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Mindfulness and Prevention in Western Medicine:

Focus on Physician Assistant

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Abstract

The health and wellness of the mind has been an important aspect that has been recognized by different cultures and medical traditions for thousands of years, but was generally neglected in the United States until recently. The beginning of the western mindfulness revolution started when Jon Kabat-Zinn introduced the concept and practice of mindfulness to care for the health and wellness of our mind. “Mindfulness is a simple concept in which one pays attention on purpose, in the present moment, nonjudgmentally” (Kabat-Zinn, 1994, p. 4). Research indicates that mindfulness helps to treat aspects of chronic diseases, pain, as well as lower stress. Health care professionals, specifically Physician Assistant (PA), can have high rates of burnout due to elevated levels of professional stress. This stress has been exacerbated by continual medical knowledge, advancing technology, and increased patient demand due to the Affordable Care Act. The benefits of practicing mindfulness has the capacity to create more compassionate physician assistants, less errors, improved relationship centered care, and more efficient appointments.

Keywords: mindfulness, physician assistant, prevention

Introduction

Eastern practices often get overlooked in western culture due to a lack of research on the mind and body. However recent studies are providing a bridge to that gap in research based evidence on mindfulness. As statistics come out each year about healthcare costs, it may be essential to incorporate these ancient practices into western medicine. The majority of rising healthcare costs can be attributed to preventable chronic diseases. Chronic diseases include heart disease, stroke, cancer, and diabetes. Annual healthcare costs in the United States are above \$320 billion (Greenwell, 2015). In 2010, 86% of all healthcare spending was for people with one or more chronic medical conditions (Centers for Disease Control and Prevention, 2015). By 2030, annual direct medical costs associated with cardiovascular diseases are projected to rise to more than \$818 billion; this is just one preventable disease that is costing the healthcare system (Greenwell). A paradigm shift is needed in how western medicine works to prevent chronic diseases. One way to begin the process is through the practice of mindfulness. By incorporating mindfulness, the healthcare system could switch from a curative/reactive approach to a preventative approach. Using mindfulness is one intervention that could help in preventing chronic diseases by lowering stress levels that often cause these diseases.

In addition to the benefits mindfulness offers disease management, there is an increasing spotlight on how it could benefit healthcare providers as well. Physician Assistants (PA's) are mid-level providers that work underneath physicians in hospitals, doctors offices, nursing homes and other locations where their primary physician is on site. They help alleviate the patient load for physicians

and can diagnose, develop treatment plans, and write prescriptions. Physician Assistants that practice mindfulness are shown to be more compassionate, have better relationship centered skills, and are more efficient and effective in their appointments (Fortney, Lutchterhand, Rakel, Zakletskaia, & Zgierska, 2013). PA's are prone to burnout; research shows that practicing mindfulness can also help to prevent burnout, compassion fatigue, and reduce stress (Fortney et al). This thesis project discusses the benefits of incorporating mindfulness into western practices. Specifically, this thesis will cover the history, definitions, and ways to practice mindfulness, an overview of physician assistant, chronic pain and mindfulness, prevention model in healthcare, and how stress impacts our bodies. It proposes a prevention model to benefit patients as well as PA's.

Understanding Mindfulness

History

The importance of the mind in health and illness dates back to ancient times (National Institutes of Health (NIH), 2013). In the West, the idea that the mind and body are independent of each other began during the Renaissance and Enlightenment eras. Increasing numbers of scientific and technological discoveries furthered this split and led to an emphasis on disease-based models, pathological changes, and external cures (NIH). As scientific medical advancements were made there were shifts in the mindset of individuals, making people believe they could lead an unhealthy lifestyle and modern medicine would "fix" it. The role of the mind in health and illness began to re-enter Western health care in the 20th century, led by discoveries about pain control via the placebo effect and effects of stress on

health. (Buffart et al, 2012). Many individuals were important to bringing mindfulness practices to the West including Thich Nhat Hanh and Jon Kabat-Zinn.

Thich Nhat Hanh is a Vietnamese Buddhist monk and international spiritual leader who brought Buddhism to the West (Plum Village Mindfulness Practice Centre, 2016). He, along with his “followers”, founded dozens of practice centers in America and Europe and over 1,000 local mindfulness practice communities (Plum Village Mindfulness Practice Centre). Hanh has traveled throughout the world spreading the message of peace and brotherhood. His teachings have been published in over 100 titles on meditation, mindfulness, and Engaged Buddhism (Plum Village Mindfulness Practice Centre). His main teaching is that, “through mindfulness we can learn to live happily in the present moment- the only way to truly develop peace, both in ones self and in the world” (Plum Village Mindfulness Practice Centre, para 2). Along with Thich Nhat Hanh, another teacher of mindfulness who is better known in Western culture because of his mindfulness training program is Jon Kabat-Zinn.

