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Preventing burnout and substance use disorder among healthcare professionals through breathing exercises, emotion identification, and writing activities

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ABSTRACT

The introduction of the COVID-19 pandemic has placed additional strain on healthcare workers, inducing immense levels of stress and workplace burnout. Health care professionals are acutely susceptible to COVID-19 exposure, ultimately leading to elevated levels of anxiety and mental illness. For example, dental professionals are at high risk due to their close work with the oral cavity. To provide temporary relief to the stress, some may turn toward substance use, especially if that individual has some form of mental illness. To curb the onset of burnout and its byproduct of substance use disorder, it is crucial to be equipped with proper tools and healthy habits that can counteract extreme levels of stress. In this article, a time-effective, 3-step method is introduced, with each activity proven to lessen the symptoms of burnout. When followed, an individual can navigate burnout's symptoms through a healthy mind and body approach. Additionally, resources to find resilience-building and mentorship programs are provided. Common substance use support groups and information regarding group meetings and contact information are listed.

1. Burnout among medical professionals

The World Health Organization declared the highly transmissible coronavirus disease-2019 (COVID-19) to be a global pandemic as of March 11, 2020.¹ The stresses of contracting the respiratory disease, quarantining, and isolating were coupled with economic and social hardship and uncertainty, inducing increasingly high levels of anxiety and depression globally.² For example, after the onset of the COVID-19 pandemic, the global prevalence estimates for psychological distress, stress, and depression were approximately 50%, 37%, and 28%, respectively.³ Despite the consistency of mental illness in the United States (U.S.), in 2018, around 25% of Americans with any mental illness (AMI) perceived there to be an unmet need regarding mental health services, and less than 36% of those with serious mental illness (SMI) received any mental health services at all.⁴

Medical professionals have been at the forefront of the pandemic, and many have unfortunately developed mental health problems, with nearly half of all healthcare professionals experiencing some form of post-traumatic stress disorder, distress, anxiety, or depression.⁵ Burnout is a term that has been used since the late 1960s to express the job-related stress in healthcare environments.⁶ Along with many other

factors, burnout during the COVID-19 pandemic may be attributed to the forced increase of technology usage,⁷ compassion fatigue, secondary traumatic stress,⁸ sexual and racial discrimination,⁹ financial instability, being overworked,^{10,11} and the constant need to provide exceptional and personalized care to all patients.¹² More specifically, due to the intimate role the oral cavity plays in the transmission and replication of the SARS-CoV-2 virus,^{13,14} dental professionals are among the most high-risk individuals for infection,¹⁵ resulting in more than 80% of dentists feeling anxiety of becoming infected.¹¹ Moreover, although dental professionals do not tend to work in hospital settings with chronically ill patients and instead lean toward private practice,¹⁶ 6% of all doctors who died due to contracting COVID-19 were dentists.¹⁷ The perpetual burnout and stress dentists face has led to extremely high suicide rates that are much more pronounced than that of the general population¹⁸ (Fig. 1). Furthermore, there exists a strong association between burnout, anxiety, and cognitive deficits.¹⁹ Cognitive impairment is of most concern for individuals in mentally challenging jobs, where not only their job outcomes are in question, but also the safety of their patients.²⁰

High stress levels and mental illness seem to affect substance use patterns, as there is a significant difference (* $p < 0.05$) between

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substance use trends between those who have AMI or SMI and those who have no mental illness (Fig. 2A).⁴ Furthermore, the number of deaths attributed to substance use disorder (SUD) and suicide has an increasing pattern, with the two trends being significantly and strongly correlated with one another ($r = 0.958$, $***p < 0.0001$) (Fig. 2B).^{21,22} Strikingly, less than half of those with co-occurring SUD and AMI received any mental health services in 2018.⁴ Unfortunately, the medical community has been very reluctant to address issues of substance use among healthcare professionals although it has been a persistent problem. Despite these issues existing, there are few reports on the subject matter in the literature.²³ The lack of literature and hesitance by the medical community to destigmatize and recognize SUD among healthcare professions and provide reliable and healthy coping mechanisms to prevent addiction from graduate school to practice is an injustice. To encourage recovery, addiction must be destigmatized and not something looked upon with shame; SUD is a disease. In graduate schools, the warning signs of SUD must be taught, along with preventative tactics a person can take and resources they can turn to.

