about the transition and impact of the pandemic and distance learning on university faculty. *Purpose:* The purpose of this study was to examine the impact of the rapid transition from traditional face-to-face teaching methodologies to distance learning on professional quality of life, physical activity, screen time, and anxiety and depression among faculty. *Methods*: A descriptive survey design with snowball sampling, was used to collect data anonymously, online. An electronic survey was developed to explore professional quality of life, physical activity, screen time, anxiety, and depression. *Results:* The COVID-19 pandemic and subsequent rapid transition of teaching and learning methodologies impacted not only students, but faculty at institutions of higher learning. Most faculty indicated concerns with their professional quality of life, putting them at moderate risk of burnout. A negative correlation between leisure time and anxiety or depression was found as well as a positive correlation between increased screen time and depression. *Conclusion*: Increased screen time and decreased physical activity or leisure time may contribute to increased faculty burnout, depression, and anxiety. University administration may need to consider strategies to help faculty cope with transitions to unfamiliar teaching methodologies and self-care behavioral changes to avoid faculty dissatisfaction and disengagement.

Keywords: university faculty, COVID-19, sedentary activity, mental health, screen time, distance learning

1. Introduction

1.1 An Unexpected Transition

The unexpected COVID-19 pandemic caused significant changes in lifestyle, activity, and habits. March 2020 will forever be known in the education community as the time in which "…the world's schools shut their doors" (Winthrop 2020, para. 1). In response to pandemic closings, educators were required to shift gears rapidly from traditional, face-to-face teaching methodologies to synchronous and asynchronous virtual instruction. This required significant lifestyle changes not only for students, but for faculty as well, and likely contributed to negative outcomes related to sedentary behavior and poor mental and emotional health.

1.2 Transition Stressors

Educators' tendencies to care about student learning experiences did not change during the sharp transition from traditional to online teaching practices. Interactions with students were often more limited which may have impacted faculty satisfaction (Jones and Kessler 2020). Faculty also noted the transition required increased responsibilities related to working at home such as establishment of a home office, less transition between work and home life, and at times, increased responsibilities and distractions related to home-based education and caregiving for children. Physical stressors reported included decreased overall physical and mental well-being associated with physical exercise, food intake, and lack of spontaneous communication with coworkers (Xiao, Becerik-Gerber, Lucas and Roll 2021). Sleep cycle disruption, depression, and anxiety were also noted in both students and university employees (Marelli et al., 2021).

1.3 Unfamiliar Technology

In addition, the vast majority of faculty felt unprepared to use distance delivery methodologies at the time of this crisis (Hodges, Moore, Lockee, Trust, & Bond 2020; O'Keefe, Rafferty, Gunder, & Vignare, 2020). Navigating the wide array of technological platforms being relied upon for telecommunications (such as Zoom, Skype for Business, and Microsoft Teams) provided an additional stress during this everchanging time. University administration may have wanted to promote the image of the university as a technologically advanced organization, but there was some dissatisfaction with distance education on the part of students and faculty, increased workload issues for faculty and support staff, and changes in not only boundaries between faculty and students but in the acquisition of knowledge and time spent in learning related to distance methodologies (Vinichenko, Vinogradova, Nikiporets-Takigawa, & Rybakova 2021).

1.4 Hypotheses

The pandemic and subsequent lock-down and stay-at-home orders required new ways of thinking, learning, and interacting, especially in the world of higher education. Although there has been some preliminary work done on the impact of these changes, less is known about the impact of the pandemic on the faculty who had to rapidly transition to alternative teaching and communication methods. The authors hypothesized that this transition would result in reduced physical activity and increased screen time and have a negative impact on quality of life and mental health. We aimed to quantitatively describe these changes and associations through widely recognized, validated instruments of measurement that were combined in one comprehensive, electronic survey.

2. Literature Review

2.1 Search of the Literature

A comprehensive literature search was undertaken in databases including PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Google Scholar using key search words of faculty teaching, online education, distance learning, and stress and teaching. The search revealed over 1,000 journal articles and further limitations were applied including published within the past five years, in peer-reviewed journals, in English, and focusing on faculty impact. Abstracts were then reviewed to include less than 50 articles. However, few focused specifically on the impact of the international pandemic on university faculty. Most of the articles described the lived experience of students during the pandemic, with few randomized controlled trials available for review.

2.2 Transitioning from Classroom to Distance Learning and Impact on Students

One of the key aspects of the pandemic and subsequent lockdown was the rapid transition from traditional face-to-face classrooms to online or distance learning experiences. Electronic learning, often used interchangeably with distance learning, online learning, or remote learning, is typically done in a synchronous or asynchronous fashion with faculty directed guidance and educational opportunities provided for the students. Online and distance education often involves increased screen time on the computer, rather than meeting in a face-to-face classroom setting. Increased screen time for students has resulted in a more sedentary lifestyle, which may lead to increased physical health risks such as obesity, back or joint pain, deterioration of muscle strength and other chronic conditions such as cardiovascular issues and metabolic syndrome (Carballo-Fazanes et al., 2020; Colley, Bushnik, & Langlois 2020; Eanes, 2018; Lurati, 2017; Meyer et al., 2020; Zheng et al., 2020). In addition, the increased sedentary lifestyle and isolation associated with distance learning may result in stress, anxiety, loneliness, and other mental health concerns (Araujo, deLima, Cidade, Nobre, & Neto 2020; Lee & Kim 2019; Weinstein, Koehmstedt, & Kop, 2017).

