DISSERTATION APPROVED BY

April 24, 2020

Cindy Costanzo, Ph.D., Chair

Timothy Guetterman, Ph.D., Committee Member

Thomas Lenz, Pharm.D., Committee Member

Jennifer Moss Breen, Ph.D., Director

Gail M. Jensen, Ph.D., Dean

MINDFULNESS AND ANXIETY
AMONG FIRST YEAR DENTAL STUDENTS

By

COLETTE O'MEARA-MCKINNEY

A DISSERTATION IN PRACTICE

Submitted to the faculty of the Graduate School of Creighton University in Partial Fulfillment of the Requirements for the degree of Doctor of Education in Interdisciplinary Leadership

---

Omaha, NE

April 24, 2020

Abstract

Students transitioning to the rigors of a four-year dental education program at a private midwestern university often self-identify as experiencing anxiety to a point at which their performance academically and personally is felt to be hindered. A survey designed to measure anxiety confirmed elevated anxiety levels due, in part, to the rigorous workload, desire for perfection, and fear of failure. Participation in a six-week, one-hour per week mindfulness-based course required for first year dental students introduced them to strategies and techniques aimed at stress reduction. As reported by participating students, the practice of mindfulness was effective among the majority, but anxiety levels remain high as does the demand for further reduction.

Keywords: Mindfulness, dental students, anxiety, perfectionism

Dedication

It is an honor to serve the Creighton University dental students. They have been generous with their trust, demonstrating through action their desire to be excellent, compassionate professionals. Because of them and the creativity, leadership, and practice of Dr. Barbara Harris, the Program for Ignatian Mindfulness was formed. The encouragement and mentorship from Dr. Mark Latta and Rev. Timothy Lannon, S.J. changed the course of my career, gave me tools to help others, and anchored me in a practice of living a more intentional life of servant leadership.

Acknowledgements

With gratitude, I am very aware this journey would not have possible without the generous support and encouragement from Drs. Mark Latta, Gail Jensen, Jennifer Moss-Breen, Cindy Costanzo, Thomas Lenz, and Timothy Guetterman. This work is largely the product of their shared guidance, wisdom, and generosity. Finally, I want to thank my incredibly supportive husband Matt; my children Michael, Miranda, Jimmy, Hayden, Riley, and Samuel; grandchildren Luella and Quintin; and my parents Tom and Carolyn for their faith in me. This is very much a shared accomplishment as their encouragement pushed me over the finish line. You each have given me this most incredible life for which I am so very grateful. As a bonus, you will no longer have to hear me say, "When I finish my doctorate, I will……"

Table of Contents

Page

List of Tables

Page

CHAPTER ONE: INTRODUCTION

Introduction and Background

It is estimated that 3.6%, or 264 million people, within the global population suffer from anxiety disorder making it one of the leading causes of lost health and disability according to the World Health Organization (2017). Among college students on American campuses, it's estimated that one in three students meet the criteria for a clinically significant mental health issue (Watkins, Hunt, & Eisenberg, 2011). Based on the findings from ten years of data collected through the Health Minds Study, an annual survey comprised of 155,026 students from 196 campuses, the rate of treatment for mental health among the college population increased from 19% in 2007 to 34% by 2017 (Lipson, Lattie, & Eisenberg, 2019). In its 2018 annual National College Health Assessment, the American College Health Association reported the number of students visiting campus counseling centers increased by 30% from 2009-2015, while academic enrollment only grew by no more than 5%. In the same report, it was noted that the rate of suicide doubled from 6% in 2009 to 12% in 2018.

The magnitude of the mental health support needs facing colleges, appears to extend from undergraduate to professional students. In particular, stress and anxiety among first year dental students are considered higher in comparison with peers in the general population according to studies conducted in several countries as cited by Basudan, Binanzan, & Alhassan (2017). Specifically, Basudan, et al. (2017) found abnormal levels of depression, anxiety and stress were identified in 55.9%, 66.8% and 54.7% of the study participants, respectively. A 2014 study of Spanish dental students compared burnout, depression and suicide ideation among second, fourth- and fifth-year

dental students. In comparison to fifth year students, second- and fourth-year students exhibited double the amount of burnout. Second and fourth years also experienced triple the amount of depression and suicidal ideation when compared to their fifth-year classmates. Suicide ideation was highest in fourth year (Brondani, Ramanula, & Pattanaporn, 2014).

There is a proclivity for stress and anxiety among dental students based, in part, on a common personality profile. According to Rada & Johnson-Leong, students drawn to dentistry tend to have compulsive personalities, unrealistic expectations, unnecessarily high standards of performance, and require social approval and status (2004). The process of striving for perfection can produce outcomes opposite of the intended consequences and actually hinder performance by causing fatigue, inefficient time management, and self-criticism (James & Rimes, 2018). Attention to the potential dangers of unmitigated stress and poor mental health among dental students was heightened following the death by suicide of a fourth-year dental student at the Columbia College of Dental Medicine in 2014. Jiwon Lee served as the president of the American Student Dental Association and as the student representative on the Joint Commission on National Dental Examinations. She left behind a note apologizing for “not living up to expectations” (Zhang, 2016).

Unfortunately, high levels of stress and anxiety among students often continue into practice leading to burnout and less than optimal patient care among practitioners (Basudan, et al., 2017). Alzahem, Van der Molen, Alaujan, and De Boer (2014) conclude research identifying sources of stress is more prevalent than studies addressing strategies to reduce stress. However, there are techniques which can reduce stress and anxiety with

effective staying power. In particular, mindfulness education and practice have the potential to mitigate psychological stress, ease anxiety, sustain or increase levels of compassion, and improve the quality of life for dentists through training and into practice (Dobkin & Hutchinson, 2013)

Statement of the Problem

When stress and anxiety are persistent through dental school, the outcome can be exhaustion, lack of empathy, ill health, and poor academic performance. This reality presents itself prominently through the stories shared by students attending the dental school in which I serve as assistant dean for the Office of Student Affairs. Common themes centered on anxiety emerge from students as they articulate concern about learning the large volume of content, managing the dense testing schedule, fearing failure, and accruing substantial debt. To provide context, it is worth noting that this particular dental school receives over 2,500 applications for a class of 115 students. The national board passage rate for our students is over 98% (N. Norton, personal communication, February 7, 2020). The average 2019 student debt $268,324 based on data collected from the university's Office of Financial Aid (S. Valdivia, personal communication, January 8, 2019). The pressure to succeed is palatable.

As of the spring semester of 2017, the only internal infrastructure in place to assist students with academic challenges, outside of direct faculty intervention, was a peer tutoring program. The direct correlation between mental health and academic performance is well documented as is the cost-effectiveness of prevention and support services (Eisenberg, Golberstein, & Hunt, 2009). However, access to mental health and academic support appeared insufficient to meet the demand. Within this environment, the

primary mental health support is provided by the university's Student Counseling Center. However, access to counseling services can be a barrier to assistance. Dental students are scheduled from 8:00 a.m. to 5:00 p.m. Monday through Friday with a one-hour break at midday. Counseling Center hours are held Monday through Friday beginning at 8:00 am and concluding by 4:30 pm three days and by 6:30 pm on two days. The wait list consistently varies between 75 and 90 students. In 2017-2018, the Counseling Center had contact with 26 dental students. Primary diagnoses were depression and anxiety according to the Center director (J. Peter, personal communication, June 13, 2018). In 2018-2019, 33 dental students sought services from the Counseling Center with anxiety and depression accounting for the majority of diagnoses (J. Peter, personal communication, February 3, 2020).

To better meet the support needs of students, additional internal resources were needed. My proposal to hire a part-time instructor trained in behavior science was accepted by the school's dean in the spring of 2018 and the Program for Ignatian Mindfulness (PIM) was formed. The instructor, appointed to both the Community and Preventive Dentistry department and the Office of Student Affairs, developed a required six-week course on mindfulness and wellbeing designed for first year dental students (see Appendix A). The course was designed with a focus on practice rather than didactic delivery in a space created for the purpose of supporting mindfulness practice through movement and meditation. It was introduced into the curriculum in the fall of 2018. At the same time, co-curricular events and activities through PIM were offered to support the general study body through mindfulness instruction and practice.

As part of the first-year effort, the Mindfulness Attention Awareness Scale (MAAS) was administered as a pretest and posttest to the educational intervention, the Mindfulness and Wellbeing course. In addition, student essays were coded according to prevalent themes. The data collected was used to shape and substantiate the current study. Based on the findings from 2018, a majority of participating students reported finding value in the course. The specific research problem addressed by this study is the outstanding need for anxiety reduction expressed by first year dental students and the desire to mitigate those hinderances through an accessible, effective, sustainable method.

Purpose of the Study

The intent of this concurrent mixed methods study is to provide a systematic evaluation of a required, six-week mindfulness education and experiential course designed to reduce the self-perceived levels of anxiety among first year dental students. Mindfulness Attention Scale (MAAS) and self-perceived levels of anxiety (Generalized Anxiety Disorder-7) were quantitative measures obtained pre and post six-week education and experiential course. Qualitative measures were obtained using written reflection. Participating students identified perceived benefits and shared opinions about the value of the course content. These methods were used to better understand students' perception about the influence mindfulness instruction had or did not have on their anxiety levels. Results from this study are projected to help shape future design and delivery of mindfulness instruction to first year dental students.

Research Questions

The questions driving this mixed methods research project ask, "To what extent does a required six-week mindfulness experiential course reduce self-rated levels of

anxiety as reported among first year dental students at a private, Midwestern university? What are the experiences of first year dental students as they relate to anxiety and mindfulness based on their experience completing a six-week mindfulness experiential course at a private, Midwestern university?"

The research questions are problem-centered and seek to make meaning of the real-world dynamic of anxiety among first year dental students and the consequence of mindfulness instruction. The research questions focus on the student perception of mindfulness through the chronology of participation in the mindfulness course. The premise of my research question assumes there is a shared experience of anxiety among students. It seems logical that I should measure anxiety to better understand the student experience as it relates to the mindfulness course as an intervention. Because I am focused on whether or not mindfulness education and practice assist with students' perceived anxiety, a pragmatic worldview appears to align with my research question based on the description provided by Creswell & Creswell (2018).

Hypothesis

Given the research supporting mindfulness instruction and practice as positively influencing participants' memory, mindset, focus, and resiliency, it was anticipated that the intervention would assist in reducing anxiety and increasing mindfulness (Epstein, 1999).

Aim of the Study

Aims of this study were to identify the effect of a mindfulness and experiential course on anxiety of first year dental students. A complimentary, qualitative aim of this

study is to inform the content development of a curriculum which assists first year dental students in learning how to practice mindfulness as a means to manage anxiety in an effective way.

Methodology

A mixed methods design was selected to capture both the sense of anxiety perceived by students and the effect of the Mindfulness and Wellbeing course as an educational intervention. First year dental students were surveyed at the start and end of a required six-week mindfulness course. Students at the two intervals self-rated their levels of mindfulness by completing the Mindfulness Attention Awareness Scale (MAAS), a 15-item, reverse-scored, 7-point scale (1 = almost always; 6 = almost never), self-report instrument with a single factor measuring attention to and awareness across several domains of experience in daily life (e.g., cognitive, emotional, physical, and general). Anxiety was measured through the completion of the Generalized Anxiety Disorder 7-item (GAD-7) scale, a psychometrically valid measure designed to assess the presence of generalized anxiety disorder symptoms (Ruiz et al., 2011). The GAD-7 is comprised of 7-items, the scores of which are added to total a range from 0 (not at all) to 3 (nearly every day). The total score can be categorized into four severity groups: minimal/no anxiety, mild, moderate, or severe (Ruiz et al., 2011).

The MAAS and the GAD-7 were distributed using Qualtrics, an online survey platform licensed by Creighton University and branded as BlueQ for faculty, staff, and student use. The qualitative component was collected when students were asked to write a three-page reflection paper in response to two questions composed by the course instructor.

1. Discuss your experience with the practices in this course including challenges either physical, emotional, religious, gender or social.
2. Discuss how you have or can incorporate the practices in your life both at school and in your personal life.

The assignment was framed with the instructions, "Because this course is pass/fail, you are asked to be honest in your reflection. Honesty will not detract from your grade. The reflection is more of a note to yourself for future reference. As you sit down to write your reflection, consider the elements for reflection, openness, observation, and objectivity. Take five minutes of quiet. Reflect on what you notice as you integrate the readings into your practice. Be as specific as possible about the three elements to describe your experience or understanding. This reflection is about you and not about people in general."

The student names were redacted prior to reviews. Reviews were conducted by me, two faculty members (Department of Cultural and Social Studies in the College of Arts and Sciences and Department of Community and Preventive Dentistry) and an undergraduate, pre-dental research assistant majoring in biology. Four readers were requested to participate based on their diverse backgrounds and experience in qualitative coding to reduce potential bias and complete cross-check coding strategies for consistency (Barbour, 2001). The essay content provided additional perspective to the student experience as expressed through the quantitative data.

Definition of Relevant Terms

Mindfulness, particularly as it relates to the practice of meditation, draws upon the teachings and practices of ancient Buddhists. Mindfulness, as referenced in this proposed

study, is based on the secular practice of mindfulness as therapeutic. Jon Kabat-Zinn, co-founder of the Mindfulness Based Stress Reduction (MBSR) program originated at University of Massachusetts Medical School, defines mindfulness as "awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally" (2017).

The additional following terms were used operationally within this study.

Dental School: A four-year educational institution dedicated to training and professional formation of dentists who receive a doctor of dental surgery (D.D.S.) degree upon completion.

Generalized Anxiety: Excessive worry about a number of things such as personal health, work, social interactions, and everyday routine life circumstances (The National Institute of Mental Health, 2018).

Course: A regularly scheduled class on a particular subject. Each college or university offers degree programs that consist of a specific number of required and elective courses (Narayan, 2011).

Tapping: Emotional Freedom Techniques (EFT) involves a gentle tapping of acupressure points on the head, torso, and hands with fingertips following a sequence and relating to the voicing of specific statements about anxiety (Boath, et al., 2017)

The language of mindfulness, stress, and anxiety is subject to interpretation and may vary among individuals. Students interpretation may have been influenced by the

readings, class discussion and participation. The final reflection provided a venue for students to freely express their experience in their own words.

Limitations, Delimitations, and Personal Biases

The research proposed is limited to a population of 108 first year dental students at a private, faith-based midwestern university and may not accurately represent students at all dental schools. In fact, it may not represent second, third, or fourth year students at the same institution. The research is limited in that not all environmental factors can be accounted for and there is no clear way to identify influencing variables not included in the study. For example, student anxiety may be affected by general health, exam schedules, fluctuations in class times, and the teaching style of the instructor. Finally, because this research is conducted with students participating in a course, some may feel an obligation to respond more favorably than authentically.

