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Connecting the Mind and the Body Through the Breath: Introducing Breathwork in Graduate Healthcare Professions Curriculum

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This essay unfolds a purpose-driven academic journey, transitioning from clinical nurse anesthesia practice to a PhD in biomedical science specializing in nurse anesthesia. The author describes the intrinsic link between fundamental science research and the human dimension in healthcare, particularly in nurse anesthesia. Incorporating both the art and science of this discipline, the essay delves into the convergence of neuroscience, mindfulness, and holistic well-being for healthcare professionals. Many healthcare professionals experienced high levels of stress and burnout prior to 2020 that were further exacerbated by the COVID-19 pandemic. The author advocates for greater attention to wellness for healthcare professionals. Integration of mindfulness and breathwork practices into a nurse anesthesia education is discussed, highlighting the beneficial effects on stress reduction and academic performance. A vision for the future anticipates a broader assimilation of contemplative practices across healthcare education, nurturing a pervasive culture of mindfulness.



My childhood toy chest held premonitions of the future: it contained two kits, one for a nurse and one for a doctor. Inside the kits were supplies for a career in the healing arts: a stethoscope, thermometer, syringe, bandages, bandage scissors, and an otoscope. Eventually, I would become a registered nurse (RN), an advanced practice nurse as a certified registered nurse anesthetist (CRNA), and a university professor, having completed a PhD in biomedical science. Although the doctor's play kit foreshadowed a career as a physician, I view it today as a premonition for pursuing a doctoral degree in biomedical science. This article describes key elements of that journey, touching on my nursing and nurse anesthesia education, and the physiological benefits of yoga, including breathwork practices. I have interwoven these practices, based in physiological science, into the academic setting where I teach in a nurse anesthesia program. In what follows, I describe my journey through advanced practice registered nursing, education, yoga, the physiological benefits of yogic breathwork, and weaving breathwork practices into academic healthcare professions education.

Nursing, Nurse Anesthesia, and Science

I was first drawn to nursing and nurse anesthesia in high school through a health occupations course. During my college nursing education, the required intensive care unit (ICU) clinical education was at an Air Force base, introducing me to the military. Upon graduation from nursing school, I was commissioned as an Air Force officer, launching a twenty-three-year military career, serving on active duty and in the reserves. After several years of critical care nursing, the desire to delve more deeply into the science of healthcare led me to pursue advanced practice registered nursing as a CRNA. I enjoyed sharing my knowledge of anesthesia with others in the clinical setting. The experience of teaching in the clinical environment spurred a desire to gain a deeper understanding of human physiology and led me to pursue a PhD in biomedical science, focusing particularly on pharmacology and neuroscience, which are the underpinnings of nurse anesthesia education.

The pharmacology, physiology, anatomy, physics, chemistry, and pathophysiology principles required to practice anesthesia derive from basic biomedical science research. During the PhD program, I collaborated with mentors, post-doctoral fellows, and student peers to bridge the gap between bench science research and the human experience in healthcare. Some researchers focus on the cell, the minute inner workings of the unseen world. From the findings of explorations at the cellular level, scientists develop higher-order research models seeking to translate the scientific findings into practical applications for humans. At every opportunity, I stepped up to share with fellow scientists the value of basic science research as it applies to human experience.

By cultivating a mindful awareness that discoveries of the cell are part of the whole person, researchers can deepen the purpose and meaning in their work.

Drawing the clinician's attention to the world of basic science is an ongoing endeavor. The mechanisms and mysteries of the cellular environment are responsive to medications, fluids, environmental temperature, surgical procedures, and the nuanced interactions of human beings. Perhaps the most intangible effects we, as clinicians, have on patients are the subtle interpersonal exchanges rooted in basic mindful practices, such as active listening, eye contact, cultivating a mindful and caring presence, and the healing power of physical touch. These types of mindfulness practice are rooted in Asian religious and cultural traditions but can be taught in a secularized form, thereby broadening their acceptance and integration into Western cultures. A burgeoning area of neuroscientific research is helping us better understand the mind-body-spirit connection, which I explore in the next section.

The Art and Science of Nurse Anesthesia

Nurse anesthesia is an art and a science. The art employs the human flourishing pillars—awareness, connection, insight, and purpose (Dahl, Wilson-Mendenhall, and Davidson 2020). Science draws upon our knowledge of the physical world to effect change in the human body so that it can, for instance, withstand a surgical procedure or a therapeutic intervention.