2.3 Transitioning from Classroom to Distance Learning and Impact on Faculty

Although less literature has focused on the impact of the rapid transition to distance learning on faculty, faculty nonetheless face challenges. Some faculty may have used distance education as a supplement to traditional face-to-face classes but may have been ill-prepared to move to a totally online format; others may have been completely unfamiliar with online teaching methods. With closure of some university campuses and "work-from-home" orders, some faculty ended up juggling academic responsibilities, home or personal responsibilities and changes in boundaries related to student-faculty interactions. This may have resulted in increased anxiety and depression for faculty, a sense of being overwhelmed, powerlessness, fatigue, vocal disorders, or even sadness (Besser, Lotem, & Zeigler-Hill, 2020; Garcia, Paraiso, Sy-Luna, & Larano, 2021; Sahu 2020; Van Leeuwen, Veletsianos, Johnson, & Belikov, 2021). Work-life balance and boundaries became more blurred, family-work conflicts became more frequent and additional stress was reported in not only faculty but school administrators (Karakose et al., 2021). With closure of campuses, in some instances, there was less

technology or administrative staff available to help faculty make the transition to online learning which may also result in increased faculty stress (Johnson, Veletsianos, & Seaman, 2020; Sahu, 2020).

2.4 Impact of Pandemic Distance Learning on Physical Activity and Stress

In addition to the technology concerns associated with transition of teaching and assessment methodologies, there has been some work noted in the aspect of physical activity among university students and staff, although not specifically related to faculty. The link between physical activity and reduction of stress or anxiety is well-known, but less is known about the physical activity and stress of the university faculty member. There has been some preliminary work noting that university employees with high levels of physical activity prior to the pandemic tended to decrease their physical activity during the pandemic, and employees with low or moderate levels of physical activity prior to the pandemic, tended to increase their physical activity (Barkley et al., 2020). Previous studies on physical inactivity and sedentary behaviors in university employees have indicated that most university employees spend much of their day (75%) seated (Fountaine, Piacentini, & Liguori, 2014). Sedentary behavior has been positively associated with stress in university students but has not been well examined in university faculty (Savage et al., 2020). Faculty transitioning from a lecture in a classroom setting or laboratory, where standing for longer periods of time or walking around the classroom, to a video-conferencing sedentary setting could also result in a change in physical activity. Distance learning methodologies require additional screen time for synchronous or asynchronous sessions, office hours, and responding to student concerns. Stress associated with changing rapidly to a new or unfamiliar teaching methodology may also have an influence on faculty's perceived quality of life, anxiety, and depression.

2.5 Purpose

The purpose of this descriptive study is to examine the impact of the pandemic transition to distance learning on university faculty quality of life, physical activity, screen time, anxiety, and depression. This study sought to answer the following research questions: 1) Do faculty report a change in physical activity with the move from in-person to distance learning? 2) How many hours of screen time (active and background) do faculty report, by device and by day of the week and time of day, during the COVID-19 lockdown? 3) What are faculty reports of burnout, compassion, anxiety, and depression during the COVID-19 lockdown and use of distance learning modalities? 4) What is the association between faculty leisure time activity and reports of anxiety and depression? 5) What is the association between faculty's active and background screen time use and reports of anxiety and depression? This will add to the body of knowledge related to the impact of the COVID-19 pandemic, as well as the impact of distance learning, on university faculty.

3. Methods

3.1 Procedures

University faculties were recruited through social media, direct email, and personal communication using a snowball technique. Email flyers were sent to faculty contacts, chairs, and deans or directors at 70 academic institutions across the United States, requesting participation and encouraging faculty to forward the invitation to other potential faculty participants. Within the flyer was a QR code and clickable link to the anonymous Qualtrics online survey. The survey began with a description of the study and participants were given the option to accept or decline consent to participate. If the participant selected no, the survey ended. Participation was strictly voluntary, and participants were able to opt out of participation at any time. Participants were given the option to include their name and email address for entry into a random drawing for one of five $50 Amazon gift cards, funds which were provided by the authors' employing college. Upon choosing to enter the drawing, participants were provided with a separate Qualtrics survey to ensure that responses were not connected to the participant. Human subjects' protection was affirmed through the University institutional Review Board process.

3.2 Sample

There were 336 participants in this study; however, 32 responses were missing all or more than five answers so were excluded from analysis, resulting in 304 total participants. Most participants in this study were female (219 females; 84 males; 1 non-binary). More than half of participants (61.1%) were between the ages of 45 and 64 years old and nearly 8% (n=23) were older than 65 years. Recent statistics indicate the median age of tenure-track faculty in the United States is 41.5 years, with 23.8% of faculty being 55 years or older (United States Department of Labor, Bureau of Labor Statistics, 2021), much younger than the 2018 mean faculty age of 49 years (McChesney & Bichsel, 2020). Positions were split evenly between tenure/tenure-track and non-tenure-track faculty, with a small number of faculty (n=11) from a non-tenure granting institution. Demographic data related to race/ethnicity and socio-economic status was not collected. Additionally, most participants reported working more than 40 hours

per week, with 9% working more than 60 hours weekly.

3.3 Survey Measures

An anonymous, online survey was developed using Qualtrics. Upon acceptance to participate, the participant began the survey with demographic questions related to gender, age, tenure status, and the number of hours worked weekly, so that researchers could adequately describe the final sample. The remainder of the survey was created by combining questions from the Professional Quality of Life Scale, the Physical Activity Questionnaire, the Screen Time Questionnaire, the Patient Health Questionnaire, and the Generalized Anxiety Disorder Scale. Details for each instrument, including reliability and validity as well as any adaptations to an instrument, are described below.

