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An Assessment of Burnout among Graduate Students in Health Professional Programs

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Abstract

Objective: To measure the level of burnout among graduate students in health professional programs. A comparative analysis was used to explore differences in burnout scores among the participating programs.

Methods: The Copenhagen Burnout Inventory (CBI) was distributed to students at two Universities with a focus on health professional educations. We assessed for demographics such as gender differences, and added an additional scale aimed at measuring school-related burnout.

Results: Burnout and program dissatisfaction were positively correlated. Students in their third year reported the highest burnout scores, with the pharmacy program reporting the highest scores of burnout across all the programs participating. Women reported higher levels of personal burnout, whereas men reported higher levels of client related burnout.

Conclusion: Burnout is prevalent among graduate students in health profession programs during the course of their education; interestingly, this appears to be more impactful among pharmacy students. Implications and suggestions for mitigating this impact are discussed.

Keywords

Burnout, stress prevention, mental well-being, graduate school, learning

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Cover Page Footnote

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An Assessment of Burnout among Graduate Students in Health Professional Programs

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Objective: To measure the level of burnout among graduate students in health professional programs. A comparative analysis was used to explore differences in burnout scores among the participating programs. **Methods:** The Copenhagen Burnout Inventory (CBI) was distributed to students at two Universities with a focus on health professional educations. We assessed for demographics such as gender differences, and added an additional scale aimed at measuring school-related burnout. **Results:** Burnout and program dissatisfaction were positively correlated. Students in their third year reported the highest burnout scores, with the pharmacy program reporting the highest scores of burnout across all the programs participating. Women reported higher levels of personal burnout, whereas men reported higher levels of client related burnout. **Conclusion:** Burnout is prevalent among graduate students in health profession programs during the course of their education; interestingly, this appears to be more impactful among pharmacy students. Implications and suggestions for mitigating this impact are discussed.

INTRODUCTION

Burnout is a psychological syndrome that develops from the long-term exposure to stress. (Maslach & Leiter, 2016) Burnout is associated with emotional exhaustion, detachment, ineffectiveness, and a lack of motivation and accomplishment, as well as features of depression, changes in personality, somatic complaints, fatigue, sleep disturbance, and low self-esteem (Dijxhoorn, Brom, van der Linden, Leget, & Raijmakers, 2021; Maslach, Schaufeli, & Leiter, 2001; Pruessner, Hellhammer, & Kirschbaum, 1999). Healthcare professionals are known to be more susceptible to burnout than the general population due to their demanding and often stressful work (Dijxhoorn et al., 2021; T. D. Shanafelt et al., 2015). Little do we know regarding when this burnout manifests, and whether it is present during their academic training.

Graduate students in programs for health professions (i.e. a post baccalaureate University program directed at training the individual to treat the health needs of the public, such as dental medicine, pharmacy, clinical psychology etc.) are a population that is under persistent scrutiny and pressure throughout their training (Dyrbye et al., 2009; Portoghese et al., 2018). With the exception of medical students (Dyrbye et al., 2010) limited empirical data currently exists on burnout among graduate students in the field of health care (Portoghese et al., 2018). A student in this position is not only expected to succeed academically, but also to perform well in a clinical setting with patients, all whilst maintaining a healthy lifestyle. The psychological health of health care personnel in the work setting is significant, as performing well on the job is crucial for patient care (Tait D Shanafelt & Noseworthy, 2017). Among graduate students that are operating in stressful environments with only limited resources, it can be hypothesized that the risk of experiencing burnout is higher. Students in general are more at risk of contracting illnesses and have poorer health during times of high stress. (Segerstrom & Miller, 2004; Uchakin, Tobin, Cabbage, Marshall, & Sams, 2001) Studies suggest that medical students are at risk of experiencing immune suppression during final examinations (Uchakin et al., 2001). Students may exhibit difficulties in learning and obtaining knowledge. Long-term exposure

to glucocorticoids as a result of persistent stress can result in deterioration of neurons that are located in the hippocampus. (de Kloet, Joels, & Holsboer, 2005) When the hippocampus is weakened due to exposure to long-term stress, memory and learning can be impaired. (Maquet, 2001). Further, stress also impacts the prefrontal cortex, a region in the brain that helps to regulate thoughts, actions and emotions (Arnsten & Shanafelt, 2021).