2. Strategies and the evidence base

Burnout's prevalence amongst healthcare providers has called for an intervention on a doctor and organizational level. The effectiveness of care provided to patients is intimately regulated by the effects of burnout.²⁴ The personal interventions undergone by individuals experiencing burnout are crucial as burnout can be amplified through a person's workload and personal characteristics that constitute perfectionism, low levels of resilience, and high self-expectations.²⁵ Organization-wide directed interventions in conjunction with personal interventions have shown to be associated with higher levels of effectiveness than if each were to be targeted alone.²⁴

To control feelings of being overwhelmed, individuals can perform a series of quick and simple tasks, such as diaphragmatic breathing, identification of their emotional state, and writing down three good things (DIW). To keep it easy and encouraging, these 3 steps can be done in a professional or at-home setting and do not require much time.

2.1. Diaphragmatic breathing - slow breathing will increase parasympathetic activation

Although the specific benefits of slow diaphragmatic breathing are yet to be fully understood, it has been shown to initiate many of the chemical and biological reactions that relax the human body. Diaphragmatic breathing not only helps with inducing calming and soothing feelings, but it also leads to heightened levels of attention.²⁶ When engaging in this practice, breathing in intervals of 6 breaths per minute has shown to be of most benefit, greatly lowering the stress cortisol levels and improving attention span.²⁷ The inhalation and exhalation periods should last 4 seconds (s) and 6 s, respectively, and the entire exercise should last around 5 minutes (min). This slow breathing technique has proven to decrease both physical stress and subjective anxiety regardless of age²⁸ and can also be done in a standing position.

When performed standing, diaphragmatic breathing has resulted in a decrease in the diastolic blood pressure.²⁹

2.2. Identify your emotions - practice mindfulness

Individuals encountering burnout are experiencing a wide array of emotions that ultimately morph into one predominant feeling: confusion. Unfortunately, this often results in the continuum of unidentified feelings, eventually leading to an obscure road to healing.³⁰ Once a state of burnout is identified, a time-efficient strategy is to categorize the exact feelings experienced at specific moments of increased emotional exhaustion; emotional exhaustion is defined as emotion overload for an extended period. Categorization of emotions will allow for more mindful thought processes. Taken together, this will further aid the body to lessen the emotional exhaustion and lead to an enhanced state of self-awareness and self-management.³¹ Some examples of emotions that an individual can experience are feelings of betrayal, irritation, isolation, excitement, annoyance, and regret.

2.3. Write down three good things that happened today - shift your mindset

Pessimism and a lack of sense of accomplishment play large roles in the induction of burnout. When individuals are in a constant state of confusion, they may be unable to focus on the positive events that took place or are taking place. Fortunately, a brief writing activity has proven to be extremely helpful in counteracting these feelings.³² When people write down three good things that they are grateful for, they can alter their mindset and focus on positive events that happened that day. Focusing on three good things helps to brighten a person's mood and works to eliminate many of the pessimistic emotions an individual may carry throughout their day.

3. Instructions and recommendations for use

3.1. Diaphragmatic breathing: step-by-step

Diaphragmatic breathing expands the lungs into the diaphragm as opposed to solely using the abdomen or rib cage. The technique focuses on the individual breath by slowing down the breath rate. This can be achieved through counting breaths while expanding the abdomen. Afterwards, this is followed by inhaling deeply through the nose, slowing down into a prolonged pause, and then contracting the abdomen and slowly exhaling through the mouth.³³ With one hand on the upper chest and the other below the ribcage, inhale slowly for 4 s before holding for 1 s. After the pause, slowly exhale for 6 s. The exercise can be performed over 30 iterations and can be repeated as needed. When performed 3 to 4 times per day, optimal results are achieved.²⁹

3.2. Identify your emotions: step-by-step

Emotion identification can efficiently help with thought and feeling



Fig. 1. Visual overview of the series of events healthcare professionals may undergo that eventually lead to stress, anxiety, burnout, and a desire to turn toward substance use.