3.3.1 Professional Quality of Life

An adapted Professional Quality of Life (ProQOL) Scale (Stamm, 2010) was used to examine compassion satisfaction, compassion fatigue, and burnout in university faculty. Compassion satisfaction is the pleasure derived from completing one's work well. The Compassion Satisfaction Scale (CSS) has a reliability of α=0.88. Burnout is an element of compassion fatigue that is associated with feelings of hopelessness and frustrations with work. High scores on the Burnout Scale (BOS) indicate a higher risk for professional burnout. The CSS has a reliability of α=0.75 and has been used extensively, across diverse populations. As faculty typically do not work in a role of "helper" with students who are reporting trauma (the students are typically referred to counseling services) the elements of the Secondary Traumatic Stress Scale were not included.

3.3.2 Physical Activity Questionnaire

A modified Physical Activity Questionnaire (Baecke, Burema, & Frijters, 1982) was used to explore participation in leisure activities that induce sweating, those that include sports, walking, running, and biking, as well as sedentary activities. The test-retest reliability for the leisure-time index is adequate with an intraclass correlation (ICC)=0.74. Participants were asked to evaluate any changes in their physical activity in the previous six months (June 2020-early December 2020), from "no change at all" to "major change".

3.3.3 Screen Time

The Screen-time Questionnaire (Vizcaino, Buman, DesRoches, & Wharton, 2019) was used to quantify participants' use of screen time, including background screen time, on an average weekday, average weeknight, and on one weekend day during the daytime and in the evening. Screen time as a primary activity (watching television, working on the computer, playing video games, etc.) was examined separately from background screen time (using the screen while performing other activities such as exercising, cooking, etc.). ICC results for the various sections of the screen-time questionnaire, including weekday, weeknight, weekend day, and background use and separated by device (television, streaming devices, computer, smartphone, and tablet), were adequate to excellent, ranging from 0.50 to 0.90, except for weekend day smartphone use (ICC= 0.16).

3.3.4 Anxiety

The Generalized Anxiety Disorder 7-item Scale (GAD-7, Spitzer, Kroenke, Williams, & Lowe, 2006) was used to measure the presence of anxiety in participants over the previous 30-60 days. The GAD-7 assesses the presence of feelings of nervousness, worry, irritability, and anxiety, as well as difficulties relaxing. The GAD-7 uses a scoring range of 0 (not at all) to 3 (nearly every day) and categorizes scores of five (mild), 10 (moderate) and 15 (severe) as distinct levels of anxiety. Spitzer et al. (2006) report that the scale has a sensitivity of 89% and specificity of 82%. Numerous studies have validated the tool among various populations (Byrd-Bredbenner, Eck, & Quick, 2021; Johnson, Ulvenes, Oktedalen, & Hoffart, 2019; Teymoori et al., 2020; Zachar-Tirado & Donders 2021) and the GAD-7 has been reported as more likely than other tools in identifying symptom severity beyond threshold (Peters et al., 2021).

3.3.5 Depression

An adapted Patient Health Questionnaire (PHQ-9, Kroenke, Spitzer and Williams 2001) was used to identify the presence of depressive symptoms in participants over the previous 30-60 days. The PHQ-9 is a self-administered questionnaire that scores symptoms of depression on a range of 0 (not at all) to 3 (nearly every day). The tool has a reported sensitivity of 88% and a specificity of 88% for identifying major depression and is reliable in measuring depression severity (Kroenke et al., 2001). The highest possible score on the PHQ-9 is 27, indicating severe depression. Question number six (feeling like a failure) and question number nine (thoughts of being better off dead or hurting oneself) were omitted due to concerns of triggering negative behaviors in an anonymous sample. Thus, the highest possible score on the adapted scale used in this study is 21.

4. Results

Descriptive analyses were conducted to identify changes in physical activity during the pandemic, active screen time (in hours) and background screen time by device and by time of day (weekday, weekday evening hours, one weekend day, and one weekend evening), self-reported scores on the GAD-7 and adapted PHQ-9, and scores on the CSS and BOS of the ProQol. Non-parametric correlation analyses were conducted to explore the relationships between screen time and leisure activity and GAD-7 (anxiety) and PHQ-9 (depression) scores.

4.1 Professional Quality of Life (ProQol)

The mean score on the ProQol Compassion Satisfaction Scale (CSS) was 18.53 (n=304). According to the ProQol Manual (Stamm, 2010), scores below 23 indicate a low level of compassion satisfaction and may indicate a general dissatisfaction with one's job or a derivation of satisfaction from activities outside of work.

The mean score on the ProQol Burnout Scale (BOS) was 31.14 (n=304), indicating faculty had a moderate risk for burnout (scores between 23-41). Stamm (2010) explains that scores below 23 suggest positive feelings about work effectiveness, but higher scores, especially when persistent, indicate a greater risk for professional burnout. Scores ranged widely; nearly 25% of the faculty sample reported a severe BOS of >41. Mean scores are presented in Table 1.

Table 1. Burnout and compassion satisfaction scale scores

Scale	*M*(*SD*)
Burnout	31.14(17.6)
Compassion Satisfaction	18.53(9.4)

Stamm (2010) describes compassion satisfaction as pleasure derived from good work performance and includes having positive feelings towards colleagues and one's personal contribution in the work setting. Scores below 23, as demonstrated in this study, indicate dissatisfaction among university faculty. Burnout, Stamm (2010) goes on to describe, is associated with "feelings of hopelessness and difficulties in dealing with work…" (p. 17) that usually appear gradually. Higher scores on this scale (above 23) indicate a higher risk for professional burnout and were also evident in our findings.

4.2 Physical Activity

Faculty were asked about their change in physical activity in the prior six months, from June 2020 to early December 2020. The majority of faculty (61.2%) indicated a moderate (40.8%) or major (20.4%) change in their level of physical activity since the early summer of the COVID-19 pandemic. Only 9% of participants indicated that there had been no change in their level of physical activity during the previous six months. Frequencies for specific activities during leisure time, using Baecke's Modified Physical Activity Scale for leisure time activity were explored. Faculty reported a nearly even split between those who participate in activities that result in sweating and those who never or seldom sweat during leisure time. A higher number of participants (65.4%) indicated they sometimes or often participate in a sport or physical activity, such as kayaking or golfing during leisure time, and nearly three-fourths of participants reported engaging in walking or running. More than 85% of participants indicated they sometimes or often participate in sedentary activities such as reading, writing, art, or watching television as leisure activities.