The Copenhagen Burnout Inventory (CBI) that was utilized in this study was developed with the purpose of measuring both the physical and psychological exhaustion of burnout, and has primarily been used to assess for burnout in healthcare environments (Messias et al., 2019). The inventory consists of a 19-item survey, evaluating three sub-dimensions of burnout. (Kristensen, 2005; Molinero Ruiz, Basart Gomez-Quintero, & Moncada Lluís, 2013). These three subscales assess for personal burnout, work-related burnout, and client-related burnout. All three subscales on the Copenhagen Burnout Inventory were demonstrated to have a high reliability correlation with the Maslach Burnout Inventory, - the inventory that is considered the "standard inventory" in the field of burnout research (Portoghese et al., 2018). While cutscores for the CBI do not appear to have been fully established, a score of 100 is generally considered as "severe," whereas scores of 75-99 are considered "high," and scores of 50-74 are considered to be in the "moderate" range of burnout (e.g., Creedy, Sidebotham, Gamble, et al., 2017).

The main objective of this study was to advance our understanding of burnout among graduate students in professional health care programs; whether there are differences in burnout rates among the participating programs, explore demographic factors such as gender differences, and number of children. In addition, we wanted to learn more about whether these students are exhibiting symptoms of burnout during their training, prior to graduating. To understand how students can be better assisted and guided during this time in their lives, more knowledge is needed about burnout in this population.

METHODS

The Institutional Review Board of the university at which this study was conducted has approved this research. No identifying information was collected, beyond general demographic data. All data is kept secure and presented as aggregate data. As such, there were no obvious or known risks involved in participating in this study.

Due to the fact that the Copenhagen Burnout Inventory included a subscale assessing for work-related Burnout, but not a school-work related burnout, that would be more adhering to graduate students, these researchers created an original subscale by modifying the work-related subscale to assess for burnout relating to schoolwork. This was accomplished by simply changing the wording such as “work to schoolwork.” This subscale was subjected to a factor analysis and internal reliability analysis.

Participants for this study consisted of 1048 graduate students. The Copenhagen Burnout Inventory, in addition to a subscale measuring burnout relating to schoolwork, and questions regarding demographics were emailed to 7340 graduate students. The email provided the graduate students with a link to access the inventory and survey on the Internet. The participants were also provided with a letter explaining informed consent and information about their potential participation. The students’ answers were saved anonymously onto a secure online database. The collection of data was carried out over a period of four weeks during the spring of 2015.

1048 students completed the entire survey, which produced a 14.2 % response rate. Of the 1048 students, 989 students were included in the analysis conducted on program analysis, in order to have a minimum of 25 students in each program to have sufficient data to make assumptions about the specific programs. The programs included in the study were: Osteopathic Medicine, Pharmacy, Podiatric Medicine, Physician Assistant, Occupational Therapy, Master of Biomedical Sciences, Master of Arts in Biomedical Science, Cardiovascular Science, Clinical Psychology, Nurse Anesthesia, Physical Therapy, Dental Medicine, Veterinary Medicine, Speech Language Pathology, and Doctor of Health Sciences. All the participants were either in a master’s level or doctoral level program. Only 7 of the following programs were included in the program analysis, however, due to the sample size from each program: Osteopathic Medicine ($n = 225$), Pharmacy ($n = 120$), Podiatric Medicine ($n = 25$), Physician Assistant ($n = 50$), Clinical Psychology ($n = 54$), Physical Therapy ($n = 39$), Dental Medicine ($n = 100$).