The rapidly expanding field of neuroscience is reshaping healthcare for patients and professionals alike. Patients and professionals can cultivate a sense of well-being by learning to practice mindful presence. By learning to fully inhabit the present moment, we become more attuned to our interactions with patients and gain valuable insights into our greater purpose of providing care to others. These principles have always been an undercurrent in nursing, nurse anesthesia, and healthcare. Attention has historically been focused on the care and well-being of the patient, but the healthcare community is now increasingly recognizing the value of focusing on the care and well-being of healthcare professionals.

Despite positive developments, we in healthcare have a lot of work to do to improve the state of well-being and flourishing in the workforce. The stress and strain of caring for people in need wears on the mind, body, and spirit of nurses, physicians, and other healthcare professionals. Moreover, the COVID-19 pandemic exacerbated weaknesses in an already strained system. Academic journals have published studies reporting burnout, depression, and anxiety in healthcare professionals that long preceded the pandemic and echo the findings among today's healthcare workforce (Chipas and McKenna 2011; Chipas et al. 2012; Del Grosso and Boyd 2019; Garcia et al. 2019). More

action is required to ensure that the healthcare professionals taking care of patients are also taking care of themselves.

To address this issue, myriad proposals have been introduced in academic and clinical settings to promote wellness in healthcare professionals. For example, proposals include flexible scheduling, childcare resources, and increased vacation time. Nurse and nurse anesthesia education programs address wellness by teaching students about the substantial stresses and pressures of their chosen professions and provide curricula to learn and practice effective well-being techniques. Many accreditation boards for healthcare professions programs, including nurse anesthesia, require curricula to provide content on the importance of wellness for healthcare professionals, healthy lifestyles, substance use disorders identification, pathophysiology, appropriate strategies for successful intervention, and treatment options (COACRNA 2023). As part of this broader trend, I teach nurse anesthesia residents and other healthcare professions students simple yogic breath practices that are effective, versatile, and accessible for use on a regular basis and/or in times of need.

Yoga and Breathwork

Many Americans are drawn to yoga for the physical benefits of the *asanas*, or postures, that are part of the Indian yogic tradition. *Asana* and *pranayama*, or breathwork (*prana* means energy and *ayama* means to control) (Madhusudandasji 2000, 43), are two of the eight limbs of yoga intended to prepare the physical body for the mind-body practices. An introduction to yoga philosophy begins by learning and practicing the ethical guidelines, the *yamas* (social ethics) and *niyamas* (personal observances) (Swami Vivekananda 2005). *Asana* and *pranayama* are meant to strengthen the mind-body connection. Through regular practice of posture and breathwork, the physical body becomes stronger and more flexible while building resilience; so too does the mind become more settled, gaining in responsiveness while becoming less reflexively reactive to events. The remaining limbs of yoga pertain to reining in the mind's constant cacophony of thoughts by withdrawal of the senses (*pratyahara*), gaining focused awareness (*dharana*) for meditation (*dhyana*), and, possibly, attaining a deep meditative state where one completely merges with the object of contemplation (*samadhi*) (Madhusudandasji 2000, 50).

Nurse Anesthesia Accreditation

Entry into advanced practice registered nursing as a CRNA requires a doctoral education as set by the accrediting body, the Council on Accreditation of Nurse Anesthesia Educational Programs. Registered nurses who have a bachelor's degree in nursing (or

related field, such as biology) and at least one or more years of ICU nursing experience may be eligible to apply and interview for admittance to a doctoral nurse anesthesia program. The three-year doctoral education program is science-based and rigorous, encompassing didactic coursework and clinical residency.

During my first semester of teaching in the graduate nurse anesthesia program, I noted the overt stress and strain endured by the students; and several students developed newly onset test anxiety during the semester. I, too, was experiencing stress as a new faculty member and turned to yoga *asanas* and breathwork practices for coping with the challenges. The breathing practices were effective in connecting my mind and body, observing the relationship between my thoughts and the physiological stress response.