4.3 Active Screen Time

Faculty screen time varied greatly with few participants indicating they maintained constant background screen time use. Faculty averaged nine hours of computer screen time use, three hours and 15 minutes of phone screen time, and two and a half hours of television screen time daily during the week (Table 2). Weekend computer screen time diminished by half (mean=4.48 hours), while daily weekend phone screen time remained at more than three hours (Table 2).

Table 2. Weekday active screen time usage

	Weekday	Weekend
Device	**M*(*SD*)	**M*(*SD*)
Computer	9.0(4.3)	4.48(3.9)
Tablet	0.84(2)	0.95(2)
Telephone	3.2(3.3)	3.0(3.1)

*Mean is time usage in hours.

4.4 Background Screen Time

Weekday background screen time was noted at five hours daily, weekday evening background screen time was two and a half hours, weekend and weekend evening background screen time were noted at nearly four hours and nearly three hours, respectively (Table 3).

Table 3. Background screen time by day and evening hours

	Weekday	Weekend
Time of Day	**M*(*SD*)	**M*(*SD*)
Daytime Hours	5.0(4.6)	3.8(3.5)
Evening Hours	2.5(2.5)	2.9(2.8)

*Mean is time usage in hours.

Anxiety

The mean score on the GAD-7 scale, was 6.73. Scores between five and nine are considered mild anxiety, 10-14 is considered moderate anxiety, and scores of 15 or greater are considered severe anxiety. On average, faculty fell in the category of mild anxiety. Roughly 8% (n=25) of participants scored above a 15, placing them in the category of severe anxiety. Nearly 40% (n=121) scored less than five, placing them below the cutoff for anxiety.

A score of one (1) on each question on the GAD-7, corresponds with an answer of “several days”; a score of two (2) corresponds with “more than half the days”; and a score of three (3) corresponds with “nearly every day”. Examining specific questions of the GAD-7, the highest means (scores of 0-3) were found with the following questions: Over the last two weeks, how often have you been bothered by the following problems? 1) Not being able to stop or control worrying (mean=1.82); 2) Feeling nervous, anxious, or on edge (mean=1.14); 3) Becoming easily annoyed or irritable (mean=1.11); 4) Trouble relaxing (mean=1.098); 5) Worrying too much about different things (mean=1.07).

Depression

The PHQ-9 is used for quick assessment screening for depression. The scale indicates a score of two or three on four of the nine questions for an initial diagnosis of depression; major depressive disorder should be considered with a score of two or three on at least five of the nine questions. The highest (worst) score on the PHQ-9 is 27. We used seven out of the nine questions on the PHQ-9. Thus, when deducting the three possible points for each of the two omitted questions, the highest possible score using our adapted scale, is 21. When monitoring the severity of depression over time, the PHQ-9 scores are interpreted as 10-14, moderate depression; 15-19 moderately severe depression; and 20-27 severe depression. Thus, we consider scores of >10 out of 21 points on our adapted scale as especially concerning. The mean score on the adapted PHQ-9, was 6.24. Roughly 21% (n=64) participants scored above 10; 5.9% (n=18) participants scored >15 and four participants scored >19.

A score of one (1) on each question on the PHQ-9 corresponds with an answer of “several days”; a score of two (2) corresponds with “more than half the days”; and a score of three (3) corresponds with “nearly every day”. Examining specific questions of the adapted PHQ-9, the highest means (scores of 0-3) were found with the following questions: Over the last two weeks, how often have you been bothered by the following problems? 1) Trouble falling or staying asleep or sleeping too much (mean=1.24); 2) Feeling tired or having little energy (mean=1.24); and 3) Trouble concentrating on things, such as reading the newspaper or watching television (mean=0.98).

Correlations

Bivariate correlations were used to examine the relationship between variables. Variables did not meet the

assumptions for Pearson's correlation; thus, Spearman's rho was used. Table 4 presents the results of the correlations between leisure time activity and anxiety and depression scores. There is a significant negative correlation between active leisure time activity (activities resulting in sweating, sports, and walking or running) and anxiety and depression scores. There is a significant positive correlation between sedentary leisure activity and anxiety (r=.193; p<.001) and depression (r=.257; p<.001). Not surprisingly, anxiety and depression are significantly and positively correlated (r=.765; p<.001).

Table 4. Correlations for varied leisure time activity and scores on the GAD-7 and adapted PHQ-9

	Sweat Activity	**Sports**	**Walk/Run**	**Sedentary**	**Anxiety**	**Depression**
Sweat Activity	---	.489**	.414**	-.207**	-.088	-.165**
Sports	.489**	---	.534**	-.364**	-.182**	-.300**
Walk/Run	.414**	.534**	---	-.340**	-.172**	-.266**
Sedentary	-.207**	-.364**	-.340**	---	.193**	.257**
Anxiety	-.088	-.182**	-.172**	.193**	---	.765**
Depression	-.165**	-.300**	-.266**	.257**	.765**	---

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5 displays the results of the correlations between screen time use and anxiety and depression scores. There is a small, but positive correlation between weekday screen time (Weekday ST; r=.115; p<.005) and depression scores. There is also a small, but positive correlation between weekend daytime background (Weekday BG) screen time (r=.169; p<.001) and weekend evening background (WE Eve BG) screen time (r=.230; p<.001) and depression, and weekend daytime background (Weekend BG) screen time (r=.141; p<.005) and weekend evening background (WE Eve BG) screen time (r=.177; p<.001) and anxiety.