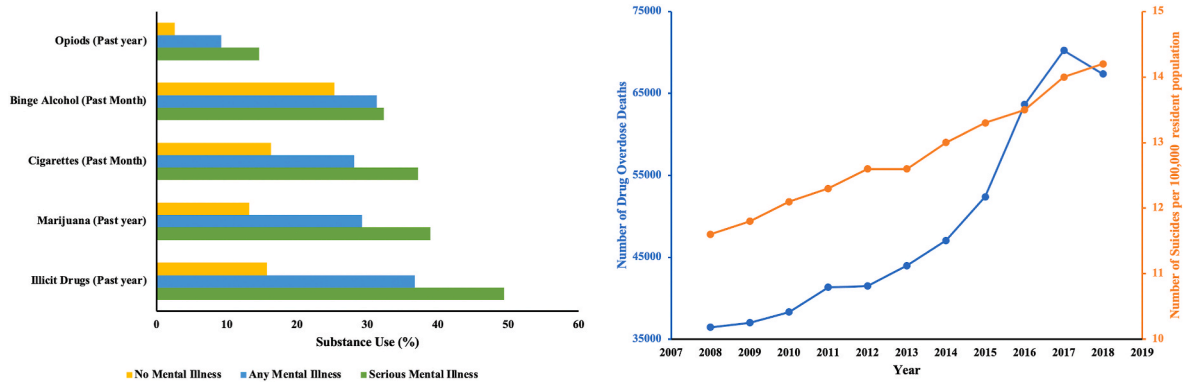


Fig. 2. (A) Substance use prevalence rates in the U.S. based on time of last consumption and degree of mental illness among adults older than 18 years of age in 2018. (B) Trends of the number of drug overdose deaths in the U.S. that involved illicit and prescription drugs and the number of suicides in the U.S. adjusted per 100,000 resident population.

organization. At most, this step calls for the optional use of a pen and paper and a quiet setting. Identifying emotions is integral to improving mental and emotional exhaustion and can easily be incorporated into a healthcare professional’s busy schedule. One can ask themselves the following questions:

When I am in a state of mental exhaustion, what am I feeling exactly?

- Is it anger?
 - If yes, nail down the root cause of the anger at that moment. Write down the reason for feeling angry and a solution you find fit.
- Is it a concern?
 - What is it that is actually concerning? Is it a who or a what?
- Is it plain exhaustion?
 - When was the last time you were able to have a mental day off?

Taken together, these questions should increase one’s sense of self-awareness and self-management.

3.3. Write down 3 good things that happened today: step-by-step

Similar to emotion identification, writing down 3 good things that happened can easily be incorporated into a medical professional’s busy work schedules and requires much less time than journaling. This activity provides rapid results that lead to an improved mood.

In a private setting (optional), write down 3 good things that happened today. Start by answering the following 2 questions:

1. What went well today?
2. What was my role in making it happen?

DIW Your Way to Well-being: 3 Steps



DIAPHRAGMATIC BREATHING

- Relax your head, shoulder, and neck
- Cross or bend your knees
- Place one hand on your upper chest and the other below your rib cage
- Inhale slowly through your nose; feel your lower hand move out and pause
- Exhale through your mouth, maintaining your original hand position



IDENTIFY YOUR EMOTIONS

Ask yourself the following questions:

- What am I feeling exactly?
 - Is it anger? Why?
 - Is it a concern? Why?
 - Is it a who? Why?
 - Is it exhaustion?
 - When was the last time I was able to have a day free of mental worries?



WRITE 3 GOOD THINGS

- Write down 3 good things that happened today*

Begin with the following questions:

- What went well today?
- What was my role in making that happen?

*When this activity is performed consecutively for 30 days, optimal results are achieved

Fig. 3. Instructions to carry out the DIW method and reduce the likelihood of the onset of burnout or to control and mitigate its symptoms. This 3-step process involves a variety of healthy activities and tools to control stress as opposed to turning to dangerous coping outlets, like substance use.

For best results, these activities should be done daily for 30 consecutive days. While this exercise is effective during a time of high stress, it is found to be most effective when done before sleeping. Fig. 3 provides a quick step-by-step overview for each strategy of the DIW method. The 3 good things activity works exceptionally well in congruence with diaphragmatic breathing and emotion identification. The DIW method is time-efficient and can be performed in either private or professional settings. When all 3 steps of the DIW method are performed at the same time, healthy habits can be formed.

4. Strategies that promote regular use

One way to promote regular use is to incorporate these activities into daily habits, such as when checking emails throughout the day or during lunch breaks. Establishing habits that encourage the DIW method will allow its full benefits to be reaped and prevent burnout. Those with healthy lifestyle habits are observed to have a better quality of life and are physically and mentally more sound than individuals with poor lifestyle habits.³⁴ For instance, habits such as time management have proven to significantly lessen the symptoms of burnout.³⁵ Unfortunately, many healthcare workers avoid seeking help due to time-constraints to seek selfcare.³⁶ However, the DIW method does not require much time to complete (7–10 min) and can therefore be easily integrated into any busy schedule.