Since the practices were effective in alleviating my stress, I adapted the yogic breathwork practices for the graduate healthcare professions students. I invited students to a series of four thirty-minute “breath focus” sessions per semester to learn abdominal breathing, slower breathing rates (slowly inhale two counts, pause at inhalation, and slowly exhale four counts), and how to use *ujjayi* breath (constricting the throat as if whispering) to prolong exhalation. Verbal cues are given during the breathing practices to focus attention on counting and be mindful of the sensations associated with the breath. Between five and ten students out of a class of sixty-five attended regularly; those students who attended would regularly share with me their positive experiences. For instance, one student commented that she lowered her heart rate from 130 to 90 beats per minute during an exam using the breath focus technique. And numerous students have commented that their exam grades improved when using the breath focus technique prior to and during exams.

Interest in the breath focus sessions grew as students shared their positive experiences with others, and I received multiple requests from faculty and staff members in other departments. Ultimately, all students, faculty, and staff in the healthcare professions college were invited to attend breath focus sessions. To bring in a variety of contemplative practices, Mark Dennis and Andy Fort from the university’s Department of Religion and Shirley Martin from the Department of Nursing led several meditation sessions, introducing participants to a wide range of Asian and secular forms of contemplative practice including Zen meditation, loving-kindness meditation (*metta*), and mindful self-compassion. The faculty facilitators retitled the sessions “mindfulness meditation” to encompass the diverse meditation techniques. Interest peaked in late 2019 and early 2020 with ten to twenty participants regularly attending the sessions. But then the pandemic arrived. Shirley Martin and I continued to offer virtual mindfulness meditation sessions during the 2020–21 and 2021–22 academic

years while pandemic guidelines restricted in-person gatherings. The virtual mindful meditation sessions were beneficial, yet we were grateful to resume in-person sessions with nurse anesthesia graduate students and those in other disciplines in the 2022–23 academic year.

Breathwork Physiology

This section will briefly review some of the scientific research showing the many physiological and emotional benefits of these types of contemplative practices. Studies at the Center for Healthy Minds (CHM) at the University of Wisconsin and other large research universities report that practitioners receive substantial respiratory and cardiopulmonary benefits from practicing breathwork. Yogic breathwork can reduce stress and anxiety, improve lung and cardiovascular function, and enhance sleep quality. A regular yogic breathwork practice can improve mood, enhance concentration, and cultivate mindfulness. Learning to control one's breath rate and pattern can affect the delicate interplay between the mind and physical body, thereby inducing effects on the pulmonary, cardiovascular, gastrointestinal, immune, and nervous systems.

Respiratory

Several yogic breathwork techniques target relaxation, focus, and concentration by incorporating a slow rate of less than ten breaths per minute, increasing diaphragmatic movement (abdominal breathing), breath retention (pausing at end-inhalation and/or end-exhalation), breathing through the nose, and focused attention on the sensations of the breath. Sitting up with an erect spine and allowing the abdomen to expand during inhalation provides room for the diaphragm to descend and the ribcage to expand outward, increasing lung capacity. Greater ventilation to the lower areas of the lungs improves oxygenation and gas exchange. Pausing at end-inhalation provides a slight positive pressure within the pulmonary airways promoting opening of the alveoli, further enhancing oxygenation and gas exchange (Levitzky 2022, chap. 5; Mason et al. 2013; Vedala, Mane, and Paul 2014; Tucker and Jenkins 1996).

Breathing through the nose filters and humidifies the air as it passes through the nasal passages and into the tracheobronchial tree, while breathing through the mouth bypasses these filtration and humidification physiological processes. Specialized neurons in the nasal passages that connect to the amygdala (a center of fear discrimination) and the hippocampus (memory) function to detect airflow patterns during inspiration, expiration, and periods of apnea (cessation of breath). Studies report that the rhythm of airflow during nasal breathing can positively affect cognition, memory, and fear discrimination (Wu et al. 2017; Zelano et al. 2016). Oral

breathing, compared to nasal breathing, impaired cognitive performance in emotion discrimination and recognition memory tasks in human subjects (Zelano et al. 2016).

Cardiopulmonary

The cardiac and pulmonary systems are intricately intertwined physiologically, working in concert to maintain the body's homeostasis. During inhalation, the rib cage expands, the diaphragm descends, and pressure inside the chest cavity (intrathoracic pressure) decreases. The decreased pressure within the chest cavity allows the right heart chambers to fill with more blood—i.e., there is greater venous blood return to the heart. The increased venous blood return stretches baroreceptors in the atria leading to an increase in the heart rate. Simultaneously, pulmonary neuronal afferent (to conduct inward) activity sends signals to the central nervous system that inhibits, in turn, efferent (to conduct outward) vagal nerve activity to the heart. The result is an increase in the heart rate.