Weekday daytime background (Weekday BG) screen time was not significantly associated with depression and anxiety scores.

Table 5. Active and background screen time and anxiety and depression

	Weekday ST	Weekday BG	Weekday Evening BG	Weekend Background	WE Evening Background	Anxiety	Depression
Weekday ST	---	.605**	.514**	.566**	.519**	.073	.115*
Weekday BG	.605**	---	.583**	.710**	.533**	.063	.093
WD Eve BG	.514**	.583**	---	.683**	.830**	.167**	.228**
Weekend BG	.566**	.710**	.683**	---	.708**	.141*	.169**
WE Eve BG	.519**	.533**	.830**	.708**	---	.177**	.230**
Depression	.073	.063	.167**	.141*	.177**	---	.765**
Anxiety	.115*	.093	.228**	.169**	.230**	.765**	---

*. Correlation is significant at the 0.01 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

Findings in this project are consistent with preliminary research found in the literature. Stress has persistently been found to have adverse effects on health, regardless of the source of the stress (Katwala, Kulkarni, Guy, Zangaladze, Zak, Stickney, Dubois and Kang 2018). The global pandemic has certainly served as a stressor and has significantly impacted university faculty in terms of their perceived quality of life, physical activity, screen time, and self-reported anxiety and depression related to the rapid transition to remote and distance education. The sudden immersion into this unknown change in lifestyle and work environment contributed to emotional instability and fear of the unknown.

5.1 Physical Activity and Mental Health

The pandemic impacted faculty lifestyles in terms of physical activity, at least initially, as the move to a remote or distance work environment increased the number of hours spent online or in front of a computer. Studies have demonstrated too much sitting is a risk to overall health, and even with participation in physical activity, high-volume sitting (more than seven hours per day) or prolonged periods of uninterrupted sitting may still prove

detrimental (Eanes, 2018). This impact may already be evident in physical changes and aches and pains, while long-term impacts, (physical or psychological) of teaching remotely for more than a year (and the potential for additional remote teaching) may not be seen for some time. In addition to occupational risks of sedentary behavior, Hallgren et al. (2020) reported an association between leisure time sedentary behavior and increased symptoms of anxiety and depression. A 2019 meta-analysis of sedentary behavior and anxiety (Allen et al., 2019) also indicated an association between sedentary behavior and anxiety, and Cooper and Barton (2016) reported an association between low physical activity and lower reports of mental well-being. The results of this study were consistent with those prior studies and demonstrated significant, negative correlations between physical activity and anxiety or depression. Physical activity, as we have known for some time, is good for physical and mental well-being.

5.2 Screen Time and Mental Health

The COVID-19 pandemic prompted significant increases in the use of digital devices, both for work and leisure activity. Digital technologies were helpful in allowing locked down individuals to remain in communication with loved ones and emotionally connected despite travel restrictions and social distancing mandates (Pandya & Lodha, 2021; Wagner et al., 2021). However, prolonged screen time is also associated with varied negative health outcomes, with a strong connection to anxiety and depression. This relationship has been well studied among children, adolescents, and young people with conflicting findings. Tang and colleagues (2021) conducted a systematic review with a reported small relationship between overall screen time and depressive symptoms among young people. Twenge and Campbell (2018), however, reported lower psychological well-being with screen time use more than four hours daily among adolescents. The relationship between screen time and mental health in adults has not been as thoroughly examined, but Madhav et al. (2017) and Yu et al. (2019) demonstrated an association between higher levels of depression and increased time watching television and using a computer. This study is consistent with prior work indicating potential negative outcomes associated with increased screen time, demonstrating a significant positive correlation between increased screen time and anxiety or depression. In turn, anxiety and depression may overlap with burnout, though researchers have not made a clear connection and the question remains as to how to distinguish between the three concepts (Bianchi & Brisson, 2017; Bianchi et al., 2015). Further studies are needed to examine these constructs.

5.3 Burnout

Burnout, simply put, is "work that demands continuous, long-term physical, cognitive, or emotional effort" (Gewin, 2021, p. 489). Regarding COVID-19 and its impact on academia, students have been considered as the most affected, due to family illnesses, financial challenges worsened by unemployment or reduced hours, and social isolation (Leigh & Edwards, 2021). Educators, however, have been greatly impacted as well; this has been especially studied among K-12 educators. In higher education, the challenges are similar, with faculty experiencing difficulties in work-life balance, increased workload, and a lack of resources or limited knowledge of new technology. Further potentiating the risk for burnout is emotional exhaustion. Educators have previously demonstrated compassion fatigue, citing pressure to provide emotional and mental health support to students (Lindecker & Cramer, 2021) as well as conditions for work effectiveness (Ruth-Sahd & Grim, 2021) as contributing factors. Many faculty members in this study indicated dissatisfaction with their job and about one-fourth of the faculty were at risk for burnout. Some weariness may have been present prior to the pandemic, but isolation from colleagues, students, and family and friends, may have hastened these feelings. This can contribute to burnout and reduced self-efficacy (Koutsimani et al., 2019), which may result in additional stress, anxiety, and depression, and become a vicious cycle. Additionally, and as expected, this study demonstrated that anxiety and depression were strongly, positively correlated.

6. Limitations

The study was limited using self-reported data and a greater representation of female faculty than what is in the general faculty population. A higher number of female participants, with a higher likelihood than men of being diagnosed with depression (Mayo Clinic, 2022), may have influenced depression scores. Additionally, data analysis focused on descriptives and correlations and did not explore comparisons of multiple variables plus interactions or relationships between variables considering biological sex, age, hours worked weekly, and faculty position. It is possible that self-reported anxiety, depression, and burnout may have been increased among certain subsets of the sample, particularly those who are working more hours and may be less experienced. The authors acknowledge these limitations, but strongly believe that the findings of this study add to the literature on the impact of the COVID-19 pandemic, and particularly the rapid shift to distance learning, on university faculty.