4.1. Long-term interventions

Prolonged burnout symptoms often lead to depression³² and can potentially alter the structural and functional aspects of the brain; this may eventually lead to increased sick days for stress-related symptoms.³⁷ Although the regional reduction in brain tissues due to prolonged stress is reversible, the healing period time requires several weeks.³⁸ Therefore, long-term interventions call for guiding individuals in the healthcare field to develop core coping mechanisms to effectively manage stresses accompanied with demanding jobs. One of the most important interventions is installing resilience workshops in order to aid individuals with coping on a daily basis and thus prevent burnout.³⁹

4.2. Resiliency — can be taught

Establishing a resilient mindset helps a person navigate the constant hardships they may encounter. Moreover, resiliency allows an individual to maintain a healthier state of mind.⁴⁰ Implementing positive mindfulness exercises is linked with decreased levels of mental strains, and therefore, burnout.⁴¹ Established resiliency programs have shown to be very effective for healthcare workers to cope and manage their everyday stresses.⁴⁰ Similarly, individual intervention initiatives have shown to be as effective, especially with self-directed electronic (E)-learning strategies. The E-learning training intervention includes asynchronous modules that can be completed at an individual's desired pace. The 5 modules are presented as "knowledge bites," and aim to prevent additional stress; the training encourages the "Self Care Plan"⁴² (Fig. 4).

5. Resources for continued exploration and guided practice

When symptoms of burnout and a tendency or desire to turn toward substance use in moments of stress are recognized, it is important to reach out to others and receive professional help. Irrespective of job classification, gender, generation, or ethnicity, professionals involved in either a formal or informal mentoring relationship are significantly less likely to report burnout than those who are not. After its implementation in the medical field in the late 1990s, mentoring has continued to reduce and manage stress, burnout symptoms, and exhaustion.^{43–45} Burnout has been associated with people feeling (i) unsupported by their department or institution, (ii) undervalued in their contributions, and



Fig. 4. Overview of the 4 pillars to the "Self Care Plan." Following these practices instills healthy habits into one's lifestyle.

(iii) unheard regarding their professional needs.⁴⁴ Contrastingly, there is an inverse relationship between receiving career-related and psychosocial support and burnout.⁴⁵ Therefore, by offering advice and guiding mentees through stressful career situations, mentors provide a supportive outlet for those struggling to be understood and heard, help to develop meaningful strategies to prevent burnout, and allow mentees to gain control over their recovery process. In doing so, unhealthy coping mechanisms—such as substance use—can be avoided entirely.

If a formal mentoring program is not available, healthcare professionals can find a mentor by (i) joining a free online mentoring program through various platforms, such as Facebook groups, LinkedIn, and professional organizations, (ii) reaching out to professors, peers, or lab mentors from school, (iii) or speaking with work colleagues. Furthermore, if someone finds themselves struggling with SUD, they should call the Substance Abuse and Mental Health Services Administration's National Hotline (open 24/7, 365-days-a-year).⁴⁶ Additionally, joining substance use support groups, such as Alcoholics Anonymous,⁴⁷ Self-Management and Recovery Training,⁴⁸ Women for Sobriety,⁴⁹ Narcotics Anonymous,⁵⁰ Celebrate Recovery,⁵¹ or many others, may be beneficial for preventing and recovering from SUD. Due to the ongoing global pandemic, some meetings may be held virtually, and participants can change their screen name and turn off their camera for additional anonymity (Fig. 5).

Moreover, there are many resources to prevent burnout. The resources provided below are of little to no cost. YouTube videos are available online and include step-by-step instructions and demonstrations. Furthermore, books are available in both electronic and paperback formats, granting someone the option to bring multiple books to their place of work.

5.1. Books

5.1.1. Burnout and Self-Care in Social Work: A Guidebook for Students and Those in Mental Health and Related Professions by SaraKay Smullens

This book establishes a framework for the onset of burnout and provides self-care tips for workers in healthcare. The author, SaraKay Smullens, combines research, questionnaires, and case studies to exemplify her message. Smullens provides her clients with insights from personal experience on how to effectively manage one's feelings and alleviate work-related stresses.⁵⁵

SUBSTANCE USE SUPPORT GROUPS
FREE AND EFFECTIVE

ALCOHOLICS ANONYMOUS
Focus: Alcohol use
Website: <https://www.aa.org/>
Phone Number: (212)870-3400
Group meetings: In-person & Online

SMART RECOVERY
Focus: All substance use
Website: <https://www.smartrecovery.org/>
Phone Number: (440)951-5357
Group meetings: In-person & Online

WOMEN FOR SOBRIETY
Focus: All substance use
Website: <https://womenforsobriety.org/>
Phone Number: (215)536-8026
Group meetings: In-person & Online

NARCOTICS ANONYMOUS
Focus: Narcotic use
Website: <https://na.org/>
Phone Number: (818)773-9999
Group meetings: In-person & Online

CELEBRATE RECOVERY
Focus: All substance use
Website: <https://www.celebraterecovery.com/>
Phone Number: NA
Group meetings: In-person

COCAINE ANONYMOUS
Focus: Cocaine use
Website: <https://ca.org/>
Phone Number: (310)559-5833
Group meetings: Online