During exhalation, the rib cage contracts, the diaphragm ascends, and intrathoracic pressure increases. The increase in pressure within the chest cavity reduces venous return of blood to the heart. The decreased blood volume in the atria reduces baroreceptor stretch, allowing activation of the parasympathetic nervous system (PNS), thereby resulting in a lower heart rate. The normal fluctuation of heart rate in response to the volume of venous blood return to the heart during inhalation and exhalation is known as respiratory sinus arrhythmia (RSA). Heart rate variability (HRV), the magnitude of change in time between heartbeats, is a measure of PNS activity. A higher HRV measure reflects greater input from the PNS to the autonomic nervous system function (Song and Lehrer 2003). Deep, slow respiratory patterns stimulate the PNS via the vagus nerves, resulting in measurable increases in HRV. Increased HRV in response to voluntary slow breathing occurs during the practice, immediately afterward, and after several sessions of practice (Laborde et al. 2022). Activation of the PNS via voluntary slow breathing practices can enhance stress-related responses in humans by improving the function of the autonomic nervous system, reducing reactivity to fear-inducing events (i.e., the fight-or-flight sympathetic nervous system response), increasing the ability to induce relaxation, and building resilience (Carnevali et al. 2018; Herbell and Zauszniewski 2019; Laborde et al. 2022).

The American Heart Association (AHA) recognizes that sitting meditation, including practices that incorporate breathwork, may be beneficial as an adjunct to conventional therapy for cardiovascular health and well-being (Levine et al. 2017, 2). A multidisciplinary collaboration of councils from clinical cardiology, nursing, and hypertension groups published a scientific statement based on a systematic

review of available data. Those findings suggest that meditation has positive effects on cardiovascular health (4–9), such as lowering one’s blood pressure, preventing cardiovascular disease, and reducing stress, and that including a sitting meditation practice may provide additional benefits to conventional therapy for reducing the risk of cardiovascular disease. However, many studies included in the AHA’s scientific statement (4–9) are of modest quality design and often include small study populations with limited or no follow-up for measuring the effects of meditation practice. Recommendations for future research should focus on greater rigor in study design: randomized controlled trials, larger study populations, and long-term follow-up to provide greater insight into the effects of these practices on cardiovascular health.

The Brain, Breath, and Body

The human mind and body are directly connected, and the effects are bidirectional. Thoughts and emotions can elicit physical effects, and physical conditions can affect the mind. The mere thought that one is in danger can evoke a fight-or-flight response resulting in an increased heart and respiratory rate and blood flow diverted to the muscles. Negative emotions and mood states such as anger, anxiety, or worry are associated with greater sympathetic nervous system (SNS) activity and decreased HRV. In contrast, positive emotions and mood states are associated with higher HRV, reflecting greater PNS activity (Jerath and Crawford 2015; McCraty et al. 1995; Park et al. 2011). Increasing PNS activity by vagal nerve stimulation can inhibit amygdala fear-evoked responses providing a modulation of the stress response (Jerath 2015; Lyubashina and Panteleev 2009). One can induce a state of relaxation by engaging in voluntary slow breathing, activating the PNS, lowering the heart rate, and increasing HRV.

Acute and chronic stress can negatively impact cognition, problem-solving, learning, and memory, affecting executive function tasks such as planning and organizing. Anxiety, depression, and burnout are also associated with chronic stress. When threatened with danger such as an impending tiger attack, acute fear activated the SNS stress response (fight-or-flight) for our ancestors to flee or fight the tiger. In modern society—but for few, rare exceptions—there are no literal tigers to run from in the academic and clinical setting. Instead, the threats are exams, deadlines, family obligations, and financial strain. Healthcare practitioners frequently face urgent or critical situations that are stressful and thus elicit the fight-or-flight response, but they can use yogic breathwork to activate the PNS and increase vagal nerve activity. The negative effects on cognition, problem-solving, learning, and executive function tasks are mitigated by PNS activation through such yogic breathwork practices. One can pause for a moment to “reset” the autonomic nervous system by using a breath practice that increases PNS activity and reduces SNS activity.