Leaders' Role and Responsibility in Relation to the Problem

The connection between mindfulness and leadership can be made across disciplines. Based on the vast literature published over the past decade, there is evidence that being more attentive and aware facilitates self-regulation, enhances decision-making, fosters stronger relationships, and eases the pressures of professional and personal demands (Perlman, 2015). In addition to theoretical support for the mindfulness leadership connection, there is physiological backing. The ability to focus as needed, on-demand allows the central executive function of the brain to override the default mode circuit which is commonly referred to as the "mind wandering" circuit (Mohapel, 2018). The practice of mindfulness increases the quality and sustainability of focus which is critical when learning new concepts and practicing new skills, two things certainly

expected of dentists in training. I would argue that it is incumbent on educational institutions to assist students in developing leadership skills and to provide opportunities to practice those skills. While not the only modality, instruction and practice of mindfulness can be constructive in strengthening the ability to focus and tune out distractions. In her book "Finding the Space to Lead: A Practical Guide to Mindful Leadership", author Janice Marturano defines a mindful leader as one who "embodies leadership presence by cultivating focus, clarity, creativity, and compassion in the service of others" (2014, p. 11). Given the complexity of healthcare, the ability to engage the executive function of the brain through awareness and attentiveness is critical for both practitioners and, ultimately, for the patients they serve.

Significance of the Study

In recognition of the value in fostering a supportive and well-rounded learning environment, the Commission on Dental Accreditation (CODA) launched a new standard in 2013 which requires dental education programs to create and support a humanistic culture and learning environment with the intention of developing ethical professionals through the cultivation of diversity, open communication, leadership, and scholarship. Guided by this standard and with the holistic well-being of students in mind, this proposed study examines the influence of mindfulness instruction and practice on students and their self-identified anxiety. It represents an attempt to understand how the technique of mindfulness may advance the understanding and practical application of anxiety and stress management among first year dental students.

The research focused on dental students and mindfulness is limited in comparison to other health professions. The gap in research exists despite the well-documented stress

and anxiety generated by the experience of dental education and the detrimental effects of anxiety on students. Basudan, et al. (2017) recommend consideration and implementation of strategies for stress prevention and management in dental schools to improve students' wellbeing, prevent drop out, and ensure proper patient care. Similarly, Lovas, et al. (2008) articulate the need to integrate mindfulness education and practice into dental education curriculum to help cultivate health professionals' abilities to let go of self-focused, short-term rewards and promote the long-term common good. Lovas, et al. (2008) conclude that mindfulness practice as an educational component contributes to a higher quality of life for both dentists and patients alike.

Despite these examples, there is a deficit of research exploring the implementation and assessment of a required mindfulness course for first year dental students. My literature search has not identified a program which is required of all students versus an elective course or co-curricular activity selected by interested students. I believe it is important to know if mindfulness instruction and practice resonates with those who might not otherwise be exposed to or intrinsically inclined to participate in mindfulness practice. The outcome of this research is expected to be valuable in designing future stress management and mindfulness instruction within my work environment and, potentially, at other dental education institutions.

Summary

The subject of mindfulness as a means to assist in the development of health care professionals is garnering attention among researchers due, in part, to the recognition of stress and anxiety as inhibitors to a healthy professional and personal life. There are also

indications that the practice of mindfulness may aid in fostering resiliency (Galante, et al. 2016). Mindfulness practice can fill a void often present in traditional healthcare provider training and professional development (Kinser, Braun, Deeb, Carrico, & Dow, 2016). Therefore, it is proposed that a six-week, required mindfulness course for first year dental students has the potential to help mitigate anxiety and stress while enhancing mindfulness. Both of the stated outcomes are proven to be of value and in alignment with performance and leadership expectations of practicing dentists.

CHAPTER TWO: LITERATURE REVIEW

Introduction

Resiliency to stress can be elusive when students are in the process of transitioning to dental school. New content to learn, pressure to succeed, and a competitive environment can contribute in varying degrees to a sense of stress and anxiety. Although research specific to dental education is more limited, the literature addressing the influences of stress and anxiety on practicing dentists is expansive. Anxiety as a prevalent outcome of demanding schedules, isolated work environments, and the desire for perfection can lead to professional burnout. The cost of burnout is high both for practitioners and patients based on the interdependency of the relationship (Myers & Myers, 2004).

The stress experienced by dental students intertwines with the stress associated with practicing dentists due to the introduction of clinical practice and treatment of patients by students in the second year of the typical four-year curriculum. The following literature review considers the practice of mindfulness as a means to mitigate stress and anxiety, reduce burnout, foster leadership skills, and enhance the quality of life for students as they prepare to enter the field of dentistry.

Stress, Anxiety, and Burnout

The stress, anxiety, and burnout associated with the practice of dentistry are well documented (Collin, Toon, O'Selmo, Reynolds, & Whitehead, 2019). While some stress is to be expected and can be a positive motivator, high levels of anxiety may exceed a person's ability to cope and result in damaging psychological strain. Persistent anxiety

can lead to exhaustion, loss of empathy and connection with others, and reduced productivity (Collin et al., 2019). According to Myers and Myers (2004), a range of factors contribute to job stressors for dentists including the impact of running behind schedule, treating uncooperative, difficult, fearful, or dissatisfied patients, working under continual pressure, and managing the finances of a dental practice. Of the over 2,000 British dentists participating in a recent stress assessment survey, nearly 55% report feeling high levels of job stress and nearly 44% of them indicate stress was exceeding their capacity to cope. The stress and burnout self-assessment were both notably higher than in previous studies (Collin et al., 2019). The authors point to the changing landscape of dentistry influenced by increasing regulation, rising negligence claims, and a devaluing of dentistry through public perception, as three contributing factors to rising levels of self-perceived stress.

The research focused on occupational stress, anxiety, and burnout among dentists is mirrored among dental students (Humpris et al., 2002). A study of psychological stress comparing dental and medical students attending seven different European schools illustrates the point. Researchers found the level of emotional exhaustion among dental students to be higher than medical students due primarily to academic overload (Humpris et al., 2002). A study conducted by Basudan, Binanzan, & Alhassan (2017) reported significant universality of stress and anxiety among dental students. Specifically, the authors found abnormal levels of depression, anxiety and stress were identified in 55.9%, 66.8% and 54.7% of the study participants, respectively. Data collected from a study involving over 130 students from five dental schools indicated approximately 20% of participating students were identified as at serious risk for future professional burnout

based on current assessment of depersonalization and emotional exhaustion (Gorter et al., 2008). Given the stark statistics related to stress, anxiety, and burnout experienced by both dental students and practitioners, there appears to be value in assisting dental students with stress management early in their training as a means to prevent future and costly professional dysfunction.

Mindfulness Programs Within Healthcare

The challenges which await healthcare providers are known and pervasive. Dunn, Ametz, Christensen, and Homer (2007) created a physician-based professional development program aimed at promoting well-being at a multi-site urban primary care group practice. The program was designed to increase physician control over their work environment, improve order in clinical operations, and deepen the meaning physicians find in their work. The program evaluation indicated a significant decrease in emotional and work-related exhaustion (Dunn et al, 2007).

A randomized clinical trial of 74 practicing physicians within the Department of Medicine at the Mayo Clinic in Rochester, Minnesota was conducted over the span of two years. The intervention was curriculum designed to bring physicians together in small groups to discuss meaning and engagement in work through reflection and conversation. The topics covered included reflection, self-awareness, and mindfulness in combination with connectedness and meaningful work (West et al., 2014).

Meditation training as a mindfulness practice was explored by Prasad, Wahner-Roedler, & Sood (2011) to meet the needs of health care employees. Based on the intent to identify the right-size meditation training, preliminary findings indicated 15 minutes

once or twice a day is the most feasible duration of meditation practice improving stress, anxiety, and quality of life (Prasad, et al. 2011). An essay written by Saxena & Ladkat (2012) for the Journal of Dental & Allied Sciences exalts the practice of meditation as a means of stress reduction thus indicating some level of intrigue in the dental profession if not full acceptance.

The literature related to mindfulness as a means to develop and sustain a clearer mind and more thoughtful means of self-regulating emotion began to surface in the 1970's with the work of microbiologist Dr. Jon Kabat-Zinn. Although a meditative practice dating back centuries, Kabat-Zinn approached mindfulness from a scientific, secular perspective and developed his working definition of mindfulness as "the awareness that arises from paying attention on purpose, in the present moment, nonjudgmentally" (Paulson, Davidson, Jha, & Kabat-Zinn, 2013, p. 91). He developed the Mindfulness Based Stress Reduction (MBSR) program in 1979 at the University of Massachusetts School of Medicine as a means to assist patients with pain management (Kabat-Zinn, 2003). Since that time, the MBSR program and several variations have been implemented broadly in across disciplines. Typically, MBSR is a group-based intervention in which participants meet for eight weekly sessions comprised of mindful breathing, body scan, meditation, and yoga (Kabat-Zinn, 2003).

There are several examples in which MBSR has been used as an intervention to decrease stress among healthcare providers. A review of nine studies involving MBSR instruction for nurses was conducted by Ghwadra, Abdullah, Yuen, & Kar (2019). While some programs based on MBSR were modified in length, the curriculum across all

studies was consistent with positive outcomes for each. Nurse participants reported stress and anxiety reduction, improved mindfulness, job satisfaction, well-being, compassion, and quality of life (Ghwadra et al., 2019).

In the context of healthcare, the effects of stress can saturate a provider's life but also negatively influence patient care. Non-reactivity cultivated through MBSR enables practitioners to remain calm and more objective as opposed to reactionary. A study with 100 health care providers conducted at a large, Midwestern teaching hospital found completion of an eight-week MBSR course to be effective in helping participants self-regulate their responses during stressful situation (Benzo, Anderson, Bronars, & Clark, 2018). The ability to be non or less reactive to stress-inducing challenges can be instrumental in making clear, informed decisions and suffering fewer consequences from stress and anxiety.

Mindfulness Programs in Healthcare Education

The process of developing health care professionals requires a comprehensive approach which incorporates the creation of knowledge, the delivery of care, and the ability to demonstrate competence and compassion. It is a process which demands a great deal of individuals and often tests their resiliency to stress and anxiety. Over the course of several decades, the practice of mindfulness has been slowly integrated into curriculum by some health profession educators. Research conducted within the fields of medical and nursing education is most prevalent. Dobkin & Hutchinson (2013) identified 14 medical schools which provided some form of mindfulness instruction to medical and dental students in addition to residents. Program length and formats varied from one-day

workshops to more intensive multi-week courses but each reported decreased psychological distress and an improved quality of life among participants. Surgical residents who received a two-hour MBSR class with 20 minutes of suggested daily practice over an eight-week period was the focus of a study conducted by Lebares et al. (2018). The MBSR program was implemented as a strategy to address the estimated 69% of general surgery residents who reported overwhelming stress and its detrimental effects on learning, memory, decision-making, and performance (Lebares et al., 2018).

Similar results were analyzed by McConville, McAleer, & Hahne in a 2017 study. The authors reviewed 19 studies which included 1,815 participants. Meta-analysis was performed evaluating the effect of mindfulness training on mindfulness, anxiety, depression, stress, mood, self-efficacy, and empathy. Mindfulness-based interventions were found to decrease stress, anxiety, and depression while improving mindfulness, mood, self-efficacy, and empathy in health profession students (McConville, et al., 2017). Supportive research was conducted by Slonim, Kienhuis, Di Benedetto, & Reece, (2015). The authors surveyed medical students in Australia in an attempt to better understand the relationships among self-care, dispositional mindfulness, and psychological distress in medical students. The findings supported the hypothesis that higher levels of dispositional mindfulness are associated with lower levels of distress, and higher levels of self-care are also associated with lower levels of distress (Slonim, et al., 2015).

Mindfulness as a conduit to lower stress levels, increase attention, and attain a higher sense of resiliency was the focus of a small study involving medical and doctoral nursing students in Britain in the summer of 2019. A six-week course comprised of a

workshop and five weekly, 30-minute mindfulness training sessions increased student resiliency and stress based on survey results from the Brief Resilience Scale (BRS) and the Mindfulness Attention Awareness Scale (MAAS) administered at the start and conclusion of the course (Noble, Reid, Walsh, Ellison, & McVeigh, 2019).

Mindfulness in Dental Education

The research focused on dental students and mindfulness is limited in comparison to other health professions such as nursing and medicine. However, Basudan et al. (2017) provide evidence that substantiates the need for mindfulness programming within dental education. Consideration and implementation of strategies for stress prevention and management in dental schools to improve students' wellbeing, prevent drop out, and ensure proper patient care were recommended. Similarly, based on a review of the literature, Lovas, Lovas, & Lovas (2008) were able to draw clear connections between mindfulness and improved attentiveness, self-awareness, acceptance, wisdom, and self-care in dentistry. The authors conclude their review with a recommendation to integrate mindfulness education and practice into dental education curriculum to help cultivate health professionals' abilities to let go of self-focused, short-term rewards and promote the long-term common good. Lovas et al. (2008) conclude that mindfulness practice as an educational component contributes to a higher quality of life for both dentists and patients alike.

The studies related to mindfulness training and practice underscore the value in teaching health care students how to better self-regulate to the benefit of their own well-being, the sustainability of their professional life, and the care experience of their

patients. Integrating mindfulness-based learning and practice opportunities better equips students to recognize stress and engage their developing resiliency while completing their studies and prior to the start of their career. In essence, they walk out the door better prepared to face the challenges which await them.

Leadership Literature

While there is limited literature specifically related to leadership in dentistry or dental education, there is a growing body of literature linking mindfulness and universal leadership. Beginning with the neurobiology of focus and distraction, Mohapel (2018) makes the case for health leaders to engage in mindfulness to increase mental flexibility, foresight, regulation, and creativity. The multitasking demanded by the complexity and pressure of today's health care system can compromise executive function and be counterproductive (Mohapel, 2018). Furtner, Tutzer, & Sachse (2018) conducted a study with 174 university students correlating self-leadership using the Revised Self-Leadership Questionnaire and mindfulness using the Kentucky Inventory of Mindfulness Skills. The authors concluded mindful self-leaders are better able to be present and achieve personal and organizational goals. A cross-sectional multi-source study with 65 leaders and 153 employees from a variety of industries showed that leader mindfulness was positively related to employees' positive affect as well as job satisfaction (Pinck & Sonnentag, 2018). More concretely, transformational leadership, defined as a "mutually stimulating relationship between leaders and subordinates", inspires employees and positively affects the self-perceived levels of employee wellbeing (Pinck & Sonnentag, p. 885, 2018). Renown mindfulness and leadership author, Janice Marturano (2018) has

written on the benefit of mindfulness as a means to identify biases, minimize reactivity, and identifying commonalities among leaders and employees even under contentious situations.

Summary

The subject of mindfulness as a means to assist in the development of health professionals is garnering attention among researchers due in part to the recognition of stress and anxiety as inhibitors to a healthy professional and personal life. Viewing mindfulness as a means to reduce and recover from stress fosters resiliency and enhances leadership skills. The practice can fill a void often present in traditional healthcare provider training and professional development (Kinser, Braun, Deeb, Carrico, & Dow, 2016). The clearer the mind, the greater the focus, the increased probability of improved decision-making all point to leadership skills worth pursuing.