RESULTS

Table 1 illustrates the means and standard deviations of burnout scores by program. To rectify positive skew, satisfaction with

program ratings and client burnout were subjected to a square root transformation. Due to unrectifiable skew with regard to number of children, non-parametric tests were utilized. A Pearson correlation coefficient was calculated to assess relationships among continuous variables, and one-way analyses of variance (ANOVAs) were calculated to determine group difference with regard to burnout. Furthermore, a Factor Analysis was conducted on the subscale measuring schoolwork related burnout to assess the construct validity of this measure as well as the new extension created for this study.

After ensuring that all required assumptions were met, a multivariate analysis of variance (MANOVA) indicated a significant main effect with regard to academic program and burnout scores ($\Lambda = 0.883, F(24, 2104.826) = 3.17, p < .001, \eta^2 = .031$). Post hoc analyses of variance (ANOVAs) indicated that personal burnout ($F(6, 606) = 3.17, p = .005, \eta^2 = .03$), client burnout ($F(6, 606) = 4.61, p < .001, \eta^2 = .04$), and schoolwork related burnout were significant ($F(6, 606) = 3.33, p = .003, \eta^2 = .03$), however, work related burnout was not significant ($F(6, 606) = 1.42, p = .206, \eta^2 = .01$).

Tukey’s HSD analyses indicated that students in the pharmacy program yielded higher personal burnout scores relative to Osteopathic medicine ($p = .001$). Students in the Pharmacy Program also reported higher client burnout than osteopathic medicine ($p = .02$), and higher scores than the students in the physician assistant program ($p < .001$). Furthermore, students in the dental medicine program reported higher burnout scores than students in the physician assistant program ($p = .001$). Students in the pharmacy program reported higher schoolwork burnout scores than students in the physician assistant program ($p = .026$), as well as higher scores than students in dental medicine ($p = .021$). Pearson’s correlation coefficient indicated a significant positive correlation between program dissatisfaction and personal burnout ($r = .30, p < .001, n = 1121$), work burnout ($r = .27, p < .001, n = 1064$), schoolwork total burnout ($r = .370, p < .001, n = 1063$), and client burnout ($r = .20, p < .001, n = 684$).

MANOVA analyses further determined an overall main effect for gender and burnout scores ($\Lambda = 0.940, F(4, 607) = 9.041, p < .001, \eta^2 = .060$). Post hoc ANOVAs indicate that women showed greater personal burnout ($F(1, 610) = 19.64, p < 0.001, \eta^2 = 0.031, M = 59.45, SD = 16.87$ vs $M = 53.23, SD = 17.55$) and men showed slightly higher client related burnout ($F(1, 610) = 4.35, p = 0.37, \eta^2 = 0.007, M = 27.52, SD = 18.51$ vs $M = 24.50, SD = 17.08$). No differences however, were noted with regard to schoolwork related burnout ($F(1, 610) = 1.22, p = 0.269, \eta^2 = 0.002, M = 56.60, SD = 22.68$ vs $M = 58.51, SD = 19.98$) or work related burnout ($F(1, 610) = 3.418, p = 0.065, \eta^2 = 0.006, M = 49.57, SD = 14.47$ vs $M = 51.74, SD = 14.23$).

Table 1 Burnout means and standard deviation (SD) by program, ranging from 0 to 100

Program	Personal Burnout M (SD)	Schoolwork-related Burnout M (SD)	Client-related Burnout M (SD)	Work-related Burnout M (SD)
Pharmacy	62.29 (16.15)	62.19 (17.86)	30.49 (18.74)	52.05 (15.41)
Dental Medicine	56.54 (16.41)	53.00 (19.96)	29.58 (17.89)	52.36 (13.30)
Osteopathic Medicine	54.28 (17.93)	57.02 (22.23)	23.85 (17.24)	50.92 (14.29)
Clinical Psychology	57.17 (18.62)	60.65 (23.79)	26.62 (15.06)	49.47 (14.53)
Podiatric Medicine	58.83 (16.81)	63.17 (24.29)	24.33(22.52)	48.57 (14.29)
Physician Assistant	53.83 (16.91)	51.00 (18.45)	17.5 (15.05)	46.29 (13.11)
Physical Therapy	57.69 (16.90)	61.54 (21.03)	25.00 (16.22)	52.20 (15.08)