Breathwork in an Academic Setting

The curriculum for the practice of nurse anesthesia is based on science. Colleagues and students have often been skeptical—and some still are—when I have mentioned the benefits of breathwork in academia and clinical settings. To counter their skepticism, I have introduced them to scientific research describing the effects of breathwork and meditation on human physiology into coursework (Fox et al. 2016, Gotink et al. 2016; Zelano et al. 2016; Dunham et al. 2019). Coincident to an increase in yoga and mindfulness meditation research were studies of stress, depression, anxiety, burnout, and substance use disorder in nurse anesthesia (Chipas and McKenna 2011; Chipas et al. 2012; Bozimowski et al. 2014, Del Grosso and Boyd 2019) and other healthcare professions. Incorporation of mindfulness practices and other mind-body therapies in healthcare professions curriculum (Foley and Lanzillotta-Rangeley 2019) and in the workplace is gaining momentum (Zhang et al. 2021; Livingston and Collette-Merrill 2018).

I collaborated with several colleagues in my department to incorporate breathwork practices and other wellness activities into the curriculum so that our graduate students could grow personally and professionally during the program and to meet accreditation standards. Students participated in stress management workshops led by counselors from the Counseling & Mental Health Center and heard guest speakers on wellness subjects, including resilience in the face of adversity, substance-use disorders, spirituality in healthcare, and techniques for restful, restorative sleep.

Wellness-related subjects are built into one of the doctoral courses that focuses on emerging science, teamwork, and professionalism. Models of teamwork emphasize situational awareness, speaking up for safety, resiliency, and self-care. The emerging science course introduces students to the effects of mind-body practices in today's healthcare for professionals and patients. One module of the course entails learning about emotional intelligence, receiving one's own emotional intelligence report (completed during the program interview process), and applying learning principles to individual report results. The course includes material on QPR—question, persuade, refer—suicide training (QPR Institute, n.d.), substance-use disorders, and stress management discussions. Lastly, students explore what advanced practice registered nursing as a CRNA means to them personally, asking them to investigate what is meaningful about nursing and the nurse anesthesia profession.

The Art and Science of Human Flourishing

Students entering college today face numerous challenges. Finances, relationships, a competitive academic environment, and separation from family, friends, and support systems can be stressors leading to anxiety, depression, and maladaptive coping.

As other articles in this special issue on *mindful flourishing* describe, neuroscientist Richard Davidson and his colleagues at CHM have developed a course entitled The Art and Science of Human Flourishing (ASHF) for first-year college students. The ASHF course guides students to develop techniques and mental and emotional dispositions to better navigate challenges in their academic and personal lives that are driving a bleak mental health picture among college students.

Fortunately, CHM and its partners at the University of Virginia and Pennsylvania State University have shared this innovative program with other colleges and universities at no cost (CHM, n.d.). In the spring semester of 2022, Texas Christian University (TCU) professors Mark Dennis (religion), Blake Hestir (philosophy), and Chad Pevateaux (visiting instructor in religion) successfully piloted the ASHF course on campus. In the same semester, I incorporated an introduction to CHM's Healthy Minds Program app (HMI, n.d.) and four thirty-minute video conference sessions into the aforementioned emerging sciences course. Each session covered one of the four pillars of the human flourishing framework noted above: awareness, connection, insight, and purpose (Dahl, Wilson-Mendenhall, and Davidson 2020). Of the thirty-six students enrolled in the course, between five and eight attended each of the optional video conference sessions.

Student comments on the end-of-semester course evaluations reflect the beneficial effects of the discussions and practice of breath focus techniques. Student comments included: "Loved the Zoom calls that encouraged breathing and mental focus," "Implement the Healthy Minds program into course curriculum," "I love the focus on mental health," and "I really enjoyed the healthy minds program."

In fall 2022, a second series of four thirty-minute optional sessions covering the four pillars of human flourishing was held in person. Average attendance was five to ten out of the seventy-one students enrolled in the program. In one of the last sessions, we discussed the importance of obtaining high-quality sleep for general health and well-being. I invited students to participate in a *yoga nidra* (a guided, deep meditation) the week before final exams to provide an opportunity to experience a deep relaxation technique. Afterward, I received the following email: "Dr. Jenschke, I don't know if I expressed my gratitude after the guided meditation and wanted to say thank you. You brought me back from the dark side (stress) and it's greatly appreciated! Apologies for the snoring. Gratefully, [name withheld for privacy]."

The main modules of the ASHF course, *foundations*, *awareness*, *connection*, *wisdom*, and *integration*, clearly meld with existing course content. For example, *foundations* content corresponds to the course introduction, and *awareness* and its subcomponents (*focus*, *emotion*, and *mindfulness*) are integral to teamwork and patient safety; learning, memory, and retention; and self-care.