CHAPTER THREE: METHODOLOGY

Introduction

A mixed methods approach was selected to investigate the complexity of anxiety and mindfulness as related to the experience of first year dental students. Measurable anxiety levels, the students' application of mindfulness, and outcomes as narrated by the students combine to present a rich data set from which the influence of the course intervention is better understood. Quantitative data was collected to measure the generalizability and magnitude of self-perceived anxiety among the sample population. The qualitative methodology employed provided a means for students to express their perceptions about the influence mindfulness instruction had or did not have on their anxiety levels which enhances our understanding of the education intervention. Mindfulness Attention Scale (MAAS) measured self-rated state of mindfulness. Self-perceived levels of anxiety were measured by the Generalized Anxiety Disorder 7-item (GAD-7) scale. Reflections by students regarding their personal experience and participation in the mindfulness course were coded according to dominant themes. As Fetters, Curry, & Creswell (2013) illustrate, in mixed methods research, quantitative data can assist in validating qualitative data while qualitative findings can help provide context to quantitative data and refine future interventions.

Research Questions

The research questions posed are, "To what extent does a required six-week mindfulness experiential course reduce self-rated levels of anxiety as reported among first year dental students at a private, Midwestern university? What are the experiences of first year dental students as they relate to anxiety and mindfulness based on their

experience completing a six-week mindfulness experiential course at a private, Midwestern university?"

Hypothesis

Given the research supporting mindfulness instruction and practice as positively influencing participants' memory, mindset, focus, and resiliency, it was anticipated that the intervention would assist in reducing anxiety and increasing mindfulness (Epstein, 1999).

Research Methodology

A mixed methods approach to the study was chosen to capture both the sense of anxiety perceived by students and the effect of the Mindfulness and Wellbeing course as an educational intervention. Quantitative data was collected through two survey instruments, the Mindfulness Attention Scale (MAAS) and the Generalized Anxiety Disorder 7-item (GAD-7) scale, while qualitative data was garnered through student essays written in response to two prompting questions. The essays were coded by four readers according to prevalent themes and subthemes. Differences in coding by the readers was noted and reconciled through three full readings of each essay. Use of the student essays was determined by their availability, direct interrelation to the topic of anxiety, and mindfulness effectiveness as perceived by first year dental students.

Research Design

The mixed methods design focused on first year dental students participating in a required course, or educational intervention, titled CPD 121: Mindfulness and Wellbeing. The research design is described as convergent or concurrent because both qualitative and

quantitative data was collected during the same timeframe (Fetters, Curry, & Creswell, 2013). Data analysis of the two data sets was done in parallel. The quantitative portion of the study was designed to capture the self-identified levels of anxiety among first year dental students utilizing a survey instrument, General Anxiety Disorder 7-item (GAD-7) scale. The Mindfulness Awareness Attention Scale (MAAS) is a 15-item instrument was factored into the research design but there was an error in its development and administration. All questions on the instrument were not included during the development of the Qualtrics survey. Discovery of the error occurred during data analysis. Following consultation with the chair and research methods expert, the decision was made to discard the results. The measure of anxiety via the GAD-7 scale as a pretest to the educational invention established a baseline of student self-rated anxiety. Results of the GAD-7 as a posttest provided evidence of perceived anxiety following participation in the mindfulness-based course.

The qualitative data was generated from an essay assignment completed by each student in which two articles on mindfulness and two questions were provided. The assignment was framed with the instructions, “Because this course is pass/fail, you are asked to be honest in your reflection. Honesty will not detract from your grade. The reflection is more of a note to yourself for future reference. As you sit down to write your reflection, consider the elements for reflection, openness, observation, and objectivity. Take five minutes of quiet. Reflect on what you notice as you integrate the readings into your practice. Be as specific as possible about the three elements to describe your experience or understanding. This reflection is about you and not about people in general.” The contribution to understanding the student experience was enhanced through

the student narratives as they described their response and perceived outcomes in relation to the mindfulness practices as instructed and demonstrated.

There are some acknowledged assumptions and limitations with the study. It was assumed that students would respond authentically. It was assumed that students would accept the separation between the assessment process for grading purposes and the research process for understanding the student perspective and experience. Quantitative research is limited in that not all environmental factors can be accounted for and there is no clear way to identify influencing variables not included in the study. In addition, close ended questions presented through a survey do not allow for participants to explain or expound on responses. This limitation is addressed, in part, by the inclusion of a reflection paper authored by the students and coded thematically by the researcher and select colleagues.

Participants

All first-year dental students (n = 110) were required to complete a six-week mindfulness course led by a professor with over ten years of experience teaching the subject matter. The class size was 110 students at the start of the study. One student withdrew from the school between the start of the study and its conclusion. The demographic data and initial GAD-7 survey data represent a population of 110 students and the final GAD-7 survey and qualitative data was collected from a population of 109 students. Of that number, 104 completed the pretest and 108 completed the posttest. Because the surveys were completed anonymously, there is not a way to know if the two students who withdrew from the dental program completed the pretest, but it is certain

they did not complete the posttest. The sample population was comprised of 45 women and 65 men ranging in age from 21 to 37 years old.

Table 1
First-Year Dental Student (n = 110) Demographics

Gender	**Male**	**Female**
	65	45
Age	**M/SD**	**M/SD**
	23.9(2.64)	23.29(1.76)
Grade Point Average	3.63(.18)	3.65(.2)
Overall 3.64(.19)		
Ethnicity		
African American	1	2
Asian Indian	0	0
American Indian or Alaska Native	0	0
Asian/Pacific/Islander	5	7
Caucasian/White	54	31
Hispanic	5	5
Faith		
Catholic	24	17
Christian	12	6
Evangelical	1	0
Hindu	0	2
Jewish	1	0
LDS	5	1
Lutheran	1	2
Methodist	1	1
Mennonite Brethren	0	1
Muslim	5	1
Pentecostal	1	0
N/A	14	14

The convenient sample of the first-year dental class was based on the curriculum requirement for all students to complete the CPD 121: Mindfulness and Wellbeing course.

Data Collection Tools

Quantitative. The data collection tools used in this study include the Generalized Anxiety Disorder scale (GAD-7), a psychometrically valid measure designed to assess the presence of generalized anxiety disorder symptoms (Ruiz et al., 2011). The GAD-7 is comprised of 7-items, the scores of which are added to total a range from 0 (not at all) to 3 (nearly every day). The total score can be categorized into four severity groups: minimal/no anxiety, mild, moderate, or severe (Ruiz et al., 2011).

Table 2
Generalized Anxiety Disorder 7-item (GAD-7) Scale

Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid, as if something awful might happen	0	1	2	3
	Column totals _____	+ _____	+ _____	+ _____ =
				Total score _____

If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?			
Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
❑	❑	❑	❑

Source: Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD-PHQ). The PHQ was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues. For research information, contact Dr. Spitzer at ris8@columbia.edu. PRIME-MD® is a trademark of Pfizer Inc. Copyright© 1999 Pfizer Inc. All rights reserved. Reproduced with permission

Scoring GAD-7 Anxiety Severity

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of "not at all," "several days," "more than half the days," and "nearly every day."
GAD-7 total score for the seven items ranges from 0 to 21.

0–4: minimal anxiety
5–9: mild anxiety
10–14: moderate anxiety
15–21: severe anxiety

Incomplete data was collected using the Mindfulness Attention Awareness Scale (MAAS) and, as a consequence, was not included in the study's findings.

Qualitative. Assessment of the mindfulness course was based on attendance and completion of the final assignment which consisted of a three-page reflection paper. The qualitative data generated from the reflection paper was coded according to defined themes and subthemes. Students were asked to read two articles, "Here's What Mindfulness Is (and Isn't) Good For" (Goleman, D., 2017) and "Mindfulness and Professionalism in Dentistry" (Lovas, et al, 2008). They were then asked to reflect up on and answer two questions:

1. Discuss your experience with the practices in this course including challenges either physical, emotional, religious, gender or social.

2. Discuss how you have or can incorporate the practices in your life both at school and in your personal life.

The course instructor graded the papers according to the Pass/Fail structure of the course in early December 2019. Once the names of participating students were redacted, the papers were reviewed and coded by the researcher, two additional readers who serve on the university's faculty, and an undergraduate pre-dental research assistant. Themes and supporting quotes were included to supplement the quantitative data collected from the described survey instrument. Three-weeks post course conclusion, a departmental administrative assistant redacted the student names, printed copies, divided them into four equal sets (1-27, 28-56, 57-85, 86-108), and distributed one set per reviewer. The lapse of time was intentional as it enabled the instructor to distance herself from the evaluation process. Data was analyzed in aggregate and not linked to any course assessments or grades. The process for theme identification and coding began with an initial read of the essays by the four readers.

Education Intervention

The CPD 121 course curriculum, or intervention, addressed the research supporting mindfulness as a stress and anxiety reduction technique and included several mindfulness practices. A typical class session would begin with the instructor articulating a brief explanation of mindfulness practice as a means for stress reduction, compassion, self-awareness, and empathy based on available scientific research. The instructor would then invite students to follow her demonstration of yoga poses, movement, stretches, and breathing exercises. She would conclude the session with guided meditation and relaxation. The instruction and practices were conducted in the Program for Ignatian

Mindfulness (PIM) Lab. The lab is a large, 45 feet long x 25 feet wide, room with a cushioned mat floor and large windows. It is equipped with yoga mats, eye bags, blankets, music, and diffused essential oils. The participants were divided into four sections to facilitate greater interaction with the instructor and to accommodate the mindfulness lab space which has capacity for 28 students on yoga mats.

Data Collection Procedures

Timeline for the Study. With the dental school dean's support, the school curriculum committee approved the course content in June 2018 and the school's associate dean for research reviewed and recommended the study design in August. Institutional Review Board (IRB) approval for the current study was granted on October 9, 2019. The course was launched the week of October 23, 2019.

The administration of the GAD-7 was conducted the week October 23, 2019 during the first class of a Mindfulness and Wellbeing course, CPD 121, instructed by a faculty member in the Creighton University School of Dentistry's Department of Community and Preventative Dentistry. The GAD-7 scale was administered for a second time at the end of the six-week mindfulness course during the week of November 12, 2019. Also, during the week of November 12, 2019, students completed a three-page reflection paper describing their course experience. Data analysis was conducted from early January through late February. Findings were documented and the dissertation was completed by late March 2020.

Recruitment procedures. The course was taught in the Fall semester to four subsets of the first-year class with a composition of 27 students per group. Dividing the

D1 class of 110 students into four groups facilitated student participation as the mindfulness lab was equipped for 28 participants at a time. As principle investigator (PI), I joined the instructor of record to provide an overview of the study to students during the initial class session and invited them to participate.

Quantitative data collection procedures. Participating students were asked to complete the GAD-7 scale survey at two distinct points; during the initial class session and again at the final class session. The Mindfulness Awareness Attention Scale (MAAS) was also distributed using the same online survey tool but an error rendered the results void. Data collection was insufficient and, therefore, not included in the final study.

The GAD-7 was distributed using Qualtrics, an online survey platform licensed by Creighton University and branded as BlueQ for faculty, staff, and student use. The survey was distributed at the start of a six-week mindfulness course and at its conclusion. Allowing students to complete the survey during class time decreased the burden to the student and increased participation rates.

Qualitative data collection procedures. A three-page reflection paper was required of all students during the final class. This paper was required of all students as a means of assessment in this Pass/Fail course and to provide qualitative data for study inclusion. Table 2 provides reader assignments for the reflection papers.

Table 3
Reader Assignments

Reader No.	Role	Assignment

1.	Research Assistant, College of Arts and Sciences	Essays 1-27
2.	Assistant Dean, School of Dentistry (PI)	Essays 28-56
3.	Assistant Professor, College of Arts and Sciences	Essays 57-85
4.	Associate Professor, School of Dentistry	Essays 86-108

The qualitative data collected through the reflection papers was coded according to themes which emerged from student responses. The four reviewers met after the first read through of their set of student papers. Themes and subthemes were identified and included: self-identified challenges, practices, student outcomes, patient outcomes, course structure, and overall benefits. Subthemes provided additional specification as related to the primary themes. Reviewers then read their assigned set of essays for a second time and coded according to the newly agreed upon themes and subthemes. In addition, each reviewer selected quotes and coded them according to the themes and subthemes to provide context to the student experience as they perceive it.

As a third step, the research assistant and I each read the full set of essays (1-108) and scored them according to the established codes. We then identified those essays for which the codes did not explicitly match between us. We reconciled any discrepancies between the two data sets and unified the data into a single set. The final step of data reconciliation occurred when I returned to consider the essay groupings reviewed by the third and fourth readers, Drs. Fox and Harris. Any significant outliers from the combined data set were reviewed and a comprehensive qualitative data set was finalized. The final data set included quotes extracted by each reviewer and coded according to the essay

number, theme, and subtheme. The data set was saved on an Excel spreadsheet making future search and sort processes efficient (see Appendix B).

Validation Strategy for Qualitative Data Analysis

A member check, or respondent validation, was conducted as a final measure of analysis. The qualitative data was shared in aggregate with a subset of first year dental students. The group was comprised of seven students who volunteered to participate in a mindfulness-based, four-week journaling and conversation club which met for an hour a week for four weeks in February 2020. Students were invited to provide feedback on a brief summary of the research findings. They responded constructively, finding the data to align with their perceptions of both personal and collective experience. They emphasized the benefit of the yoga practices and the dedicated time to focus on self-care. They also encouraged continuation of the course and consideration of additional courses. Regarding suggestions for improvement, the students offered the idea of including journaling and even smaller class sizes to facilitate more open and deeper dialogue about the challenges of dental school. They acknowledged not all of their peers found the course to be as valuable as they did. The primary point of discontent appeared to be the time allocation for the course and its status as required. It was assessed as pass/fail and, therefore, not significant in terms of overall Grade Point Average (GPA). However, students continually negotiate their time allocation across 11 courses scheduled in a single semester. The Mindfulness and Wellbeing course became a stressor for some students, especially on exam days, thus generating the opposite of the intended affect.

Mixed Methods Integration

As articulated by O'Cathain, Murphy, & Nicholl (2010), bridging the quantitative and qualitative data moves researchers from thinking about the findings related to independent data sets to intersecting findings. In this case, the integration of measurable anxiety levels and self-described perceptions of mindfulness illustrated through specific examples provided a more complete understanding of the influence of the intervention on anxiety and mindfulness among the study population. More specifically, the quantitative data garnered through the GAD-7 became more useful only when connected directly with the complexities of the student experience as they are articulated upon reflection.

While the GAD-7 survey revealed a student propensity for feeling nervous, anxious, or on edge, the narratives provided insight into the visceral manifestation of those feelings. For example, the mean score for the pretest and posttest to the first survey item, "Feeling nervous, anxious, or on edge" was 2.73 and 2.68 respectively. Those numbers tell us that students in general identify with the experience of those emotions nearly every day. That is helpful to know when attempting to detect areas of concern. However, when a student writes, "The moment things felt like it was out of my control, I panicked, and that led to increased stress, then doubt, then fear, then inability to retain content" we gain a concrete and real life example of the toll anxiety can take on personal wellbeing and academic performance. The integration of quantitative and qualitative data recognizes the limitations of each while blending their strengths. The mixed methods approach chosen for this study is defined as convergent parallel design. Described by Hadi, Alldred, Closs & Briggs (2013), this design provides equal value to quantitative and qualitative data, analyzes both in parallel, and then integrates them seeking a broader understanding of the issues.