Table 2. Percentage of students scoring 75 or over on each subscale by program

Program	Personal Burnout %	Schoolwork-related Burnout %	Client-related Burnout %	Work-related Burnout %
Pharmacy	26%	28%	3.3%	10.9%
Dental Medicine	13.7%	17.5%	2%	4.5%
Osteopathic Medicine	18.4%	27%	0.9%	9.7%
Clinical Psychology	18.7%	25.4%	0%	3.2%
Podiatric Medicine	34.3%	33.3%	8%	9.1%
Physician Assistant	15.4%	2.3%	2%	4.1%
Physical Therapy	17.3%	26%	0%	5%

Spearman's rho indicated no significant correlation between number of children and work burnout ($r = -.02, p = .540, n = 1064$), schoolwork burnout ($r = .02, p = .528, n = 1063$), or client burnout ($r = .034, p = .368, n = 684$). A weak, though significant, correlation was noted between personal burnout and number of children ($r = .06, p = .046, n = 1121$).

Table 2 illustrates the percentage of students reporting a score greater than 75 on each subscale on the CBI of each program. It appears that, in general, relatively few students experience "high" burnout with regard to working with clientele (0 – 8%) whereas the bulk of students experience personal burnout (13.7 – 34.3%) or attribute it to schoolwork (2.3-28%).

A Factor Analysis with varimax rotation was utilized to assess construct validity regarding each item of the Copenhagen Burnout Inventory, with the particular focus on the modified items utilized in this study to assess schoolwork related burnout. The Factor Analysis returned a solution with four components with eigenvalues greater than 1.0 (1.230-9.848). The first component (Client related burnout) accounted for 37.88 % of the variance, the second component (Overall related burnout) accounted for 12.40 % of the variance, the third component (school related burnout) accounted for 6.85 % of the variance, and the fourth component (work related burnout) accounted for 4.73 % of the variance. To further establish the stability of this additional scale, Cronbach's Alpha was computed and demonstrated strong internal reliability ($\alpha = 0.88$).

DISCUSSION

To our knowledge, this is the first study where burnout has been examined among graduate students in health professional programs using the Copenhagen Burnout Inventory. The Inventory is unique from other burnout inventories in the sense that it has three different subscales, with one subscale that focuses on working with patients (Kristensen, 2005). The main limitation to utilizing the inventory is that it contains a work subscale, where most graduate students are typically unable to maintain outside employment while in graduate school. These researchers created an original subscale measuring burnout related to schoolwork. Both subscales were administered to the participants, and there was a high internal reliability within the two different subscales. The client related burnout subscale, as well as the schoolwork related burnout subscale is important as they can help measure any discrepancy between the students' clinical training experiences and class related workload. As a result, it is recommended that this newly created subscale be utilized when examining burnout among students.

It may be argued that the response rate of 14.2% may not reflect the student body at large. An examination, however, of

the demographics among the participants indicates that sample of students that participated varied in gender, age, ethnicity and program, which may support the contention that the current data may indeed be reflective and representative of the population. Further, we see that participation rates in population-based health studies have dropped over the course of the last 30 years. (Galea & Tracy, 2007) People with hectic schedules are less likely to participate in research, a challenge that will occur when recruiting graduate students in research (Beebe, Jenkins, Anderson, & Davern, 2008).

The surveys were distributed during the month of April, where some students might experience more stress at this time of the year, due to final exams and finishing the academic year. However, it might be argued that such timing will result in a more accurate presentation of burnout reports. It can be hypothesized that we would have found lower levels of burnout among students during the beginning of the academic year.

Of further interest, gender differences were noted in this study, where women reported to exhibited higher levels of personal burnout symptoms, whereas men reported higher levels of client related burnout. This may, in part, explain the correlation noted between personal burnout and number of children noted in the present analyses. This is further consistent with research conducted on differences in burnout prevalence between clinical professionals and biomedical scientists, where they also find that women exhibit higher levels of personal burnout, and men exhibit more client related burnout (Messias et al., 2019). This points to the need for gender responsive support in regards to what triggers stress among men and women, and how burnout manifest itself in their behavior.