Emerging research in the field of neuroscience has explored the human need for *connection* and healthy relations and the subcomponents of *interdependence*, *compassion*, and *diversity*. *Wisdom* and the subcomponents of *identity*, *gratitude*, and *values* naturally partner with a module devoted to exploring the complexities of self-awareness, focusing on stress and stress management, suicide awareness, and emotional intelligence. Finally, *integration* and its subcomponents (*courage* and *community*) set the stage for exploring how nurses can find meaning and purpose as they pursue their studies and then enter careers in the art and science of advanced practice registered nursing as a CRNA.

The doctoral courses in the first two semesters of the program are delivered as asynchronous distance education. The distance education courses include discussion forums (typed and video-recorded responses), quizzes, journal entries, a reflective self-evaluation essay, video-conference sessions, and a video-recorded poster presentation. A drawback of the asynchronous distance-education delivery of the course content is the difficulty of scheduling synchronous classes to practice as a group the various contemplative techniques offered in the full ASHF course due to variable work schedules (day shifts, night shifts, weekends, holidays) common among nurses. Students enrolled in the program continue to work as RNs in the ICU while taking two three-credit-hour courses in the spring and two three-credit-hour courses in the summer (twelve total credit hours). The following three semesters are on campus, in-person courses, and so it is easier to integrate contemplative practices later in the curriculum. The final four semesters of the program involve clinical settings in addition to further didactic coursework.

Interprofessional Mental Health Student Workshops

Healthcare systems in the United States are complex, often fragmented, and many fail to meet the health needs of their local communities. Healthcare professionals commonly “go it alone” in providing care to patients. There are personal and system-wide benefits when interprofessional teams of healthcare practitioners come together, listen to each other, and work collaboratively to strengthen the delivery of healthcare. Interprofessional collaboration improves the functioning of the healthcare system and thus leads to better patient outcomes. Interprofessional education (IPE) teaches students principles of teams and teamwork, learning roles and responsibilities of other professions, effective communication, and the ethics and values of various professions. Incorporating IPE into health professions curricula sends collaborative practice-ready healthcare professionals into the workforce upon graduation. At TCU, we have held two mental health-related IPE workshops for students.

An annual IPE workshop brings together basic science researchers and clinicians to bridge the gap between bench research and clinical patient care. Students from

two universities and multiple departments convene for the workshop to develop competency in interprofessional work, focusing on communication, teamwork, and roles and responsibilities. Scientist and clinician graduate students work together to design a research study to address a problem posed in a hypothetical scenario.

One workshop's scenario posited that the universities had received a \$3 million grant to develop a wellness program aimed at improving graduate student mental health. For background on the subject and scenario, students read a research study by Nagy et al. (2019) reporting on the prevalence of mental health problems and burnout among biomedical students. Additional resources were provided to the students in preparation for the workshop.

Teams were tasked with (1) identifying a strategy to implement for that would address either physical health or behavioral health for graduate students and (2) devising a research study to evaluate the effectiveness of the proposed intervention. Several teams presented their proposals, one of which proposed making sleep pods available for thirty-minute rentals to provide quick refresher naps during the day. Another team recommended the university food service offer low-cost, assorted vegetables, grains, and meats prepared to be ready to eat or to finish cooking at home. The behavioral health recommendations included incorporating yoga into the class day, beginning class with a brief breath focus session, and developing an information program for students' close family and friends who are often their main support systems. All fifteen student teams developed relevant, realistic strategies to address mental health in the graduate student population.

Matthew Zinder (**Figure 1**), a CRNA and certified hypnotherapist, gave a talk on sleep physiology and the effects of sleep deprivation, and he offered recommendations for obtaining quality sleep the day before the IPE workshop. In the final twenty minutes of the IPE workshop, Zinder led the audience in a guided progressive relaxation exercise (**Figure 2**). His calm, soothing voice carried over the hushed silence of the room, leading the audience of 140 people to collectively experience a state of peace and quietude. At the end of the session, several people commented that they felt quite relaxed yet maintained a clear awareness. One student nicely summarized the session's benefits, writing in the course evaluations, "I enjoyed the ability to interact with our colleagues



Figure 1: Matt Zinder delivers a guided meditation during an interprofessional education workshop.

and professors in person. This was a unique learning activity that helped with professional development as well as helping to achieve learning objectives for this course. Focusing on graduate student well-being and stress was very relevant to the season of life that we are walking through right now as first-year CRNA students.”