Ethical Considerations

It was vital that participating students understood their responses to be confidential and anonymous to the researcher. Integral to the introduction of the research project to the students was a clear explanation of the project, how the data would be used, and the means of data collection. I recognize the sample population is a captive audience and participation in the study may be swayed by its inclusion in an academic course. Recognizing that participating students may have felt compelled to respond more positively if unsure of true anonymity, reassurance was intended to be helpful. A demonstration of the survey tool and the researcher's view of the data was also shared to alleviate any concerns about confidentiality.

A clear distinction between the requirements of students to meet course objectives and voluntary participation in the research study was articulated at the beginning and at the conclusion of the mindfulness course. While the professor who provided instruction and conducted assessment of student learning, participated as a reviewer, she is not the principal investigator. Nor am I, as principal investigator, responsible for any course assessment or student evaluation. Student participation in the research had no bearing on grades. This point was explicit.

Summary

Collecting data on anxiety in a quantifiable form provided a foundation from which I could connect the qualitative data generated from student experiential reflections. The process was effective because of the upfront work of the research team. The readers dedicated significant time and energy to identifying, articulating, debating, and seeking

consensus on themes which emerged from the student experience. While not flawless, the process of coding the 108 essays repeatedly and reconciling differences generated some clear and defensible themes from which the research questions were addressed, and knowledge created.

CHAPTER FOUR: RESULTS AND FINDINGS

The intent of this concurrent mixed methods study was to provide a systematic evaluation of a required, six-week mindfulness education and practice course designed to reduce the self-perceived levels of anxiety among first year dental students. The questions driving this mixed methods research project ask "To what extent does a required six-week mindfulness experiential course reduce self-rated levels of anxiety as reported among first year dental students at a private, Midwestern university? What are the experiences of first year dental students as they relate to anxiety and mindfulness based on their experience completing a six-week mindfulness experiential course at a private, Midwestern university?" The research questions focus on the student perception of mindfulness through the chronology of participation in the mindfulness course.

The premise of my research questions assumed there was a shared experience of anxiety among students. More specifically, the research questions were problem-centered and sought to make meaning of the real-world dynamic of anxiety among first year dental students and the consequence of mindfulness instruction and practice. Based on the findings as reported through quantitative data, the self-reported anxiety levels of students decreased slightly from the beginning of their participation to its conclusion but remain significantly high. Student written reflections describing their own challenges and responses point to a negative correlation between anxiety and mindfulness based on the

participation in the educational intervention. The majority of students reported positive attributes of and outcomes from the educational intervention while providing insight into the role anxiety and mindfulness play as first year dental students.

Results

First-year dental students who participated in this study reported severe anxiety levels and articulated a struggle to manage the accompanying effects. Their responses to a mindfulness-based education intervention were positive in helping them address anxiety but self-perceived levels remained high. There were no significant differences in self-reported anxiety levels between pre- and posttest. Breathing, movement, and relaxation exercises proved to be productive in assisting most students with anxiety and stress management. Additional outcomes from the educational intervention included improved focus, self-awareness, self-care, and academic performance. The most common point of discontent was one specific tapping exercise conducted in one of the six class sessions. Reviews on requiring the course for first year dental students was mixed with some students finding it necessary for participation while others felt it was too prescriptive, less relevant to their educational goals, and a stress inducer. Time allocation and management appears to be a major driver in students' perception of the course value as many find the overall dental course load and rigor to be very demanding.

Quantitative Findings

One of the most striking results of the study is the data generated from the pre and posttest of the Generalize Anxiety Disorder-7 (GAD-7) scale. Generalized Anxiety Disorder affects 1.6% to 5% of the general population (Spritzer, Kroenke, Williams, &

Löwe, 2006). However, 94.23% participating dental students taking the GAD-7 reported feeling nervous, anxious, or on edge over several to nearly every day. The average GAD-7 scores for first year dental students were well into the severe anxiety range (M = 17.1, SD = 5.7) pretest and (M = 16.1, SD = 5.4) posttest.

Table 4
Means and Standard Deviations for the Generalized Anxiety Disorder-7 Scale Items

Items	Pretest M/SD	Post M/SD
1. Feeling nervous, anxious, or on edge	2.73 (0.93)	2.68 (0.88)
2. Not being able to stop or control worrying	2.37 (1.00)	2.18 (0.95)
3. Worrying too much about different things	2.68 (1.02)	2.49 (0.97)
4. Trouble relaxing	2.45 (1.12)	2.39 (1.02)
5. Being so restless that it's hard to sit still	2.26 (0.97)	2.09 (0.98)
6. Becoming easily annoyed or irritable	2.42 (0.96)	2.29 (0.89)
7. Feeling afraid as if something awful might happen	2.14 (1.13)	1.99 (1.00)
GAD-7 Score	17.1 (5.7)	16.1 (5.4)

Validation and standardization of the GAD-7 as it relates to the general population provides a means for interpretation of the GAD-7 results. Response options are "not at all," "several days," "more than half the days," and "nearly every day," scored as 0, 1, 2, and 3, respectively. Therefore, GAD-7 scores range from 0 to 21, with scores of >5, >10, and >15 representing mild, moderate, and severe anxiety symptom levels (Lowe, et al., 2008).

The response rate was 95% for the pretest and 99% for the posttest. To varying degrees in the pretest, nearly 75% of responding students reported that at least one of the

listed problems made it difficult to do work, take care of things at home, or get along with other people (M=1.95/SD=.70). In the posttest survey, 66.96% of respondents reported at least one of the listed problems made it difficult to do work, take care of things at home, or get along with other people to varying degrees (M=1.83/SD=.70).

Table 5
GAD-7 Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
GAD Score	Equal variances assumed	1.359	.245	1.247	210	.214	.95584	.76631	-.55480	2.46648
	Equal variances not assumed			1.246	207.997	.214	.95584	.76719	-.55662	2.46830

Although trending in the right direction in terms of reduced anxiety, the results were not statistically significant. The mean GAD score decreased pre-post, the difference was not statistically significant, $t(210) = 1.247$, $p = .214$

Qualitative Findings

A three-page final assignment instructed students to reflect and write a response to two questions posed by the instructor and two provided journal articles. In relation to the questions and articles, they were asked to summarize their own experience as a course

participant. A multistep and repetitive coding process generated several primary themes with related subthemes. Through several conversations, readers agreed upon definitions for each. This method served as the foundation for coding and better understanding the student experience related to the educational intervention.

Specifically, each reader reviewed the set of essays assigned in relation to themes that were identified when the course was taught and analyzed the previous year. Although the data from 2018 is not included in this study, the themes identified at that time provided a starting point for analysis. When the readers convened after the first review, themes were solidified with some modifications from the previous year. Specifically, the theme of self-identified challenges was chosen to categorize any issues students specifically described as problematic. The practices theme expanded yoga to include movement. Meditation was changed to guided relaxation in order to be more descriptive of the instructed practices. Tapping was divided to reflect the distinction between two types demonstrated in class. The category of outcomes was broadened to include energy level, professionalism, non-patient relationships, physical outcomes, and faith. These subthemes emerged from a more detailed examination of student outcomes in comparison to previous data analysis. Finally, course structure was reformatted to provide more specific feedback related to the interest in additional offerings, the environment in the lab space, and the day and time of the week classes were scheduled in order to adjust future offerings.

Reviewers then read their assigned set of essays for a second time and coded them according to the newly agreed upon themes and subthemes. In addition, each

reviewer selected quotes and coded them according to the themes and subthemes to provide context to the student experience as they perceive it.

As a third step, the research assistant and I each read the full set of essays (1-108) and scored them according to the established codes. We then identified those essays for which the codes did not explicitly match between us. We reconciled any discrepancies between the two data sets and unified the data into a single set. The final step of data reconciliation occurred when I returned to consider the essay groupings reviewed by the third and fourth readers, Drs. Fox and Harris. Any significant outliers from the combined data set were reviewed and a comprehensive qualitative data set was finalized. The final data set included quotes extracted by each reviewer and coded according to the essay number, theme, and subtheme. The data set was saved on an Excel spreadsheet making future search and sort processes efficient.

Table 6
Student Reflections: Themes, Subthemes, Explanations

Self-Identified Challenges	This theme encompasses barriers to the overall state of well-being and mental health as described by students.
Anxiety and Stress	Anxiety and stress were often used interchangeably but it was determined to note which of the two words was specifically stated by the student in terms of coding.
Critical of Self	Critical of self is synonymous with self-judgement or inner critic.
Depression	Noted when specifically referenced by a student as a felt emotion.
Diagnosed	Diagnosed indicated the student revealed a clinical or therapeutic diagnosis from a care provider.
Focus	Focus, attention, and awareness were often used interchangeably by students and were most often

	related to studying and test taking.
Memory	Primarily used in the context of recall for the purpose of completing examinations.
Perfectionism	Perfectionism was either specifically noted or clearly defined by references to striving, excelling, and achieving.
Practices	Methods of mindfulness are categorized as practices because they represent either actions or ways of proceeding.
Aroma Therapy	Aroma therapy referenced the use of essential oils.
Breathing	Breathing was abbreviated from breathing exercises.
Guided Relaxation	Guided relaxation is synonymous with meditation.
Tapping – General or Stress	Tapping exercises were divided by type, either general or specific to stress reduction.
Yoga/Movement	Yoga and movement were associated as stretching exercises.
Student Outcomes	The results based on student participation in the mindfulness course from the student perspective formed this theme.
Calm/Relaxed/Less Stress	A sense of anxiety reduction or alleviate as defined by student reference.
Empathy/Compassion	Affinity, appreciation, or kindness toward oneself as articulated by students formed this subtheme.
Energy Level	Energy level was typically self-reported as increased.
Faith	Faith was referenced when students make a connection with their own tradition.
Focus/Attention	Students describe this theme as the ability to concentrate as related to their attention in class.
Memory	Retaining and recalling information as the process related to academic studies formed this subtheme.

Non-patient Relationships	Non-patient relationships were noted if students specifically addressed the influence of the course on relationships with people other than patients.
Performance/Grades	Many students related scoring on exams as a key indicator of effective mindfulness practice.
Physical State	Physical state was noted if students identified physical benefits or hinderances.
Self-Awareness	A common subtheme of student outcomes, students noted whether they felt more introspective or contemplative when assessing their state of well-being and mindfulness.
Self-Care	Students reference self-care specifically as taking care of themselves either physically, mentally, or both.
Patient Outcomes/Benefits	This theme focuses on the relationship between patient and student as care provider. In the final analysis, subthemes of communication, empathy, professionalism, and reflection were compressed into the primary theme of general patient benefits due to the discrepancy in reader interpretation.
Course Structure	This theme and subthemes provided greater specificity to help the researcher understand the non-curricular factors which may have influenced the student experience.
Clothing	Students did not change clothes for the course so were in dress code attire which consists of a collared shirt and tie for men and slacks and collared shirt for women.
Number of Classes	Students commented on the number of classes or sessions scheduled for the course. Most were in favor of adding sessions.
PIM Lab	PIM lab is abbreviated for Program for Ignatian Mindfulness Lab. The physical space in which the classes were held was referenced specifically by students (see Appendix C).
Required	CPD 121: Mindfulness and Wellbeing was a required course for all first year (D1) dental students in the

	second quarter of 2020.
Time Commitment	Students commented on the time allocated to the course which comprised of six classes of 50 minutes each totaling five hours. Some students felt time spent in this class was time subtracted from study time. This is not a common concern in relation to other courses which may signify the perceived value within the curriculum or the fact that it was structured as
Uncertain Expectations	A large number of students commented that they did not know what to expect from the course. Some have preconceived ideas that it would be more yoga based while others thought the meditation practice would be dominant.
Want Additional Courses	Recognizing the potential for integrating mindfulness into the curriculum beyond the first year, interest expressed in participating in additional courses was noted.
When Offered (Day/Time)	Students appeared somewhat influenced in their experience of the course based on the section to which they were assigned. There were two sections on Tuesday afternoons, one Wednesday afternoon, and one on Friday morning. The most favorable time slot for those who addressed scheduling was the Friday class.
Overall Experience Positive Negative Mixed	Readers considered each paper comprehensively and labeled the student experience as either positive, negative, or mixed based on the students' description of the course content and influence. While a subjective process, reconciliation of disparate coding among the readers concluded with agreement.

Self-identified Challenges. Students were forthright in their self-assessment regarding intrinsic challenges they were facing. The vast majority reference anxiety and stress as prevalent emotions. The challenge of focusing and memorizing material was also a common theme as related to didactic comprehension and hand skill activities

explicit to dental education. Additionally, the drive to succeed and compete with peers favorably generated self-criticism and interfered with positive states of mind.

Table 7
Theme One: Self-Identified Challenges and Quotes

Theme and Subthemes	Student Quotes
Self-Identified Challenges Anxiety Critical of Self Depression Diagnosed Focus Memory Perfectionism Stress	"When midterms began, I found myself getting little amounts of sleep and skipping meals so I could study (cram) as much as I could. [Despite]the amount of work and time I spent learning the materials I was still having trouble recalling all the information and my grades didn't seem to reflect the amount of work I was putting in." "As we get closer to the end of the semester, I feel that it takes longer to memorize anything, and I cannot focus as I used to at the beginning of the semester." "Sometimes when I get under an intense workload, I cannot even pinpoint what is causing most of the distress due to the overflow I am experiencing and consequently all the issues start to blend together in a blur of confusion." "The moment things felt like it was out of my control, I panicked, and that led to increased stress, then doubt, then fear, then inability to retain content."

Course Practices. Course participants met for six sessions of approximately 50 minutes each for a total time allocation of six hours over the course of six weeks. The lab/studio was equipped with yoga mats, blankets, eye bags, straps, and related props to assist students in stretching and gentle movement exercises. The room was scented with essentials oils and instrumental music played in the background. The environment was intentionally created to foster relaxation and contemplation. The activities demonstrated were accessible to participants of various abilities and focused on breathing, tapping, and movement in addition to guided meditation and relaxation.

Table 8
Theme Two: Practices and Quotes

Theme and Subthemes	Student Quotes
Practices Aroma Therapy Breathing Guided Relaxation Tapping – General Tapping Stress Yoga/Movement	"Deep breathing resonated with me the most…This helps me to focus my attention inward. It also slows my heart rate if I do it long enough which gives me a sense of stress relief in and of itself." "The breathing techniques made me feel short of breath and tapping made me significantly more anxious." "My shoulders and neck were stiff most of the times, and my breath was un-regulated and shallow. Now, I have become more aware of those and am able to be mindful both mentally and physically."

Student Outcomes. Students were encouraged to reflect and write about their personal experience as course participants. The themes related to outcomes were generated by students and provided the foundation for the qualitative data collection related to the efficacy of the educational intervention. The outcomes ranged from immediately accessible such as stress reduction to longer term benefits such as improved attention and memory. This category also produced the greatest number of consistent subthemes and goes to the core of the research questions addressing the educational intervention's influence in reducing self-perceived stress among first year dental students.