Jon Kabat-Zinn is a key teacher to introduce Buddhist mindfulness practice to the West (GoodTherapy, 2015). He earned his PhD in biology and founded the Center for Mindfulness in Medicine, Health Care, and Society as well as the Stress Reduction Clinic in 1979 at the University of Massachusetts (GoodTherapy). He developed the mindfulness based stress reduction program (MBSR), which combines meditation exercises and yoga techniques to help individuals suffering from a wide range of chronic disorders and diseases. MBSR programs have since become a popular and successful way to reduce stress and chronic pain. Jon Kabat-Zinn brought

mindfulness to western culture and emphasized that you do not need to be a Buddhist or partake in the Buddhist religion to practice mindfulness.

Today there are over 250 mindfulness-based stress reduction programs in the United States (Goldstein & Stahl, 2010). Mindfulness-based stress reduction (MBSR) programs have been proven effective in decreasing symptoms of anxiety, obsessive-compulsive disorder, and chronic pain as well as preventing relapse in depression and drug addiction, and increasing empathy, spirituality, and well-being (Goldstein & Stahl). Mindfulness allows you to focus on the present moment by being aware and the present moment is the only time you can make changes. Mindfulness allows one to see a situation more clearly, becoming aware of how it is affecting you, and choose a more skillful response (Goldstein & Stahl). This creates a connection between mind and body and can help maintain balance.

Defining Mindfulness

Mindfulness has rich history that dates back thousands of years that makes it challenging to define. The definition has been fluid and open to individual interpretation. There are definitions that trace back to Buddhist roots, as well as definitions offered by teachers of the practice. Although there are many definitions they tend to encompass common teachings of awareness and staying in the present moment. This section will discuss some of the ways mindfulness has been defined throughout the years.

Mindfulness is the English equivalent of the Pali word *sati*, which is an activity (Carlson & Shapiro, 2010). Mindfulness is an ancient Buddhist practice that has relevance for our present-day lives. John Kabat-Zinn explained, “Practicing

mindfulness does not mean you have to become a Buddhist; mindfulness is a simple concept in which one pays attention on purpose, in the present moment, nonjudgmentally” (Kabat-Zinn, 2014, p. 4). Mindfulness focuses on waking up and living in harmony with oneself and the world. Normally we are limited in our consciousness, more like being in a dream than in wakefulness, being in a state of automaticity and unconsciousness and we want to wake up from that automated lifestyle (Kabat-Zinn). Mindfulness is the art of conscious living, which allows us to be awakened and fully enjoy the present moment (Kabat-Zinn). Waking up means being present to life as it is in an immediate and intimate way, with an open heart and a clear mind without so much fear and clinging (Being Intimate with your World: Jack Kornfield, 2015).

Another definition of mindfulness is noticing what is happening in our body, our thoughts, our emotions, as well as the world around us (Halliwell, 2012). It teaches us to become more in touch and connected with ourselves and the world around us. Furthermore, mindfulness involves an elemental and spontaneous openness to experiences, grounded in the body, in the timeless, in not expecting anything to happen, a befriending of this present moment for its own sake (Goldstein & Stahl, 2010). In mindful awareness, you are participating intimately in life as it is unfolding, seeing what happens, experimenting. For example, mindfully walking to work: feeling the warm temperature of the sun on your skin, the cool breeze on your face, hearing the birds chirping, the commotion of cars driving by, seeing all the colorful flowers, maybe smelling those flowers or exhaust of a broken car, feeling the pressure of your feet when they hit the ground taking steps, smiling

at the person walking by, becoming scared when you see a squirrel run out into the street then relieved when he just barely made it across, etc. Observing and participating in life, nonjudgmentally, as it is happening will allow one to enjoy life more fully and get more out of everyday. It is being alive in these precious moments that are available to us but we often ignore in the hopes of better moments ahead (Goldstein & Stahl). Mindfulness incorporates cultivating nonjudgmental awareness in day to day life (Goldstein & Stahl).

Practicing Mindfulness

“Mindfulness is both a process- mindful practice- as well as an outcome- mindful awareness” (Carlson & Shapiro, 2010, p. 4). The mindfulness process incorporates intention, attention, and attitude. Intention is fundamental to mindfulness practice. The Buddhist intention is freedom from suffering for oneself and all beings. Intention is a central component in the Buddhist teachings and in particular mindfulness practices. Jon Kabat-Zinn (1990) explains “your intentions set the stage for what is possible and it reminds you from moment to moment why you are practicing in the first place” (Carlson & Shapiro, p. 8). Set an intention for each day, and remember to pause and reflect in order to reconnect with your intention (Carlson & Shapiro). For example, setting an intention for the day to take time for your own self care throughout the day.