Figure 2: Interprofessional workshop students and facilitators during a guided meditation practice.

A Mindfulness Workshop

Most healthcare professionals report experiencing elevated levels of stress, depression, anxiety, and burnout. The effects of the COVID-19 pandemic have further exacerbated the stress endured by healthcare professionals, leading to increased numbers of people suffering from those conditions (Pala et al. 2022). As a service to our students and future colleagues, healthcare professions faculty need to provide students with tools for mitigating negative effects related to stress. At TCU, faculty from the Departments of Nurse Anesthesia, Kinesiology, Nursing, and Nutrition collaborated to offer a mindfulness workshop to undergraduate and graduate students (**Figures 3 and 4**). Workshop participants listened to short presentations on the effects of negative self-talk, learned about the physiology of stress and relaxation, and experienced a variety of contemplative practices, including mindful breathing, compassionate breathing, mindful eating, and reflective journaling (Martin et al. 2021). Participants completed a baseline survey and a two-month post-workshop survey describing current mindfulness meditation practices, self-compassion, perceived stress, and intention to establish a mindfulness practice. The results from the two-month post-

workshop survey (69% response rate) demonstrated reduced perceived stress scores and increased self-compassion scores. The small sample size of the pilot study (n = 39) limits generalizability of the findings, yet the pilot study does provide evidence of feasibility for academic programs to promote mindfulness skills that may reduce anxiety, depression, and burnout among healthcare professionals and thus increase their sense of flourishing.



Figure 3: The author leads a breath focus session during the mindfulness workshop.



Figure 4: Health profession students engaged in a mindfulness self-compassion meditation practice during the workshop.

Coming Full Circle

The end of the fall semester brings final exams for some students and the National Certification Exam (NCE) for graduates of our nurse anesthesia program. Graduates who successfully pass the NCE earn the credential CRNA, the goal of their three-year doctoral education journey. I organized a video conference breath focus session that brought together several students completing their first year and other students graduating from the three-year program who were preparing to take the NCE. Students from two distinct points in their education journey practiced breathwork together, as a community, to mitigate test anxiety.

A graduating student offered the following words of wisdom to those completing the first year of their three-year journey: “Pause for a few moments before an exam to breathe slowly and deliberately. Bring your mind to here and now. If/when needed during an exam, pause for a few moments to breathe, let the knowledge come to you.” The graduating student was asked by a first-year student, “How can you close your eyes and do breath focus in clinical?” She replied that using the breathwork technique during urgent situations in the clinical setting helped her focus attention and concentrate on the task at hand, such as quickly and safely drawing up medications for a patient. She observed that the use of breathing practices kept her engaged in the present moment, enhanced her awareness, and fostered a sense of calm. Testimonials such as this demonstrate the value of students teaching and learning from each other, powerful reinforcement for the students of the benefits that can be realized through cultivating mindful awareness.

I close with a story from my early years of teaching. The nurse anesthesia program is front-loaded with twenty months of didactic education followed by sixteen months of clinical residency and continued didactic education. As described above, I introduced students to the science of breathwork and practice during a research course. The following semesters, I invited students to attend in-person breath focus sessions, learn breathwork techniques, discuss the general mind-body effects of stress, and share their concerns as graduate students. About three months after beginning clinical residency, a student who was having periods of acute anxiety and breath holding during a critical time in providing anesthesia for patients contacted me. The preceptors in his clinical setting noticed the behavior and encouraged him to seek help for his anxiety. While consulting a professional therapist to uncover the underlying root of the anxiety, he and I worked on breathing practice, slowing inhaling to a count of two, pausing, then slowing exhaling to a count of four. He immediately noticed the sense of tension release and a slower heart rate. After a few sessions and by practicing breathwork daily, he reported improved ability to keep focused concentration on a single task. Within

a few weeks of practicing breathwork prior to starting the clinical day, he no longer experienced acute anxiety and breath holding. A few years after he graduated from the program, I met him at a conference. He gave me a big hug and told me he continues the breathwork practice daily. Coming full circle, he pays it forward by teaching others the technique so they, too, may experience the benefits of taking a moment to slowly inhale, pause, and slowly exhale.

Competing Interests

The author has no competing interests to declare.

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