Table 9
Theme Three: Student Outcomes and Quotes

Theme and Subthemes	Student Quotes
Student Outcomes	"Whether I have felt overwhelmed by a heavy workload or did not agree with a peer in my group, I

Calm/Relaxed/Less Stress Empathy/Compassion Energy Level Faith Focus/Attention Memory Non-patient relationships Performance/Grades Physical State Self-Awarenes Self-Care	was able to identify that this was my mind acting as a defense mechanism and shutting down…These internal management skills are something that I will benefit from both academically and professionally moving forward." "This class though, gave each of us a snap shot on how to take a step back and realize that these stressors don't define us, allowing us to identify what we can and cannot control, all while letting that fuel us into pushing through whatever challenging time we may be faced. That in itself made the class well worth it to me." "When I first began graduate school, I knew that I would have to make adjustments in how I study, how I handle stress, and in maintaining a balance in my life. However, looking back, I think that I was naïve in how difficult this adjustment was going to be. In addition, I was at a loss of how to go about training my mind for this transition. Through the course and my experience with mindfulness, I have been able to better discipline my mind and reduce my level of stress." "I didn't give mindfulness a chance at the start I thought it was a waste of time and there was nothing I could benefit from being in this class but as the weeks went by, I realized so much about myself that I wasn't paying attention to. I would like to share with the instructors how mindfulness has increased myself awareness, attention, sleep, posture and consciousness." "I found when I was more relaxed and feeling better my concentration in class went up and started to do consistently better all the way across the board whether that be didactic course work or my more hands-on course work…The best part about building and continuing these habits was that they are very sustainable and not time consuming."

Patient Outcomes. The student reflections on patient outcomes point to aspirational intentions to serve others as healthcare providers. First year dental students

have little engagement with patients, but they are in a process of professional formation to serve and care for others. In many ways, they are preparing for and anticipating patient care based on their own experience as dental care recipients and what is being taught through the curriculum. The reassuring elements of their responses lie in the fact that they are predicting the patient relationship and how they envision themselves as healthcare providers.

Table 10

Theme Four: Patient Outcomes and Quotes

Theme and Subthemes	Student Quotes
Patient Outcomes Communication Empathy General Benefits Professionalism Reflection	"Being present with a patient may be the most important part of the patient interaction. If a dentist cannot come into the present and feel what the patient is feeling and try to connect on a personal level, the experience for the patient will be lacking." "Practicing mindfulness implements a humanistic approach to how we take care of ourselves and therefore how we will take care of our future patients." "This is critical, especially with the large trend toward patient centered care now in the healthcare field because if dentists see themselves as servants of the patient's well-being and mindfulness is a practice which will improve the doctor's attentiveness, mental clarity, and acceptance, then the patient experience will certainly improve as well."

Course Structure. The final set of reflection themes and subthemes center on the mechanics of course delivery and the environment in which the course was delivered. Nearly every student referenced the uncertainty experienced as they entered the course. The course description was brief and is considered non-typical curriculum for dental

education. If students were scheduled for the course later in the week, they tended to be more amenable than those who were scheduled in the middle of week. Some students disagreed with the course being required while others felt the requirement was necessary to expand engagement and, ultimately, benefits. The feedback related to the course structure underscored the challenge of time management for students as several commented on what they viewed as a trade-off. Time spent on the course was less time spent studying material for which their knowledge would be evaluated and graded.

Table 11

Theme Five: Course Structure and Quotes

Theme and Subthemes	Student Quotes
Course Structure Clothing Number of Classes PIM Lab Space Required Time Commitment Uncertain expectations Want Additional Courses When Offered	"Whenever I enter the studio, I leave everything that might distract my mind outside of the room. My only aim is to calm and nourish my soul." "I was skeptical of why a mindfulness class was a necessary addition to a dental school curriculum that was already busy enough. However, after taking part in this course, I realized that the busyness is the exact reason why a mindfulness course is necessary." "The mindfulness course was somewhat of a roller coaster for me…some weeks I found to be very beneficial and could see the value while other weeks I found it to be a complete waste of time. Perhaps the weeks I found it to be a waste of time are the weeks where I actually needed to engage and be more mindful." "I think that mindfulness would be most beneficial when practiced at times most convenient to you. Sometimes before exams, I would end up being more stressed that I missed out on an hour of studying."

Readers considered each essay in its totality and ranked them as overall positive, negative, or mixed based on student responses to the open-ended questions posed for the final essay assignment. Of the 109 essays submitted, 95 students summarized their experience with the course content as positive. One student described the experience as negative while 13 students qualified their overall experience as mixed with elements of positivity and negativity.

Summary

Perceptions of mindfulness benefits through participation in a six-week educational intervention as expressed through student reflections indicate general receptivity. Anxiety levels measured through a survey instrument during the same period were slightly reduced but remained significantly high for first year dental students in comparison with their general population peers. As reported through the GAD-7 pre- and posttest surveys, anxiety levels persisted in the category range of "severe". A vast majority of participating students described the course positively in the areas of addressing personal challenges, providing beneficial outcomes, and influencing patient care. While some practices were preferred over others and time management continued to be a challenge, the student narrative provided encouragement to continue the exploration and refinement of mindfulness-based instruction and practice as a means to help address anxiety and stress among first year dental students.

CHAPTER FIVE: PROPOSED SOLUTION AND IMPLICATIONS

Findings of this research study point to the potential for further exploration of mindfulness practice as a means of anxiety management among first year dental students. The need for stress reduction, increased attention, and self-awareness as a conduit for personal and professional development was evident in both the measure of anxiety and the self-reported benefits of mindfulness practice among study participants. While the educational intervention was generally well received by students, more can be learned about the optimal dosage of mindfulness practice and the implications for longer-term student outcomes. This chapter explores strategies for expanding the curriculum and length of the current CPD 121: Mindfulness and Wellbeing course, incorporating reflective practice in the course, and integrating mindfulness practice throughout the dental curriculum.

Aim of the Study

Aim of this study is to identify the association between mindfulness practice and anxiety. A complimentary aim of this study is to inform the content development of a curriculum which assists first year dental students in learning how to practice mindfulness as a means to manage anxiety in an effective way.

Proposed Solution and Supporting Evidence

Most students participating in this study articulated benefits specifically related to anxiety reduction, self-awareness, focus/attention, and self-care. This response was broadly positive but also constructive in forming new approaches to content delivery and course structure for future offerings. There are three primary recommendations designed to mitigate anxiety among first year dental students through the educational intervention of the course CPD 121: Mindfulness and Wellbeing and additional courses which could reasonably integrate mindfulness practice.

1. Extend CPD 121 from a six-week to an eight course.
2. Add reflective practice exercises as an integral component of the CPD 121 course.
3. Integrate mindfulness research and practice across the second, third, and fourth year curriculum.

Extend CPD 121: Mindfulness and Wellbeing Course

The current course offering for first year dental students was scheduled for six weeks, beginning at first semester midterm exams and concluding by final exams the same semester. The original premise was that the timing of the experiential course would be well placed for students approaching a point in the semester when anxiety levels are typically high. However, the course length may be insufficient to establish a comprehensive understanding of mindfulness or have adequate practice. Scores on the GAD-7 survey, $t(210) = 1.247$, $p = .214$, confirm, while anxiety levels were trending downward, the movement was not statistically significant.

There are mixed views on what is considered the ideal length of a mindfulness-based course intended for stress reduction. Through the early work of Jon Kabat-Zinn, an

eight-week course which includes formal meditation training via group meetings, a full day retreat, and home practice is often considered the gold standard (Van Dam, van Vugt, Vago, Schmalzl, Saron, et al., (2018). However, a condensed version of a mindfulness-based stress reduction course conducted by Demarzo, et al. (2017) over a four-week period was evaluated and determined to be equally effective as a similar eight-week course for a non-clinical population. The practice of loving kindness meditation was the primary curricular difference between the eight and four week programs. In completing the Mindfulness Attention and Awareness Scale (MAAS), participants in both groups reported an increase in equal measures of well-being. The differences in mindfulness and positive affect among both groups were significant in comparison with the control groups.

Lemay, Hoolahan, & Buchanan (2019) studied a small group of thirteen pharmacy and other college students who completed a six-week yoga and meditation program. A 60-minute weekly class preceding final exams was conducted. Students completed the Beck Anxiety Inventory (BAI), the Perceived Stress Scale (PSS), and the Five Facet Mindfulness Questionnaire (FFMQ) surveys. Overall, self-assessed levels of anxiety and stress reduced significantly.

On the minimal end of the spectrum, Prasa, Wahner-Roedler, Cha, & Sood (2011) analyzed the effect of a single-session meditation training to reduce stress among health care professionals. In this study, 17 female volunteers completed a one-time, two-hour group meditation training session and then continued practicing at home during the subsequent four weeks. Completion of the Perceived Stress Scale (PSS), Linear Analogue

Self-Assessment (LASA), and Smith Anxiety Scale (SAS), pre and post intervention, resulted in significant reductions across all surveys.

Given the diversity of program formats presented through available research, coupled with feedback from students, extension of the course length as an educational intervention would be an interesting experiment. Without prompting, four students specifically commented in written reflection papers that additional class sessions would have been helpful.

> *"Because we only practiced mindfulness once a week for an hour, I don't think I was able to reap the full benefits that mindfulness can offer."*
>
> *"If there is anything I could change for this class, it would be to make it a semester or at least change it to first quarter because it would've been useful during that first month transition into dental school."*

The proposed extension of the six-week course to an eight-week course would allow for additional content related to the scientific research of mindfulness, open the opportunity for discussion and journaling, and provide students with support from the transition to dental school through the completion of final exams.

Add Reflective Practice as an Integral Component of CPD 121

In the current course design, students are active participants in the practice of mindfulness but there is no structure for formal reflection. Adding a personal journaling assignment may provide the format and guidance needed for students to engage in meaningful reflective practice. Educational leader John Dewey defined reflective practice as an active, deliberative process, based on beliefs and knowledge, involving the interconnectedness of ideas to address practical problems (Hatton & Smith, 1995).

Jonas-Dwyer, Abbott, and Boyd (2013) studied the influence of reflective writing assignments completed by third year dental students as they transitioned to clinical care. The process was intended to form professionals who are self-aware, confident, clear communicators, and empathic care providers. Using an eight-item, pre- and post-survey designed with a reflective practice framework, students rated their performance using a Likert-type scale and two open text responses. Questions included, “I reflect on my own practice” and “Reflective practice helps me to challenge my own assumptions.” Responses ranged from “not at all” to “often”. Qualitative comments proved most helpful to the researchers indicating students considered reflective practice activities as constructive in helping them prepare for clinical rotations. Although inexperience at reflective practice was reportedly a challenge for some, most saw value in the exercise and recommended providing additional time for contemplation, giving feedback, and allotting time for one to one discussion with a fellow student.

In the current Mindfulness and Wellbeing course, there is little time for discussion or shared processing of the mindfulness experience. Despite this, many students commented that

the course provided a mechanism to enhance qualities which would serve them well in caring for patients.

> *“Every day that I show up and I am unaware of what's going on within myself is a day that a patient doesn't get my very best.”*
>
> *“It was only through the participation in the class that I was able to "get in touch" with myself, my emotions, and my thoughts. It was through meditation that I was able to see clearer, be more present and aware, and to reflect accordingly.”*

Therefore, it is reasonable to explore the integration of reflective practice expressed through journaling to deepen personal growth and help students reduce intrinsic anxiety. Reflective writing provides a venue for a deeper understanding of self and thus opens channels to empathy, compassion, and concern for others (Wald & Reis, 2010). It is considered an educational tool to slow down, think through, and ultimately be present to patients. In essence, reflective writing and practice are mindful activities.

Integrate Mindfulness Research and Practice Across the Curriculum

Given the dense curriculum and inflexible structure of the course schedule, it is very difficult to add courses to the established program of study within the school of dentistry. Despite the favorable outcomes generated by the Mindfulness and Wellbeing course, students recognize the limitations of the current schedule and its limitations for change.

> *"My only regret from the class is that I do not have the option to attend it next semester."*
>
> *"I wish we could have a class like that every semester, even though our schedules make it quite challenging to do so."*

In collaboration with the dean, senior associate dean, chair of the curriculum committee, and the course instructor, CPD 121: Mindfulness and Wellbeing was divided into four sections and scheduled at various times for the first-year dental students. The challenge of inserting new courses intensifies for the second-year curriculum given the length and complexity of lab assignments. The third- and fourth-year curriculum shifts to a strong clinic focus in which students provide patient care in a clinic which schedules over 11,000 patient visits annually. Therefore, I propose integrating components of

mindfulness education and practice within existing courses. A thorough review of second through fourth year curriculums in collaboration with course directors may generate some creative thinking which connects dental education and patient care with mindfulness. Integration of mindfulness is a logical fit as students engage course content addressing ethics, professionalism, leadership, and patient behavior. Fostered and supported through mindfulness practice, self-awareness, empathy, and humility align with professional practice standards as they relate to competencies in managing holistic wellbeing, resilience, communication, and patient centered models of care (McConville, McAleer, & Hahne, 2017). Based on course titles and descriptions, there are several options for mindfulness integration into existing courses, all of which are within the Department of Community and Preventive Dentistry or CPD.

Table 12
Potential Courses for Mindfulness Integration

Year	Course	Title	Description
D1	CPD 111	Interpersonal Relationships and Communication	To assist in their orientation and adjustment to professional education, freshmen will participate in group introductions followed by discussions on interpersonal relationships. Communication styles, time management, problem solving, dealing with stress, and understanding various cultural differences will be addressed.
D2	CPD 211	Ethics I	Provides an understanding of classical health care ethical principles which have direct relevance to students' training and future dental practice experience. Focuses on common ethical dilemmas found in the relationships between student and dental school, between dentist and patient, between dentists themselves, and between dentist and the community.

D3	CPD 313	Behavioral Science Aspects of Patient Care	The goal of this course is to enhance the students' ability to care for the patient by increasing the knowledge relevant to behavioral science topics. These include, but are not limited to topics such as empathy, rapport, communication, fear and anxiety, smoking cessation, domestic violence, and patients with disabilities, both physical and mental. Working with patients of different cultures will also be addressed. The student will work in managing various challenging situations through application of learned skills.
D4	CPD 411	Business of Practice	Designed to provide background information to assist in making informed decisions when agreeing to work as a dental associate. Employment contract language is discussed at length. The principles of purchasing a practice are explored including methods used in valuing a practice and financing the purchase of a practice. Principles are discussed for disability insurance, dental malpractice insurance and general office insurance.
D4	CPD 413	Ethics II	Students will discuss dental practice laws and licensing; impaired colleagues, peer review and whistle blowing; dental malpractice; prescription fraud and drug diversion; legal and social implications for treating mentally and physically challenged individual; and quality assurance in dentistry

Evidence that Challenges the Solution

Curricular changes are often challenging in dental education. Journal articles dating back to 1926 called for curriculum innovation in response to dense but myopic content focused primarily on systems and specialties versus an interdisciplinary approach to oral health education (Saffari, Frederick Lambert, Dang, Pagni, & Dragan, 2018). Resistance to change appears to be driven in part by the scheduling, an insufficient number of faculty members, and a requirements versus competencies emphasis. Therefore, carving out limited resources for mindfulness integration calls for an

evidence-based presentation supporting mindfulness practice for health providers as critical.