Attention is the second component of the mindfulness practice. Attention involves observing moment-to-moment experiences. This teaches us how to be attentive in a discerning and nonreactive way, rather more sustained and concentrated so that we can see clearly what is happening in the present moment

(Carlson & Shapiro, 2010). This will allow one to observe feelings and emotional reactions and more clearly handle it. Back to the example above, taking time for your self care periodically, a step further by paying attention to our internal experience, how are you feeling, do you need a break from your work, are you hungry/thirsty? In addition to internal conditions it is important to observe external experiences: is your environment chaotic and loud, do you need to step outside to get some fresh air? This allows awareness of what is going on around you in order to make clear decisions to continue with your intentions (Carlson & Shapiro).

“The qualities one brings to attention are referred to as attitudinal foundations of mindfulness” (Carlson & Shapiro, 2010, p. 11). This is the attitude one brings to the act of paying attention. It is important to keep certain attitudes in mind while practicing mindfulness such as acceptance, openness, caring, curiosity, patience, or compassion. For example, if you start to feel annoyed or overwhelmed with the practice, note that and accept it with kindness and understanding; this is meant to substitute the negative attitudes, making it disappear. Changing perspectives on how you react, see, and feel by keeping those positive attitudes in mind (Carlson & Shapiro).

Mindfulness can be practiced many ways. Some examples include: mindful breathing, listening, eating, walking, meditation, yoga, and many more. This makes it so you can practice mindfulness in virtually anything you are doing at the moment. Mindfulness allows you to shift your attention and observe what happens as everything arises in a friendly, compassionate, and interested way. With practicing this kind of attention it creates greater awareness, clarity, and acceptance of the

present moment reality (Kabat-Zinn, 2013). As we pay more attention through the practice of mindfulness, we begin to notice how we become stuck on autopilot, unconsciously playing out patterns that create stress and suffering in our lives (Halliwell, 2012). Mindful listening teaches us how to pay attention, to notice all the different sounds that are around you. It also creates a space for paying better attention to what you are listening to.

Another way to practice mindfulness is by practicing gratitude. Our brains are 3-5 times more sensitive to negative information than to positive (Settle Down, Pay Attention, Say Thank You: A How-To, 2012). This was important for survival in the past, but we no longer have the same threats that we had in caveman days but our brain is still more sensitive to negative experiences. The neural pathways can be strengthened to increase positive thoughts by practicing gratitude (Settle Down...). Gratitude helps to experience more positive emotions; people are 25% happier, kinder to others and are healthier (Settle Down...).

Another important aspect when practicing mindfulness is to avoid past-future thinking. This creates suffering because it causes us to stray away from the present moment. Alan Watts, a writer and philosopher best known for interpreting Eastern philosophy, describes how we often think about memories in our past and fantasize about our future, taking us away from the present (Watts, 2011). He further explains to focus and stay in the present moment and not dwell on the past because it is no longer, and don't fantasize about the future since it is not certain it will come. Lao Tzu, a Chinese philosopher and founder of Taoism described it as, "If you are depressed you are living in the past, if you are anxious you are living in the

future, if you are at peace you are living in the present” (Philosiblog, 2013, para. 1).

Dr. Rick Hanson is a psychologist who founded the Wellspring Institute for Neuroscience and Contemplative Wisdom and he offers a program on the foundations of well-being. He uses science based methods and offers a three step process of staying in the present moment (Hardwiring Happiness: Dr. Rick Hanson, 2015). Dr. Hanson suggests first, practice getting away from past-future thinking by trying to stay with the present feelings, emotions, and experiences in a wholesome way, but not clinging or attaching to it. Do not rush on to the next thing, take time to process it. Be with what’s there, witness it, and hold it with curiosity and compassion. Next, try to reduce, prevent, and abandon whatever is negative, let go of tension, challenge your thoughts, and shake it off. Lastly, cultivate what is beneficial; deliberately create whatever leads to happiness for ourselves. These three steps can be summed up to: Let be, let go, and let in. He emphasizes that the most important time in life is the next minute to come (Hardwiring Happiness: Dr. Rick Hanson).