7. Conclusion

The COVID-19 pandemic created new challenges for many people including increased family-work conflicts,

changes in work-life balance, virtual communication, and new ways of conducting daily business. Although educational research has examined the impact of the pandemic on university students, less was known about the impact on university faculty who had to undergo rapid transitions from in person classroom teaching methodologies to remote, distance education, resulting in a more sedentary lifestyle.

Results of this study, as well as those identified in other studies (Dhawan, 2020; Kelly, 2020; Lederman, 2020) indicate that the pandemic caused a change in physical activity resulting in a more sedentary lifestyle, a blurring of work-life boundaries, decreased feelings of professional competence, and some decrease in perceived professional quality of life that may indicate early burnout. As consistent with prior studies, (Allen et al., 2019; Cooper & Barton, 2016; Hallgren et al., 2020) decreased physical activity was positively associated with increased stress and anxiety. These findings are also consistent with similar studies that examined the impact of the pandemic on students. Further research is needed to determine the extent of the pandemic on faculty's perceived quality of life, stress and anxiety, and possible burnout, particularly over the long term. Mediating strategies to help faculty improve their quality of life through positive coping mechanisms, additional training in technology, and other aspects have not yet been identified. Although this small descriptive study adds to the body of literature on the impact of the pandemic in academia, additional work is critical to promote a high quality of life in university faculty and provide university administration and faculty with effective evidence-based resources to ameliorate the stress related to this unexpected crisis.

References

Allen, M. S., Walter, E. E., & Swann, C. (2019). Sedentary behaviour and risk of anxiety: A systematic review and meta-analysis. *Journal of Affective Disorders, 242*, 5-13. https://doi.org/10.1016/j.jad.2018.08.081

Arujo, F., deLima, L., Cidade, P., Nobre, C., & Neto, M. (2020). Impact of Sars-Voc-2 and its reverberation in global higher education and mental health. *Psychiatry Research, 288*, 1-2. https://doi.org/10.1016/j.psychres.2020.112977

Baecke, J. A., Burema, J., & Frijters, J. E. (1982). A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *American Journal of Clinical Nutrition, 36*(5), 936-942. https://doi.org/10.1093/ajcn/36.5.936

Barkley, J. E., Lepp, A., Glickman, E., Farnell, G., Beiting, J., Wiet, R., & Dowdell, B. (2020). The acute effects of the COVID-19 pandemic on physical activity and sedentary behavior in University Students and employees. *International Journal of Exercise Science, 13*(5), 1326-1339. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7523895/

Besser, A., Lotem, S., & Zeigler-Hill, V. (2020). Psychological stress and vocal symptoms among university professors in Israel: Implications of the shift to online synchronous teaching during the COVID-19 pandemic. *Journal of Voice*, 1-8. https://doi.org/10.1016/j.jvoice.2020.05.028

Bianchi, R., & Brisson, R. (2017). Burnout and depression: Causal attributions and construct overlap. *Journal of Health Psychology, 24*(11), 1574-1580. https://doi.org/10.1177/1359105317740415

Bianchi, R., Schonfeld, I. S., & Laurent, E. (2015). Burnout-depression overlap: A review. *Clinical Psychology Review, 36*, 28-41. https://doi.org/10.1016/j.cpr.2015.01.004

Byrd-Bredbenner, C., Eck, K., & Quick, V. (2021). GAD-7, GAD-2, and GAD-mini: Psychometric properties and norms of university students in the United States. *General Hospital Psychiatry, 69*, 61-66. https://doi.org/10.1016/j.genhosppsych.2021.01.002

Carballo-Fazanes, A., Rico-Diaz, J., Barcala-Furelos, R., Rey, E., Rodriguez-Fernandez, J.E., Varela-Casal, C., & Abelairas-Gomez, C. (2020). Physical activity habits and determinants, sedentary behavior and lifestyle in university students. *International Journal of Environmental Research and Public Health, 17*(9), 3272-3287.https://doi.org/10.3390/ijerph17093272

Colley, R.C., Bushnik, T., & Langlois, K. (2020). Exercise and screen time during the COVID-19 pandemic. *Health Reports, 31*(6), 3-11. https://doi.org/10.25318/82-003-x202000600001-eng

Cooper, K., & Barton, G. C. (2016). An exploration of physical activity and wellbeing in university employees. *Perspectives in Public Health, 136*(3), 152-160. https://doi.org/10.1177/1757913915593103

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems, 49*, 5-22. https://doi.org/10.1177/0047239520934018

Eanes, L (2018). Too much sitting: A newly recognized health risk. *AJN, 118*(9), 26-34.

https://doi.org/10.1097/01.NAJ.0000544948.27593.9b

Fountaine, C., Piacentini, M., & Liguori, G. (2014). Occupational sitting and physical activity among employees. *International Journal of Exercise Science, 7*(4), 295-301. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4831850/

Garcia, R., Paraiso, L., Sy-Luna, G., & Larano, L. (2021). Impact of COVID 19 pandemic on work- related stress among university faculty: A longitudinal study. *International Journal of Recent Advances in Multidisciplinary Research, 8*(4), 6725-6728. Retrieved from https://www.researchgate.net/publication/351245324_IMPACT_OF_COVID19_PANDEMIC_ON_WORK-RELATED_STRESS_AMONG_UNIVERSITY_FACULTY_A_LONGITUDINAL_STUDY

Gewin, V. (2021). Pandemic burnout is rampant in academic. *Nature, 591*, 489-491. https://doi.org/10.1038/d41586-021-00663-2