While significant evidence supports the practice of mindfulness, it is not a panacea. Van Dam, et al., (2018) articulated several aspects of mindfulness-based research which are problematic. Two fundamental challenges to evidence-based approaches to mindfulness are a lack of an agreed upon definition of mindfulness and research which does not adhere to accepted scientific methodology. Measuring mindfulness is difficult as it often relies on self-reporting, as it did in this study. In addition, meditation as a form of mindfulness practice can affect emotionally or mentally vulnerable participants negatively if not managed with appropriate expertise and guidance (Van Dam, et al., 2018).

There continue to be advances in mindfulness research which address the articulated challenges. Functional magnetic resonance imaging (fMRI), generating visual depictions of brain activity during various cognitive activities, is providing data and new insight into the relationship between the brain and mindfulness meditation (Van Dam, et al., 2018). It is hoped that, as the science of mindfulness develops, the language, therapies, and protocols will also mature and standardize.

Implementation of the Proposed Solutions

There are multiple steps to address the three proposed solutions to increase the perceived value of mindfulness education and practice among first year dental students.

4. Extend CPD 121 from a six-week to an eight course.
5. Add reflective practice exercises as an integral component of the CPD 121 course.

6. Integrate mindfulness research and practice across the second, third, and fourth year curriculum.

One measure which spans all three is the incorporation of faculty development focused on the science, purpose, and value of mindfulness practice. Faculty understanding, if not support, is essential to the implementation across the curriculum. Expansion of CPD 121: Mindfulness and Wellbeing could be achieved with approval from the school's curriculum committee and the dean.

The introduction of reflective practice is a decision of the CPD 121 course instructor and is already formulated into the course offering for the coming year. As Jonas-Dwyer, Abbott, and Boyd (2013) determined, students learn about reflective practice through observation and practice. In that regard, the instructor of record will define, share examples, and provide opportunities for students to share their experience through dialogue and writing. The final measure to integrate mindfulness research and practice across the four-year curriculum will require a concerted effort and education among school administrators, department chairs and faculty. Faculty development, curriculum collaboration, and mentoring are anticipated to be essential tactics. Integration may include a single lecture in which mindfulness is connected to the course objectives or serve as a consistent thread throughout a course. The following examples illustrate ways in which mindfulness, supported by the literature, can be integrated into existing courses.

In the CPD 411: Business Practice course, research on mindfulness leadership can be connected as a benefit to staff productivity and a positive office culture. Good, et al., (2016) hypothesize that mindfulness may develop as a root construct in organizational

dynamics in which motivation, personality, and identity shape work culture. Mindfulness also has the potential to influence hiring, training, and operations. These management elements are common points of challenge among practicing dentists who often maintain a dual role as practitioner in addition to Chief Executive and Operating Office for their dental practice.

Mindfulness as related to ethical decision-making provides a framework for the CPD 211: Ethics I and CPD 413: Ethics II courses. In a commentary by Greenberg and Mitra (2015), mindfulness nurtures discernment, intention, and imagination with the end goal of developing understanding and seeking benefits for all. A prolific mindfulness researcher, Ruth Baer (2015) aligns mindfulness interventions with the development of values, virtues, character strengths, and ethical behavior in the workplace.

Mindfulness is attention training which facilitates understanding through awareness. CPD 111: Interpersonal Communications invites students to explore communication styles and problem-solving. A 2016 study evaluating communication efficacy among Norwegian and Swedish nursing students found a direct relationship between mindfulness and communication skills described as person-centered (Sundling, Sundler, Holstrom, Dorte Vesterager, & Hilde).

CPD 313 Behavioral Science Aspects of Patient Care is a course designed to help prepare students for engaging patients in a way that is culturally sensitive, empathetic, and clear. It centers on understanding behavioral science and skill development. In his 2017 book, Attending: Medicine, Mindfulness, and Humanity, Ronald Epstein articulates how the practice of mindfulness can create a level of intimacy between care giver and

care receiver in which " presence is a gift of dignity and respect when patients need it most" (p.68).

Factors and Stakeholders Related to the Implementation of the Solution.

The key to successful mindfulness curricular integration is approval and support from the dean, curriculum committee chair, associate dean for academic affairs, and participating faculty. Leveraging relationships with these opinion leaders, focusing on interpersonal communication, and providing evidence of the value of mindfulness practice and versatility may be the most effective way to introduce the conversation. Dentistry has been generally immune to substantial non-technological change over the past half century. In this country, the profession is represented primarily by the American Dental Association and managed by private practitioners. Scope, licensing, accreditation, and a fee-for-service model have combined to limit external influences (Kitcher & Mertz (2012). Consequently, the integration of mindfulness instruction and practice is expected to be gradual and built upon a successful experience as interpreted and expressed by students and faculty.

Timeline for Implementation of the Solution

A proposal to extend CPD 121: Mindfulness and Wellbeing from six to eight weeks will be submitted to the Senior Associate Dean for Academic Affairs in the spring of 2020. Pending approval, the course will be scheduled to begin in August of 2020 at the start of the fall semester for first year dental students. Adapting CPD 121: Mindfulness and Wellbeing to incorporate reflective writing will be in place for the fall 2021 course offering. Journals will be provided to each student and five minutes of writing will be scheduled at the start of each class session. Integration of mindfulness across the

curriculum will likely have a less direct path and variable timeline as the decision lies directly with the instructor of record. My goal is to begin with the CPD 111: Interpersonal Communications course. I currently have a faculty appointment in the Community and Preventive Dentistry department. The instructor of record has expressed a willingness to collaborate with me.

To continue connecting with faculty members who may be willing to integrate mindfulness within their course, I am scheduled to present a faculty development session on my current research in June of 2020. Another faculty development session for the university community will be set for the fall of 2020 as a requirement for a small grant received from the Teaching Learning Center in the spring of 2020.

Evaluating the Outcome of Implementing the Solution

Research on this subject will continue into the foreseeable future. As CPD 121: Mindfulness and Wellbeing begins in August of 2020, students will be asked to complete The Generalized Anxiety Scale (GAD-7) and the Mindfulness Attention Awareness Scale (MAAS) as a pre-and posttest. The two surveys will be administered at the start of the mindfulness course, at its completion, and two-months post-completion. Students will complete the final reflection paper with their reflective writing journals to reference. In addition, students will be assigned an identifier which protects their confidentiality but enables the research to track individual variances of both anxiety and mindfulness. It will also correlate quantitative data with the qualitative data collected through the reflection essays.

Evaluating the influence of mindfulness education through the curriculum is a more challenging task given the plan of integration throughout several courses spanning first through fourth year. Over time, some formative information may be garnered from course evaluations. Perhaps most instructive will be patient satisfaction and alumni

surveys as they may be more likely to capture the influence of civility, attentiveness, compassion, and personal success associated with mindful behavior. As reported by Neville & Waylen (2016), many dental students fail to understand the interconnection between the social sciences and their technical training as it relates to patient care until they are practicing patient care as professionals. The goal of mindfulness education and practice is to develop skills needed to understand patient behaviors, improve outcomes, and increase the quality of the experience for both patients and practitioners.

Implications

Practical Implications

This current research project focuses on mindfulness and anxiety as expressed by first year dental students. It addresses a gap in current literature which is heavily concentrated on mindfulness and other health professions such as medicine, nursing, and social work. Given the well-documented stress and anxiety generated by the experience of dental education and the detrimental effects of anxiety on students, the study's implications will be significant in bringing attention to the issue and potential redress. Basudan, et al. (2017) recommend consideration and implementation of strategies for stress prevention and management in dental schools to improve students' wellbeing, prevent drop out, and ensure proper patient care. Similarly, Lovas, et al. (2008) articulate the need to integrate mindfulness education and practice into dental education curriculum to help cultivate health professionals' abilities to let go of self-focused, short-term rewards and promote the long-term common good. Lovas, et al. (2008) conclude that

mindfulness practice as an educational component contributes to a higher quality of life for both dentists and patients alike.

The mindfulness educational invention featured in this study is one of the few curricular initiatives and believed to be the only required course within the 66 dental schools in the United States. It is important to know if mindfulness instruction and practice resonates with those who might not otherwise be exposed to or intrinsically inclined to participate in mindfulness practice. The outcome of this research is valuable in designing future stress management and mindfulness instruction within my work environment and, potentially, at other dental education institutions.

Implications for Future Research

Empirical research on the effectiveness of mindfulness practice across a broad range of disciplines has erupted in the past twenty years. The cultural popularity of mindfulness and meditation has blurred the distinction between the two, generated false or misleading claims, and promoted some research projects despite poor methodology.

Mindfulness as it relates to anxiety among first year dental students is fertile for additional study. Very little has been published on the subject despite broad recognition that anxiety can be a persistent barrier for student learning, skill development, communication, and patient care (Humphris, et al., 2002). Stressors and the anxiety generated extend beyond graduation and are carried into practice by many dentists (Myers & Myers, 2004).

This study provides some insight to the levels of perceived anxiety of first year dental students and the potential for mindfulness education and practice to mitigate anxiety. There is more to be learned through research in response to the following questions.

1.) What is the optimal dosage of mindfulness practice for maximum benefit among the study population?

2.) Do any demographic attributes such as gender, age, religious affiliation, and past mindfulness experience influence the adoption of mindfulness practice?

3.) Are there lasting effects to mindfulness practice taught and practiced within a dental school setting?

4.) Does the integration of mindfulness practice among dental students have any influence on patient perceptions of care?

Implications for Leadership Theory and Practice

Mindful leaders are self-aware, attentive to others, and tuned into their environment. They channel those traits to observe and respond intentionally and thoughtfully in order to achieve personal and organizational goals (Furtner, Tutzer, & Sahse, 2018). We are seeking to form professionals who meet that criteria and serve the profession with integrity and compassion. The mindfulness-based curriculum and recommended augmentation within the school of dentistry is designed with those goals in mind. Based on the data, the process is beneficial for the majority of students as it provides structure, guidelines, demonstration, and practice.

> *"I think being mindful is an important part of a professional's skill set, but without any formal structure it isn't something that will likely take priority during this difficult and volatile learning stage."*

In many ways, mindfulness practice directly aligns with the construct of dental education which values critical thinking, self-directed learning, scientific discovery, knowledge creation, and interdisciplinary collaboration (Haden, et al., 2006). From the classroom to the clinic, mindfulness supports anxiety reduction and increases job satisfaction (Hülsheger, Alberts, Feinholdt, & Lang, 2013). Healthcare professionals are one of the most commonly studied groups in mindfulness-based studies as they are consistently challenged to manage physical and emotional stress. A review of studies in which healthcare providers engaged in Mindfulness Stress Based Reduction (MSBR) found that personal well-being, enhanced presence with patients, and a shared sense of humanity were generalized outcomes (Janssen, Heerkens, Kuijer, van der Heijden, & Engels, 2018).

Summary of the Dissertation in Practice

Anxiety experienced as a dental student is too often considered an acceptable price for participation. However, anxiety is known to impede learning, foster poor decision-making, and lead to burnout (Chapman, Chipchase, & Bretherton, 2017). Although trending downward, participating first year dental students in this study reported severe anxiety pre- and posttest. That reality serves no one. Mindfulness education and practice are proven to be an effective antidote to anxiety among diverse populations. This study indicates potential for mindfulness to serve students in their

efforts to self-regulate anxiety. Participating students provided some of the most compelling data through their final reflective writing assignment.

> *"One of the benefits of the class was the ability to experience stillness. That forced me to face the turmoil inside me and began to calm it. I started to recognize that when my feelings and emotions are not well managed, my thinking is impaired, and that resulted in so much lost potential. I attribute this class with helping me realize how managing my feelings and emotions can ultimately help me realize and reach my true potential."*

Through a collaborative effort, mindfulness practice may have a transformative effect on the learning experience of dental students, their transition into practice, and the culture in which dental education is delivered at this private, Midwestern university. There are positive indications that continued pursuit and refinement of mindfulness practice and research is a worthy endeavor.

References

Alzahem, A.M., Van der Molen, H.T., Alaujan, A.H., & De Boer, B.J. (2014). Stress management in dental students: A systematic review. *Advances in Medical Education and Practice*, *5,* 167-176. doi: 10.2147/AMEP.S46211

American College Health Association (2018). American College Health Association-National College Health Assessment II: Reference Group Executive Summary Fall 2018. Silver Spring, MD: American College Health Association. https://www.acha.org/documents/ncha/NCHA-II_Fall_2018_Reference_Group_Executive_Summary.pdf

Baer, R. (2015). Ethics, values, virtues, and character strengths in mindfulness-based interventions: A psychological science perspective. *Mindfulness, 6*(4), 956-969. doi:10.1007/s12671-015-0419-2

Barbour R. S. (2001). Checklists for improving rigour in qualitative research: a case of the tail wagging the dog?. *BMJ (Clinical research ed.)*, *322*(7294), 1115–1117. doi:10.1136/bmj.322.7294.1115

Basudan, S., Binanzan, N., & Alhassan, A. (2017). Stress, anxiety and depression in dental students. *International Journal of Medical Education, 8*, 179-186. doi: 10.5116/ijme.5910.b961

Benzo, R. P., Anderson, P. M., Bronars, C., & Clark, M. (2018). Mindfulness for healthcare providers: The role of non-reactivity in reducing stress. *Explore, 14*(6), 453-456. doi:10.1016/j.explore.2018.03.008

Blanck, P., Perleth, S., Heidenreich, T., Kröger, P., Ditzen, B., Bents, H., & Mander, J. (2018). Effects of mindfulness exercises as stand-alone intervention on symptoms of anxiety and depression: Systematic review and meta-analysis. *Behaviour Research and Therapy, 102*, 25-35. doi:10.1016/j.brat.2017.12.002

Brondani, M., Ramanula, D., & Pattanaporn, K. (2014). Tackling stress management, addiction, and suicide prevention in a predoctoral dental curriculum. *Journal of Dental Education, 78*(9), 1286-1293.

Burt, J. (2015). Following the mixed methods trail: Some travel advice. *British Journal of General Practice*, *65*(634), 264-265. doi: 10.3399/bjgp15X685045

Carmody, J., & Baer, R. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*(1), 23-33. doi 10.1007/s10865-007-9130-7

Chapman, H., Chipchase, S., & Bretherton, R. (2017). The evaluation of a continuing professional development package for primary care dentists designed to reduce stress, build resilience and improve clinical decision-making. *British Dental Journal, 223*(4), 261-271. doi: 10.1038/sj.bdj.2017.712

Christensen, D. (2016). Balance Perfectionism and Self-Compassion With a Meditation Exercise. *ONS Connect, 32*(2), 27.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior, 24*(4), 385-396. doi: 10.2307/2136404

Collin, V., Toon, M., O'Selmo, E., Reynolds, L, & Whitehead, P. (2019). A survey of stress, burnout and well-being in UK dentists. *British Dental Journal, 226*(1). 40-49. doi: 10.1038/sj.bdj.2019.6

Commission on Dental Accreditation (2010). Accreditation standards for dental education programs. Chicago: American Dental Association.