MARIJUANA ANONYMOUS
Focus: Marijuana use
Website: <https://marijuana-anonymous.org/>
Phone Number: (800)766-6779
Group meetings: In-person & Online

SECULAR ORGANIZATIONS FOR SOBRIETY
Focus: All substance use
Website: <https://www.sossobriety.org/>
Phone Number: (314)353-3532
Group meetings: In-person & Online

Fig. 5. Overview of popular substance use support groups for those struggling with drug and/or alcohol use.^{47–54}

5.1.2. *The Resilient Practitioner: Burnout and compassion fatigue prevention and self-care strategies for the helping professions* by Thomas M. Skovholt and Michelle Trotter-Mathison

The newest edition of *The Resilient Practitioner* provides students and practitioners with tools to help them better balance self-care with patient-oriented care. *The Resilient Practitioner* guides readers into

developing a resilient mindset, with clear instructions and guidance. The authors also write a chapter on resiliency and include details for a new self-care action plan.⁵⁶

5.1.3. *Atomic habits* by James clear

Clear provides a structured framework on how to conquer a lack of motivation, reinforce willpower, and prioritize creating and improving habits. Clear writes a chapter on how to remotivate oneself and prevent falling behind.⁵⁷

5.2. YouTube videos

5.2.1. *Diaphragmatic breathing tutorial while sitting down*

It is critical to learn proper breathing techniques, given that stressed individuals tend to breathe with their chest. In this 4:08 video, Michigan Medicine demonstrates the steps involved with diaphragmatic breathing, ensuring the proper technique is performed.⁵⁸

5.2.2. *Diaphragmatic breathing tutorial while standing up*

This video helps individuals in situations where diaphragmatic breathing can only be performed in a standing position. In this 4:33 video, Dana Santas and Donovan Santas, pro-sports and yoga coaches, demonstrate how to perform diaphragmatic breathing.⁵⁹

5.3. Resiliency program

Mayo Clinic provides a resilience training program that targets emotional, mental, physical, cognitive, and spiritual resiliency. To start treatment, a person must be registered as a Mayo Clinic patient. There are two programs, one of which being the General Health and Wellness Program and the other being the Mind and Body Counseling and Stress Management Program. The General Health and Wellness Program is 1:1 with a physician and offers guidance to achieve one's personal physical and mental resilience goals. This program starts with a 60-min appointment (\$103), followed by an optional 30-min session (\$67). A person can also purchase a package deal (\$310) that includes the first 60 min appointment and 4 30-min sessions. Unfortunately, this program does not accept insurance. The second program includes interactions with therapists who specialize in social work, and each session aims to improve one's mental health. These sessions take place in-person or via video calls and are 1 hour long (\$273). Although most insurances are accepted for this program, Medicare is not.⁶⁰ Similarly, resilience counseling and therapy are also effective methods to build resiliency, with both in-person and online options available.

5.4. Professional help

As SUD, a lack of energy and motivation, depression, and suicidal ideations are very serious, it may be best for someone experiencing one or more of these to be seen by a psychotherapist or a psychiatrist so that they are able to obtain the proper medication and professional help to get them to their baseline. There are many resources available to obtain a therapist for mental health and SUD. To name a few, someone can receive care through Psychology Today,⁶¹ Headway,⁶² The National Queer and Trans Therapists of Color Network,⁶³ and the Clinicians of Color Directory.⁶⁴ It is essential to prioritize one's mental health and receive professional help (Fig. 5) if struggling with SUD.

6. Key takeaways

- Burnout and mental illness are prevalent among healthcare professionals, especially during the COVID-19 pandemic (Fig. 1).
- Mental illness is associated with SUD; therefore, it is critical to identify stressors and develop healthy coping habits (Fig. 2).
- Burnout symptoms can be managed through the time-effective and simple strategies present in the DIW method (Fig. 3).

- Healthcare workers can avoid burnout through building resilience and by engaging in the “Self Care Plan” (Fig. 4).
- Mentorship is important to prevent burnout, and substance use support groups and professional help are great ways to overcome SUD (Fig. 5).

Author contributions

RJK conceived this project, performed data analysis, created figures, and wrote/revised this manuscript. MH aided in figure preparation and wrote/revised this manuscript.

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Declaration of competing interest

The authors declare no conflict of interest.

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Abbreviations

AMI	Any mental illness
COVID-19	Coronavirus disease-2019
DIW	Diaphragmatic breathing, identification of emotional state, and writing down three good things
Min	minute
S	second
SMI	Serious mental illness
SUD	Substance use disorder
U.S.	United States

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