Hallgren, M., Nguyen, T., Owen, N., Vancampfort, D., Dunstan, D. W., Wallin, P., … Ekblom-Bak, E. (2020). Associations of sedentary behavior in leisure and occupational contexts with symptoms of depression and anxiety. *Preventive Medicine, 133*, 1-6. https://doi.org/10.1016/j.ypmed.2020.106021

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*. Retrieved from https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Johnson, N., Veletsianos, G., & Seaman, J. (2020). U.S. Faculty and Administrators' experiences and approaches in the early weeks of the covid-19 pandemic. *Online Learning Journal, 24*(2), 6-21. https://doi.org/10.24059/olj.v24i2.2285

Johnson, S. U., Ulvenes, P. G., Oktedalen, T., & Hoffart A. (2019). Psychometric properties of the Generalized Anxiety Disorder 7-Item (Gad-7) Scale in a heterogeneous psychiatric sample. *Frontiers in Psychology, 10*(1713), 1-8. https://doi.org/10.3389/fpsyg.2019.01713

Jones, A. L., & Kessler, M. A. (2020). Teachers' emotion and identity work during a pandemic. *Frontiers in Education, 5*, 583775. https://doi.org/10.3389/feduc.2020.583775

Karakose, T., Polat, H., & Papadakis, S. (2021). Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the COVID-19 pandemic. *Sustainability, 13*, 13448. https://doi.org/10.3390/su132313448

Karakose, T., Yirci, R., & Papadakis, S. (2021). Exploring the interrelationship between COVID-19 phobia, work–family conflict, family–work conflict, and life satisfaction among school administrators for advancing sustainable management. *Sustainability, 13*(15), 8654. https://doi.org/10.3390/su13158654

Karakose, T., Yirci, R., Papadakis, S., Ozdemir, T. Y., Demirkol, M., & Polat, H. (2021). Science mapping of the global knowledge base on management, leadership, and administration related to COVID-19 for promoting the sustainability of scientific research. *Sustainability, 3*, 9631. https://doi.org/10.3390/su13179631

Katwala, P. C., Kulkarni, S. K., Guy, N. M., Zangaladze, S., Zak, A., Stickney, I. Z., … Kang, Y. (2018). Curriculum setting and pre-clinical dental students' stress level. *Journal of the Scholarship of Teaching and Learning, 18*(4), 1-12. https://doi.org/10.14434/josotl.v18i4.22720

Kelly, K. (2020,). Results from Top Hat's COVID-19 faculty survey about online teaching. *PhilOnEdTech*. Retrieved from https://philonedtech.com/results-from-top-hats-covid-19-faculty-survey-about-online-teaching/

Koutsimani, P., Montgomery, A., & Georganta, K. (2019). The relationship between burnout, depression, and anxiety: A systematic review and meta-analysis. *Frontiers in Psychology, 10*, 284. https://doi.org/10.3389/fpsyg.2019.00284

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9), 606-613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Lederman, D. (2020, August 26). *Early dispatches form the COVID-19 classroom*. Retrieved from https://www.insidehighered.com/digital-learning/article/2020/08/26/professors-describe-their-experiences-covid-19-classroom-fall

Lee, E., & Kim, Y. (2019). Effect of university students' sedentary behavior on stress, anxiety and depression. *Perspectives in Psychiatric Care, 55*(2), 164-169. https://doi.org/10.1111/ppc.12296

Leigh, J. S. A., & Edwards, M. S. (2021). Drowning on dry land: Looking back and learning from COVID-19. *Journal of Management Education, 45*(6), 823-833. https://doi.org/10.1177/10525629211051067

Lindecker, C., & Cramer, J. (2021). Self-disclosure and faculty compassion in online classrooms. *Online Learning, 25*(3), 144-156. https://doi.org/10.24059/olj.v25i3.2347

Lurati, A. R. (2017). Health issues and injury risks associated with prolonged sitting and sedentary lifestyle. *Workplace Health & Safety, 66*(6), 285-290. https://doi.org/10.1177/2165079917737558

Madhav, K., Sherchand, S. P., & Sherchan, S. (2017). Association between screen time and depression among U.S. adults. *Preventive Medicine Reports, 8*, 67-71. https://doi.org/10.1016/j.pmedr.2017.08.005

Marelli, S., Castelnuovo, A., Somma, A., Castronovo, V., Mombelli, S., Bottoni, D., Leitner, C., Fossati, A., & Ferini-Strambi, L. (2021). Impact of COVID-19 lockdown on sleep quality in university students and administration staff. *Journal of Neurology, 268*, 8-15. https://doi.org/10.1007/s00415-020-10056-6

Mayo Clinic. (2022). *Depression in women: Understanding the gender gap*. Retrieved from https://www.mayoclinic.org/diseases-conditions/depression/in-depth/depression/art-20047725

McChesney, J., & Bichsel, J. (2020). *The aging of tenure-track faculty in higher education: Implications for succession and diversity*. Retrieved from https://www.cupahr.org/wp-content/uploads/CUPA-HR-Brief-Aging-faculty.pdf

Meyer, J., McDowell, C., Lansing, J., Brower, C., Smith, L., Tully, M., & Herring, M. (2020). Changes in physical activity and sedentary behavior in response to COVID-19 and their associations with mental health in 3052 U. S. adults. *Int J Environ Res Public Health, 17*(18), 6469. https://doi.org/10.3390/ijerph17186469

O'Keefe, L., Rafferty, J., Gunder, A., & Vignare, K. (2020). *Delivering high-quality instruction online in response to COVID-19: Faculty playbook*. Every Learner Everywhere. Retrieved from http://www.everylearnereverywhere.org/resources