Creswell, J. D. (2017). Mindfulness interventions. *Annual Review of Psychology, 68*(1), 491-516. doi:10.1146/annurev-psych-042716-051139

Creswell, J.W. & Creswell, J.D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches, 5th edition*. Los Angeles, California: SAGE Publications Inc.

Demarzo, M., Montero-Marin, J., Puebla-Guedea, M., Navarro-Gil, M., Herrera-Mercadal, P., Moreno-González, S., Calvo-Carrión, S., Bafaluy-Franch, L., & Garcia-Campayo, J. (2017). Efficacy of 8- and 4-Session Mindfulness-Based Interventions in a Non-clinical Population: A Controlled Study. *Frontiers in psychology*, *8*, 1343. https://doi.org/10.3389/fpsyg.2017.01343

Dobkin, P.L. & Hutchinson, T.A. (2013). Teaching mindfulness in medical school: Where are we now and where are we going? *Medical Education, 47*, 768-779. doi: 10.1111/medu.12200

Dunn, P., Arnetz, B., Christensen, J., & Homer, L. (2007). Meeting the imperative to improve physician well-being: Assessment of an innovative program. *Journal of General Internal Medicine, 22*(11), 1544-1552. doi:10.1007/s11606-007-0363-5

Furtner, M. R. (2018). The mindful self-leader: Investigating the relationships

between self-leadership and mindfulness. *Social Behavior and Personality: An International Journal, 46*(3), 353-360. doi:10.2224/sbp.6521

Eisenberg, D., Golberstein, E., & Hunt, J. (2009). Mental Health and Academic Success in College. *The B.E. Journal of Economic Analysis & Policy, 9*(1), 2191. doi: 10.2202/1935-1682.2191

First reflections: Third-year dentistry students' introduction to reflective practice. (Report). (2013). *European Journal of Dental Education, 17*(1), E64. doi-org.cuhsl.creighton.edu/10.1111/j.1600-0579.2012.00763.x

Fetters, M., Curry, L., & Creswell, J. (2013). Achieving Integration in Mixed Methods Designs-Principles and Practices. *Health Services Research,* Health Services Research, 2013. doi: 10.1111/1475-6773.12117

Furtner, M. R. (2018). The mindful self-leader: Investigating the relationships between self-leadership and mindfulness. *Social Behavior and Personality: An International Journal, 46*(3), 353-360. doi:10.2224/sbp.6521

Galan, F., Rios-Santos, J., Polo, J., Rios-Carrasco, B., & Bullon, P. (2014). Burnout, depression and suicidal ideation in dental students. *Medicina oral, patologia oral y cirugia bucal*, *19*(3), 206–211. doi:10.4317/medoral.19281

Galante, J., Dufour, G., Benton, A., Howarth, E., Vainre, M., Croudace, T., . . . Jones, P. (2016). Protocol for the Mindful Student Study: A randomised controlled trial of the provision of a mindfulness intervention to support university students' well-being and resilience to stress. *BMJ Open, 6*(11), doi: 10.1016/S2468-2667(17)30231-1.

Ghawadra, S. F., Abdullah, K. L., Yuen, C. W., & Kar, P. C. (2019). Mindfulness-based stress reduction (MBSR) for psychological distress among nurses: A systematic review. *Journal of Clinical Nursing,* doi:10.1111/jocn.14987

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., . . . Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management, 42*(1), 114-142. doi:10.1177/0149206315617003

Gorter, R., Freeman, R., Hammen, S., Murtomaa, H., Blinkhorn, A., & Humpris, G. (2007). Psychological stress and health in undergraduate dental students: Fifth year outcomes compared with first year baseline results from five European dental schools. *European Journal of Dental Education, 12*, 61-68. doi: 10.1111.j.1600-0579.2008.00468.x

Greenberg, M. T., & Mitra, J. L. (2015). From mindfulness to right mindfulness: The intersection of awareness and ethics.(editorial).*6*(1), 74. doi: 10.1007/s12671-014-0384-1

Haden, N. K., Andrieu, S. C., Chadwick, D. G., Chmar, J. E., Cole, J. R., George, M. C., . . . Kalkwarf, K. L. (2006). The dental education environment. *Journal of Dental Education, 70*(12), 1265.

Hadi, M., Alldred, D., Closs, S., & Briggs, M. (2013). Mixed-methods research in pharmacy practice: Basics and beyond (part 1). *The International Journal of Pharmacy Practice, 21*(5), 341-5. doi: 10.1111/ijpp.12010

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education, 11*(1), 33-49. doi:10.1016/0742-051X(94)00012-U

Henzi, D., Davis, E., Jasinevicius, R., & Hendricson, W. (2006). North American dental students' perspectives about their clinical education. *Journal of Dental Education, 70*(4), 361-377. doi:10.1002/j.0022-0337.2006.70.4.tb04091.x

Hülsheger, U. R., Alberts, H. J. E. M., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology, 98*(2), 310-325. doi:10.1037/a0031313

Humphris, G, Blinkhorn, A., Freeman, R., Gorter, R., Hoad-Reddick, G., Murtomaa, H., O'Sullivan, R., Splieth, C. (2002). Psychological stress in undergraduate dental students: Baseline results from seven European dental schools. *European Journal of Dental Education*, 61-68. doi:10.1034/j.1600-0579.2002.060105.x

James, K. A., & Rimes, K. (2018). Mindfulness-Based Cognitive Therapy Versus Pure Cognitive Behavioural Self-Help for Perfectionism: A Pilot Randomised Study. *Mindfulness, 9*(3), 801-814. doi: 10.1007/s12671-017-0817-8

Janssen, M., Heerkens, Y., Kuijer, W., van der Heijden, B., & Engels, J. (2018). Effects of mindfulness-based stress reduction on employees' mental health: A systematic review. *PLoS One, 13*(1), e0191332. doi:10.1371/journal.pone.0191332

Jonas-Dwyer, D.R.D., Abbott, P.V., & Boyd, N. (2013). First reflections: Third-year dentistry students' introduction to reflective practice. *European Journal of Dental Education,* 17, e64-e69. doi: 10.1111/j.1600-0579.2017.00763.x

Kabat-Zinn, J. (2017). Too early to tell: The potential impact and challenges – ethical and otherwise – inherent in the mainstreaming of dharma in an increasingly dystopian world. *Mindfulness, 8*(5), 1125-1135. doi: 10.1007/s12671-017-0758-2

Kinser, P., Braun, S., Deeb, G., Carrico, C., & Dow. A. (2016). "Awareness is the first step": An interprofessional course on mindfulness & mindful-movement for healthcare professional and students. *Complementary Therapies in Clinical Practice, 25*,18-25. doi: 10.1016/j.ctcp.2016.08.003.

Kitchener, M., & Mertz, E. (2012). Professional projects and institutional change in healthcare: The case of American dentistry. *Social Science & Medicine (74).* 372-380. doi: 10.1016/j.socscimed.2010.10.005

Lebares, C. C., Hershberger, A. O., Guvva, E. V., Desai, A., Mitchell, J., Shen, W., . . . Harris, H. W. (2018). Feasibility of formal mindfulness-based stress-resilience training among surgery interns: A randomized clinical trial. *JAMA Surgery, 153*(10), e182734. doi:10.1001/jamasurg.2018.2734

Lemay, V., Hoolahan, J., & Buchanan, A. (2019). Impact of a yoga and meditation intervention on students' stress and anxiety levels. *American Journal of Pharmaceutical Education, 83*(5), 7001. doi:10.5688/ajpe7001

Lipson, S.K., Lattie, E.G., & Eisenberg, D. (2019). Increased rates of mental health service utilization by U.S. College Students: 10-year population-level trends (2007-2017). *Psychiatric Services, 70*(1), 60-63. doi: 10.1176/appi.ps.201800332.

Lovas, J.G., Lovas, D.A., & Lovas, P.M. (2008). Mindfulness and Professionalism in Dentistry. *Journal of Dental Education 72*(9) 998-1009.

Löwe, B. Y., Decker, O., Müller, S., Brähler, E., Schellberg, D., Herzog, W., & Herzberg, P. (2008). Validation and Standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the General Population. *Medical Care, 46*(3), 266-274. doi: 10.1097/MLR.0b013e318160d093

MacKillop, J., & Anderson, E. J. (2007). Further psychometric validation of the mindful attention awareness scale (MAAS). Journal of Psychopathology and Behavioral Assessment, 29(4), 289-293. doi: 10.1007/s10862-007-9045-1

Marturano, J. (2018). Using mindful leadership to build bridges: Identifying your biases, minimizing your reactivity and looking for commonalities enables you to build bridges in even contentious situations. *Law Practice, 44*(6), 44.

McConville, J, McAleer, R., & Hahne, A. (2017). Mindfulness training for health profession students - The effect of mindfulness training on psychological well-being, learning and clinical performance of health professional students: A systematic review of randomized and non-randomized controlled trials. *Explore, (13)*1, 26-45. doi: 10.1016/j.explore.2016.10.002

Mohapel, P. (2018). The neurobiology of focus and distraction: The case for incorporating mindfulness into leadership. *Healthcare Management Forum, 31*(3), 87-91. doi: 10.1177/0840470417746414

Molinari, C., & Freshman, B. (2015). Mindful awareness training in online and face-to-face learning environments: A comparative analysis. *The Journal of Health Administration Education, 32*(4), 579-604. doi: 10.13016/M2KM85

Myers, H L, & Myers, L B. (2004). 'It's difficult being a dentist': Stress and health in the general dental practitioner. *British Dental Journal, 197*(2), 89-93. doi: 10.1038/sj.bdj.4811476

Narayan, A. (2011). U.S. Higher Education Glossary, US News and World Report, 15, Aug. 2011, Retrieved October 2, 2019 from https://www.usnews.com/education/best-colleges/articles/2011/08/15/us-higher-education-glossary

Neville, P., & Waylen, A. (2016). That 'mushy boxed fog feeling': Dental students' evaluations of the social and behavioural sciences in dental education. *Mededpublish, 5*(3) doi:10.15694/mep.2016.000144

Noble, H., Reid, J., Walsh, I. K., Ellison, S. E., & Mcveigh, C. (2019). Evaluating mindfulness training for medical and PhD nursing students. *British Journal of Nursing, 28*(12), 798. doi:10.12968/bjon.2019.28.12.798

O'Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ (Clinical Research Ed.), 341*, C4587. doi: 10.1136/bmj.c4587

Paulson, S., Davidson, R., Jha, A., & Kabat-Zinn, J. (2013). Becoming conscious: The science of mindfulness. *Annals of the New York Academy of Sciences, 1303*(1), 87-104. doi:10.1111/nyas.12203

Perlman, A. (2015). Informed Mindfulness as the Foundation for Leadership. *Explore: The Journal of Science and Healing, 11*(4), 324-325.

Pinck, A.S. & Sonnentag, S. (2018). Leadership mindfulness and employee well-being: The mediating role of transformational leadership. *Mindfulness, 9*, 884-896. doi: 10.1007/s12671-017-0828-5

Plummer, F., Manea, L., Trepel, D., & Mcmillan, D. (2016). Screening for anxiety disorders with the GAD-7 and GAD-2: A systematic review and diagnostic metaanalysis. *General Hospital Psychiatry, 39*, 24-31. doi: 10.1016/j.genhosppsych.2015.11.005

Prasad, K., Wahner-Roedler, D.L., Cha, S.S., & Sood, Amit (2011). Effect of a single-session meditation training to reduce stress and improve quality of life among health care professionals: A "dose-ranging" feasibility study. Alternative *Therapies in Heath & Medicine, 17*(3), 46-49.

Saffari, S. S., Frederick Lambert, R., Dang, L., Pagni, S., & Dragan, I. F. (2018). Integrating student feedback during "Dental curriculum hack-A-thon". *BMC Medical Education, 18*(1), 1-6. doi:10.1186/s12909-018-1189-z

Saxena, R., & Ladkat, S. (2012). Meditation - A powerful stress buster in dental care professionals. *Journal of Dental and Allied Sciences, 1*(2), 45-47. doi:10.4103/2277-4696.159132

Slonim, J., Kienhuis, M., Di Benedetto, M., & Reece, J. (2015). The relationships among self-care, dispositional mindfulness, and psychological distress in medical students. *Medical Education Online, 20*(1), doi: 10.3402/meo.v20.27924.

Soto-Vásquez, M., & Alvarado-García, P. (2017). Aromatherapy with two essential oils from Satureja genre and mindfulness meditation to reduce anxiety in

humans. *Journal of Traditional and Complementary Medicine, 7*(1), 121-125. doi: 10.1016/j.jtcme.2016.06.003

Spitzer, R., Kroenke, K., Williams, J., & Löwe, B. (2006). A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Archives of Internal Medicine, 166*(10), 1092-1097. doi: 10.1001/archinte.166.10.1092

Sundling, V., Sundler, A., Holmström, I., Kristensen, D., & Eide, H. (2017). Mindfulness predicts student nurses' communication self-efficacy: A cross-national comparative study. *Patient Education and Counseling, 100*(8), 1558-1563. doi: 10.1016/j.pec.2017.03.016

Van Dam, N.T., van Vugt, M.K., Vago, D. R., Schmalzl, L., Saron, C.D., Olendzki, A., . . . Meyer, D.E. (2018). Mind the hype: A critical evaluation and prescriptive agenda for research on mindfulness and meditation. *Perspectives on Psychological Science, 13*(1), 36-61. doi:10.1177/1745691617709589

Wald, H., & Reis, S. (2010). Beyond the margins: Reflective writing and development of reflective capacity in medical education. *Journal of General Internal Medicine, 25*(7), 746-9. doi:10.1007/s11606-010-1347-4

Watkins, D., Hunt, J., & Eisenberg, D. (2012). Increased demand for mental health services on college campuses: Perspectives from administrators. *Qualitative Social Work, 11*(3), 319-337. doi: 10.1177/1473325011401468

West, C. P., Dyrbye, L. N., Rabatin, J. T., Call, T. G., Davidson, J. H., Multari, A., . . . Shanafelt, T. D. (2014). Intervention to promote physician well-being, job satisfaction, and professionalism: A randomized clinical trial. *JAMA Internal*

Medicine, 174(4), 527-533. doi:10.1001/jamainternmed.2013.14387. doi: 10.1001/jamainternmed.2013.14387

Windish, D. (2015). Reflective practice and stress: Helpful, harmful or uninfluential in critical thinking. *Journal of General Internal Medicine, 30*(9), 1237-1238. doi:10.1007/s11606-015-3423-2. doi: 10.1007/s11606-015-3423-2

Rada, R.E. & Johnson-Leong, C. (2004). Stress, burnout, anxiety and depression among dentists. *The Journal of the American Dental Association, 135*(6), 788-794. doi: 10.14219/jada.archive.2004.0279

Ruiz, M., Zamorano, García-Campayo, Pardo, Freire, & Rejas. (2011). Validity of the GAD-7 scale as an outcome measure of disability in patients with generalized anxiety disorders in primary care. *Journal of Affective Disorders, 128*(3), 277-286. doi: 10.1016/j.jad.2010.07.010

Saxena, R., & Ladkat, S. (2012). Meditation - A powerful stress buster in dental care professionals. *Journal of Dental and Allied Sciences, 1*(2), 45-47. doi:10.4103/2277-4696.159132

Slonim, J., Kienhuis, M., Di Benedetto, M., & Reece, J. (2015). The relationships among self-care, dispositional mindfulness, and psychological distress in medical students. *Medical Education Online, 20*(1), doi: 10.3402/meo.v20.27924.