It would be interesting to follow-up with the students who reported more burnout, and assess for the dropout or attrition rates in their programs. Dyrbye and colleagues suggest that high levels of burnout are associated with contemplation of dropping out of school. (Dyrbye et al., 2010) This might be due to the fact that students who experience burnout might not perform to the best of their abilities, and experience a decline in their sense of personal accomplishment. (Maslach & Leiter, 2016) It can be difficult for the students to understand that psychological symptoms can be a result of stress and high demands, something that can trigger feelings of insecurity and anxiety. Marshall and colleagues found that stress levels among students are related to health-related quality of life, where pharmacy students reported finances, examinations and scheduling, assignments and family/relationships as the most common stress related factors while pursuing higher education. (Marshall, Allison, Nykamp, & Lanke, 2008). Shanafelt and colleagues found that burnout and satisfaction with work-life balance among physicians worsened profoundly from 2011

to 2014, where more than half of US physicians are reporting that they are experiencing burnout related to their work (T. D. Shanafelt et al., 2015). However, we know that burnout is not merely a phenomenon among US physicians, and that research finds burnout among students and health professionals worldwide (Portoghese et al., 2018).

Further, it would be interesting to follow-up students in the pharmacy program, to learn more about why this population exhibits the most burnout among the health professional programs. A possible reason for this finding is that the pharmacy programs at the participating universities are a three-year accelerated program, with no appreciable breaks or vacation. Frick and colleagues found that students in a 3-year-long PharmD program report higher level of stress than students in a 4-year-long PharmD program, (Frick, Frick, Coffman, & Dey, 2011) which suggests that accelerated programs are perhaps more stress provoking than traditional programs. This information tells us that we need to know more about how the learning environment contributes to burnout among students in health professional programs. Research conducted on medical students find that burnout is linked to the amount of support they receive from faculty members, as well as the perception of being mistreated by faculty (Dyrbye et al., 2009). Research from medical students in resident training finds that stressful relationships with supervisors, and insufficient autonomy also impacts burnout scores (van Vendeloo et al., 2018; West, Shanafelt, & Kolars, 2011).

Based on the results from this study, programs should be aware of the presence of burnout that exists among the students. Ideally, programs would have resources for students that struggle, such as creating an arena where students can openly seek support for their stress, without feeling as they are being judged or that seeking help results in negative repercussions for their academic or clinical success. In regards to making preventative changes, organization-directed approaches has shown to be more effective in reducing burnout compared to individual interventions (Panagioti et al., 2017). universities can make changes such as using different contemplative pedagogies in course contexts and program development where student might exhibit burnout (Franzese & Felten, 2017). Furthermore, programs might consider promoting self-care, improve communication skills between trainees and trainers (West, Dyrbye, Erwin, & Shanafelt, 2016), and make self-care a mandatory aspect of their own professional development.

Following the Covid-19 pandemic, it will be important to continue to conduct research on burnout and the well-being of health care personnel, as both professionals and students have been in the front-line of the pandemic. The pandemic has extended beyond physical illness, as we have adapted new behaviors such as social distancing, wearing a mask, isolating, and avoided close contact with loved-ones to protect one another (Grover et al., 2020). Eventually, the pandemic will have affected everyone, and we might experience long-term Covid-19 repercussions in the field of mental health.

CONCLUSION

Burnout and dissatisfaction were positively correlated on all scales, indicating that students who experience burnout are also less satisfied with their programs. Pharmacy students reported significantly higher burnout than any other program that participated in this study. Women reported higher personal burnout, while men reported slightly higher burnout related to clients. A weak, though

significant, correlation was noted between personal burnout and number of children. However, there was no significant correlation between school related burnout, client burnout or work related burnout and having children.

Learning more about when and how burnout manifests will enable programs and universities to take the necessary steps to educate and prevent students from burning out. This, in turn should foster their well-being, and thus contribute to higher graduation rates and higher program satisfaction.

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