Peters, L., Peters, A., Andreopoulous, E., Pollock, N., Pande, R. L., & Mochari-Greenberger, H. (2021). Comparison of DASS-21, PHQ-8, and GAD-7 in a virtual behavioral health care setting. *Heliyon, 7*, e06473. https://doi.org/10.1016/j.heliyon.2021.e06473

Ruth-Sahd, L. A., & Grim, R. (2021). Nurse educators: Professional quality of life related to conditions of work effectiveness. *Nurse Educator, 46*(4), E55-E59. https://doi.org/10.1097/NNE.0000000000000950

Sahu, P. (2020). Closure of universities due to Coronavirus Disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus, 12*(4), e7541. https://doi.org/10.7759/cureus.7541

Savage, M., James, R., Magistro, D., Donaldson, J., Healy, L., Nevill, M., & Henis, P. (2020). Mental health and movement behaviour during the COVID-19 pandemic in UK university students: Prospective cohort study. *Mental Health and Physical Activity, 19*, 100357. https://doi.org/10.1016/j.mhpa.2020.100357

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal Medicine, 166*, 1092-1097. https://doi.org/10.1001/archinte.166.10.1092

Stamm, B. H. (2009). *Professional quality of life: Compassion satisfaction and fatigue version 5* (ProQOL). Retrieved from https://proqol.org/proqol-measure

Tang, S., Werner-Seidler, A., Torok, M., Mackinnon, A. J., & Christensen, H. (2021). The relationship between screen time and mental health in young people: A systematic review of longitudinal studies. *Clinical Psychology Review, 86*, 102021. https://doi.org/10.1016/j.cpr.2021.102021

Teymoori, A., Gorbunova, A., Haghish, F. E., Real, R., Zeldovich, M., Wu, Y., … Steinbuchel, N. V. (2020). Factorial structure and validity of depression (PHQ-9) and Anxiety (GAD-7) scales after traumatic brain injury. *Journal of Clinical Medicine, 9*, 873-894. https://doi.org/10.3390/jcm9030873

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents. Evidence from a population-based study. *Preventive Medicine Reports, 12*, 271-283. https://doi.org/10.1016/j.pmedr.2018.10.003

United States Department of Labor, Bureau of Labor Statistics. (2021). *Labor force statistics from the current population survey: Table 18b*. Retrieved from https://www.bls.gov/cps/cpsaat18b.htm

Van Leeuwen, C., Veletsianos, G., Johnson, N. & Belikov, O. (2021). Never-ending repetitiveness, sadness, loss and "juggling with a blindfold on." Lived experiences of Canadian college and university faculty members

during the COVID-19 pandemic. *British Journal of Educational Technology, 52*(4), 1306-1322. https://doi.org/10.1111/bjet.13065

Vinichenko, M.V., Vinogradova, M.V., Nikiporets-Takigawa, G., & Rybakova, M. (2021). The impact of the pandemic on the quality of education and the image of a university. *XLinguae, 14*(1), 17-37. https://doi.org/10.18355/XL.2021.14.01.02

Vizcaino, M., Buman, M., DesRoches, C. T., & Wharton, C. (2019). Reliability of a new measure to assess modern screen time in adults. *BMC Public Health, 19*, 1386. https://doi.org/10.1186/s12889-019-7745-6

Wagner, B. E., Folk, A. L., Hahn, S. L., Barr-Anderson, D. J., Larson, N., & Neumark-Sztainer, D. (2021). Recreational screen time behaviors during the COVID-19 pandemic in the U. S.: A mixed-methods study among a diverse population-based sample of emerging adults. *International Journal of Environmental Research and Public Health, 18*, 4613.

Weinstein, A. A., Koehmstedt, C., & Kop, W. J. (2017). Mental health consequences of exercise Withdrawal: A systematic review. *General Hospital Psychiatry, 49*, 11-18. https://doi.org/10.1016/j.genhosppsych.2017.06.001

Winthrop, R. (2020). *Top 10 risks and opportunities for education in the face of COVID-19*. Brookings. Retrieved from https://www.brookings.edu/blog/education-plus-development/2020/04/10/top-10-risks-and-opportunities-for-education-in-the-face-of-covid-19/

Xiao, Y., Becerik-Gerber, B., Lucas, G., & Roll, S. C. (2021). Impacts of working from home during COVID-19 pandemic on physical and mental well-being of office workstation users. *Journal of Occupational and Environmental Medicine, 63*(3), 181-190. https://doi.org/10.1097/JOM.0000000000002097

Yu, B., Gu, Y., Bao, X., Meng, G., Wu, H., Zhang, Q., … Niu, K. (2019). Distinct associations of computer/mobile devices use and TV watching with depressive symptoms in adults: A large population study in China. *Depression & Anxiety, 36*(9), 879-886. https://doi.org/10.1002/da.22932

Zachar-Tirado, C. N., & Donders, J. (2021). Clinical utility of the GAD-7 in identifying anxiety disorders after traumatic brain injury. *Brain Injury, 35*(6), 655-660. https://doi.org/10.1080/02699052.2021.1895315

Zhang, Y., Wu, X., Tao, S., Li, S., Ma, L., Yu, Y., Sun, G., Li, T., & Tao, F. (2021). Associations between screen time, physical activity, and depressive symptoms during the 2019 coronavirus disease (COVID-19) outbreak among Chinese college students. *Environmental Health and Preventive Medicine, 26*, 107. https://doi.org/10.1186/s12199-021-01025-0

Zheng, C., Huang, W. Y., Sheridan, S., Sit, C. H., Chen, Z., & Wong, S. (2020). COVID-19 Pandemic brings a sedentary lifestyle in young adults: A cross-sectional and longitudinal study. *International Journal of Environmental Research and Public Health, 17*(17), 6035. https://doi.org/10.3390.ijerph17176035