Spitzer RL, Kroenke K, Williams JBW, Löwe B. (2006) A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Arch Intern Med.*,166(10):1092–1097. doi:10.1001/archinte.166.10.1092. doi: 10.1001/archinte.166.10.1092

The National Institute of Mental Health (2018). Anxiety disorders. Retrieved October 2, 2019, from https://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml#part_145333

West, C. P., Dyrbye, L. N., Rabatin, J. T., Call, T. G., Davidson, J. H., Multari, A., . . . Shanafelt, T. D. (2014). Intervention to promote physician well-being, job satisfaction, and professionalism: A randomized clinical trial. *JAMA Internal Medicine, 174*(4), 527-533. doi:10.1001/jamainternmed.2013.14387

World Health Organization. (2017). Depression and other common mental disorders: global health estimates. World Health Organization. doi: 10665/254610

Zhang, Christian (2016, July 27). Missing dental student Jiwon Lee found dead in Hudson, medical examiner rules suicide. *Columbia Spectator.* Retrieved from https://www.columbiaspectator.com/news/2014/05/05/missing-dental-student-jiwon-lee-found-dead-hudson-medical-examiner-rules-suicide/

Appendix A
IRB Approval

DATE:	09-Oct-2019
TO:	O'Meara-McKinney, Colette L.
FROM:	Social / Behavioral IRB Board
PROJECT TITLE:	Mindfulness and Anxiety Among First Year Dental Students
REFERENCE #:	2000308
SUBMISSION TYPE:	Initial Application
REVIEW TYPE	Exempt
ACTION:	APPROVED
EFFECTIVE DATE:	09-Oct-2019

Thank you for your Initial Application submission materials for this project. The following items were reviewed with this submission:

Creighton University HS eForm~

This project has been determined to be exempt from Federal Policy for Protection of Human Subjects as per 45CFR46.101 (b) 2.

All protocol amendments and changes are to be submitted to the IRB and may not be implemented until approved by the IRB. Please use the modification form when submitting changes.

If you have any questions, please contact the IRB Office at 402-280-2126 or irb@creighton.edu. Please include your project title and number in all correspondence with this committee.

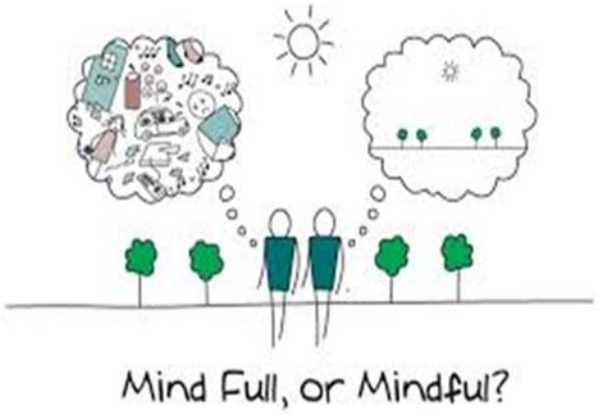
Institutional Review Board
т 402.280.2126 | т 402.280.3200
Dr. C.C. and Mabel L. Criss Health Sciences Complex I
2500 California Plaza Omaha, NE 68178

creighton.edu
creighton.edu/researchservices/rcocommittees/irb

Appendix B

CPD 121: Mindfulness and Wellbeing Syllabus

Creighton
UNIVERSITY



"In the end, just three things matter: How well we have lived. How well we have loved. How well we have learned to let go" ~Jack Kornfield

Mindfulness and Wellbeing
CPD 121

Barbara Harris, M.S.W., L.M.H.P., Ph.D., Program Director
The Program for Ignatian Mindfulness and Wellbeing
Room 127-128
Fall 2019
Phone: 280-2081 Email:bharris@creighton.edu
Office Hours: Wednesday 9-11:30

School of Dentistry

Informed by Ignatian ideals, a global perspective, knowledge, values, skills, ethics, and purpose, the School of Dentistry is dedicated to the formation of competent and compassionate practitioners who are committed to the well-being of self and others. Student's demonstrate professional behavior through the advancement of professionalism by recognizing the mutual influence of research and practice.

Course description

The ultimate goal of dental education is to develop technically advanced and compassionate practitioners. The Jesuit tradition of the Ingantian value of Cura Personalis or care of the whole person frames this integrated approach to health care. Because dental education is both rigorous and exacting this course provides space to explore techniques that support student wellbeing. By engaging in practices of movement, breathing, contemplation and mindfulness students will develop strategies for use in the practice setting to enhance professional resilience and patient wellbeing that is supported by research. Using a small group approach this course meets one hour for 6 weeks. As a commitment to this exploration attendance is required. This course is graded on a pass/fail basis.

Required Course REading

https://hbr.org/2017/09/heres-what-mindfulness-is-and-isnt-good-for

http://www.jdentaled.org/content/72/9/998.long

Faculty Role and communication

Timely and effective communication is essential in a working relationship. Students are encouraged to utilize faculty office hours, voice mail, and/or email to communicate any questions or concerns. Faculty will respond to communication within 24 hours during the week, and on Monday for any weekend communication. Students are invited to participate in practices. However, if you feel uncomfortable either physically or emotionally feel free to remain in the class and observe. If, for whatever reason, you need to leave class due to being uncomfortable with the practice wait outside of class to ensure that your wellbeing is assessed.

Because participation in this class is highly introspective all information shared in class is confidential unless it is determined that the wellbeing of the student is in serious jeopardy.

Student Responsibilities for learning

1. Students will read the course syllabus and schedule, and become familiar with course requirements.
2. Students will actively engage in course activities treating the student and faculty with respect.

3. Students will submit assignments by indicated deadlines and recognize late-point deductions will be applied when deadlines are not met.
4. Students must ensure assignments are correctly submitted. Technological difficulties do not exempt students from late grade deductions. If attachments are not the correct file, do not open, or are not saved correctly, the assignment is considered not submitted.
5. Any concern with a grade must be addressed with the faculty within two weeks. Final grades will not be adjusted to comply with individual requests, but will reflect the grades earned throughout the semester.
6. Students will conduct themselves in professional manner through all means of communication with peers, faculty, and support staff.
7. required. This course is graded on a pass/fail basis.

Objectives

Competencies	Objective:	Assignments:
To develop a humanistic approach to dental education.	1. To examine emerging research on the topic of mindfulness in health professions and the impact on student and patient wellbeing. 2. To develop an awareness of the relationship between the breath, body movement, mind, empathy and compassion. 3. To reflect on the knowledge and skills acquired in the class,	1. Review the reference list in the syllabus of research on the topic of mindfulness in dental education 2. Engage in the following: Examine – Scanning Practices, Breathing practices, Mindful-mediation practices 3. Complete a pre-test and post-text assessing baseline data about mindfulness. 4. Complete a three page reflection what the student learned learned from and/or experienced in the course

Course Policies

CLASSROOM ENGAGEMENT

In this course on mindfulness and wellbeing students are INVITED to participate in movement, breathing and mindfulness exercises. Please note that if any of the movements cause pain or distress you are advised to “sit out” observer of what is going for you. This course demands that students come to class with an open mind and to demonstrate respect for fellow students and accept where classmates are in this process. Unless a doctor’s not is provided there are no excused absences. Due to unforeseen situations the syllabus may be revised in the course of the semester.

ACCOMMODATIONS

If you have any special learning needs or are in circumstances which necessitate special consideration, please contact the faculty on or before the first day of class.

WEATHER AND COURSE MEETING CHANGES

If class needs to be cancelled for weather or other reasons students will be notified as soon as possible through an announcement on Blueline and an email to the student's Creighton email address.

Assignments

Reflection Required for passing

One three-page reflection required for passing this course. Use the two required readings for this course as a baseline for describing your experience in this course.

1. Discuss your experience with the practices in this course including challenges either physical, emotional, religious, gender or social.
2. Discuss how you have or can incorporate the practices in your life both at school and in your personal life.

Because this course is pass/fail you are asked to be honest in your reflection. Honesty will not detract from your grade. The reflection is more of note to yourself for future reference. As you sit down to write your reflection consider the elements for reflection, openness, observation and objectivity. Take five minutes of quiet. Reflect on what you notice as you integrate the readings into your practice. Be as specific as possible about the three elements to describe your experience or understanding. This reflection is about you and not about people in general.

Grading Scale

No Pass	Pass
Student does not submit one reflection as described. The reflections are not handed in on time	***Student hands in reflection on time. One reflection is due at the end of the class***
Student is distracting in class and is not attentive to other students questions and experiences	***Students are present and respectful of others. Students demonstrate empathy and understanding***
Student misses one or more classes	***Student does not miss a class***

Course schedule

Date	Learning Activity
Week One October 7-11	**The practice: using the breath to move the body to soften the thoughts of the mind without judgement and open up to compassion** **This isn't a religious or spiritual practice unless it is for you** **This is about shifting gears and learning to integrate practices into your daily life** **How to use the breath to unlock the body to practice mindfulness and increase empathy and compassion** **In-breath is deep out-breath is long** **Taming the monkey mind: Tapping to quiet the mind (frontal cortex)**
Week Two October 14-81	**Understanding Your Brain and the "Monkey Mind"** **Centering: Hand warming to quiet the gaze** **Breathing practices to move the energy up** **Postures Sitting: understanding the posture, head alignment** **Seated Stretching: side stretches, forward stretches, eagle stretches**
Fall Break	**No classes – enjoy**
Week Three October 28 – November 1	**Breathing – moving the energy down – bubbles** **Ujaii breath – the sound of quiet** **Postures: Standing** **Forward fold, wide legged forward fold, five pointed star, warrior 1 and 2,** **The physiology of the body as it releases stress**
Week Four November 4-8	**Centering, stretching, surrender** **Noticing the mind, body and spirit connection as you consider "surrendering"** **Centering practices – Examen St. Ignatius prayer of surrender** **Postures: Star, goddess, wide legged forward fold**
Week Five November 11-15	**Alternate nostril breathing – quieting the mind** **Understanding the breath as a life force** **Using the wall as a prop** **Postures: Side stretches for shoulder work, downward dog at the wall, half-moon at the wall**
Week Six November 18-22	**Interroception** **Great Excuses, Great Solutions** **Final Reflection Due Monday November 25**

References

Goldman and Davidson https://hbr.org/2017/09/heres-what-mindfulness-is-and-isnt-good-for

Mindfulness and Professional Education **http://www.jdentaled.org/content/72/9/998.long**
http://repository.um.edu.my/26099/1/eje12017.pdf

A Humanistic Environment for Dental Schools: What are dental students experiencing
http://www.jdentaled.org/content/78/12/1629.short

ASDA https://www.youtube.com/watch?v=q7jZVmrBkso&feature=youtu.be

Wellness Among Dental Students**http://www.jdentaled.org/content/80/9/1119.long**

Harvard Research

https://www.helpguide.org/harvard/benefits-of-mindfulness.htm

ASDA Program on Mindfulness in dental students

https://www.youtube.com/watch?v=q7jZVmrBkso&feature=youtu.be

ASDA series on mindfulness for dental students

https://www.asdanet.org/index/programs-events/webinars/wellness

ADA Wellness Handbook

https://www.ada.org/~/media/ADA/Files/ADA_Dentist_WellBeing%20Handbook.pdf?la=en

Tapping

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5499602/

http://psycnet.apa.org/fulltext/2016-39089-001.html

Student Groups

Section A: Tuesday from 3-4 pm - Students Aasar to Dikuba
Section B: Wednesday from 4-5 pm – Students Ebben to Komosinski
Section C: Tuesday from 4-5 pm – Students Kwasney to Parrone
Section D: Friday from 11-12 pm – Students Patel to Zerbian

Appendix C

Excerpt from Thematically Coded Qualitative Data Set

C.	Student Outcomes	Positive	Negative	Mixed	Reconciliation	Revision
1	Calm/ Relaxed/Less Stress	4,5,6,7,9,11,12,13,15,16,18,19,22,23,24,25,26,28,29,31,33,34,35,37,43,44,45, 46,47,48,50,51,52,56,59,73,77,85,57,58,59,61,63,64,68,69,71,72,73,75,77,78, 82,83,84,85	32	41,50,88	35,41,64,71, 72,73,82,84, 85,86,99, 88mixed	35,41 mix,59, 73,77,85, 86,99, 88mixed
2	Empathy/ Compassion					
3	Energy Level	3,35,38,40,64,63,64,94			64	64
4	Faith	1,2,6,17,25,34,37,57,96,102,105	44		37,57,95	37,57
5	Focus/ Attention	2,6,7,8,9,10,11,13,14,15,17,23,25,26,28,29,30,31,36,37,38,42,43,45,47,48,50, 52,57,58,61,63,64,68,70,71,72,73,74,75,76,77,78,79,81, 83,85,86,87,89,90,91,92,94,95,96,98,99, 100, 102,103,106,107	4,32	12	5,8,28, 12mixed,35, 38,41,55,81, 96,108	8, 12mixed, 38,81,96
6	Memory	7,13,26,28,31,58,94,96,102,106			28,58,31,35, 32neg,68neg	31,58
7	Non-patient Relationships	21,29,47,50,53,56,57,71,				
8	Performance/ Grades	7,11,12,14,16,22,23,24,25,26,38,45,47,48,49,52,57, 59,63,70,75,82,84,89,102,			25, 1 neg,89	25,89

		106		
9	Physical State	10,23,28,29,31,35,36,37,39,40,45,47,52,53,56,68,70,78,80,82,90,91,96	82	82
10	Self-Awareness	3,4,5,6,9,10,11,14,15,16,19,20,22,23,25,26,28,31,33,34,35,37,38,41,43,45,46,47,48,53,55,56,57,58,62,63,65,66,68,69,73,77,79,80,85,86,87,88,89,92,93,95,96,97,101,102,103,105,106,108	2,7,8,13,24,28,29,30,36,39,40,42,47,50,51,57,59,60,70,71,72,73,74,75,78,81,85,90,91,98,106,107	47,57,73,106
11	Self-care	1,16,19,24,26,36,39,40,41,44,45,51,52,63,65,68,72,85,86,89,91,92,98,103,109	1-10,14,15,19,20,27,28,29,88,90,92,94,95,97,99,101,105,106,107,108	1,19

Appendix D

Program for Ignatian Mindfulness (PIM) Lab