Mindfulness meditation can be used as a means of relaxation, reduction of psychological distress, and symptom control (Angen, Carlson, Goodey, Speca, & Uruliak, 2010). Many physical benefits have been associated with mindfulness including decreased heart rate and blood pressure, slowed respirations, lowered lipid levels and decreased levels of circulating stress hormones (Angen et al). Psychological effects include lowered level of anxiety and stress, better sense of well being, and overall better psychological health (Angen et al). In mindful meditation clients are taught to observe their cognitions, emotions, or sensations

nonjudgmentally and to accept them as they are (Angen et al). They are taught to focus on neutral stimuli such as clouds passing by and to focus on breathing (Malcolm, 2008). This practice is referred to also as metacognitive insight. Metacognitive insight helps clients to learn to regulate their attention on a moment to moment basis, undisturbed by maladaptive thought processes (Malcolm, 2008). This helps with understanding and accepting that what you are feeling at that moment is what is supposed to be, and that there is no need to change it, just observe it and allow it to be there. Similar to floating on the waves in the ocean, we don't fight the waves we ride along with them. Shifting to this mindset and applying it to western medicine could help professionals and patients take better care of themselves as well as improving quality of life.

Physician Assistant: Overview of the Profession

A physician assistant is a nationally certified and state licensed healthcare professional. They practice medicine on healthcare teams under the supervision of physicians. PA's can work in different areas of medicine in hospitals, doctors offices, and nursing homes. PA's practice and prescribe medication throughout the United States. PA's are educated and trained in a two to three year program that require the same prerequisite courses as medical schools (American Academy of Physician Assistants (AAPA), n.d.). Along with didactic courses in biology and medicine they also complete more than 2,000 hours of clinical rotations in family medicine, obstetrics, pediatrics, emergency medicine, oncology and many other areas of medicine (AAPA). They are very flexible and can work in any area they choose under a physician.

Demands on physician assistants can lead to burn out (Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska, 2013). Both mentally and physically demanding, the health field continues to become more complex as technology grows, medical knowledge increases, and increasing demands from patients. Medicine is constantly changing making it harder to keep up with all the information and technical advancements. With the advances in medicine and less time to spend with patients, PA's experience burn out, compassion fatigue, and their own health issues (Fortney et al). PA's will see an increase in number of patients due to the Affordable Care Act, which provides insurance to 32 million previously uninsured citizens (American Public Health Association, 2012) The ACA will dramatically increase the workload and stress on physician assistants and other health care professionals (Fortney et al).

Health care workers that are burned out are at higher risk for substance abuse, lying, cheating, and suicide (Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska, 2013). Health care providers also tend to make more errors and lose their sense of empathy when feeling burned out (Fortney et al). Burnout is more common among physicians; up to 60% have reported experiencing burnout (Fortney et al). Evidence has shown that burnout negatively effects patient care (Fortney et al). Mindfulness training is one solution to help prevent burnout, helping providers to become more focused, more empathetic, and less exhausted (Fortney et al). Mindfulness allows providers to tend to their own health and needs, but also to stay fully present with the patient, listening and being aware, in turn creating a more fulfilling and efficient visit.

These potential benefits of practicing mindfulness were researched by Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska (2013). This study measured the effects of mindfulness on job satisfaction, quality of life, and compassion in primary care clinicians. Thirty primary care clinicians were recruited from the UW-Madison departments of family medicine, internal medicine, and pediatrics. Recruitment criteria were as follows: employed as a primary care doctor, doctor of osteopath, nurse practitioner, or physician assistant, they work at least 50% of their time in direct patient care, they can attend most intervention sessions, willingness to do 10-20 minutes of mindfulness related practices daily, and agreement to complete a 10 to 30 minute online survey four times (Fortney et al).

The intervention that participants received was a shortened version of Jon Kabat-Zinn's MBSR program. Two groups of 15 participants attend sessions where they participated in additional activities such as guided sitting and walking mindfulness practices. The participants were able to share experiences in a group setting. A website was created that assisted clinicians in the examination room to remind them to be more present with the patient. Although it was unclear as to how the website worked, its function was to remind the clinician to pause, fully be present with the patient, and then give recommendations, questions and advice mindfully. Four surveys were sent out at different time periods, the first one sent out two weeks before training started, the second one the day after the last mindfulness training session, the third one sent out at 8 weeks after the last session, and the fourth one sent out 9 months post-intervention. Each survey questionnaire measured Maslach Burnout Inventory, Depression Anxiety Stress Scales-21, the

Perceived Stress Scale, the 14-item Resilience Scale, and the Santa Clara Brief Compassion Scale (Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska 2013).

Results showed that the effects of physicians that took a short, one weekend mindfulness course and two follow up sessions had decreased levels of burnout, anxiety, depression, and distress when compared to other doctors (Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska 2013). The mindfulness training revealed significant improvement in quality of life, reduction in perceived stress and burnout, and increased personal accomplishment (Fortney et al). These effects were maintained over an additional nine months, showing the significant long term effects mindfulness can have even when a shortened mindfulness training approach is used (Fortney et al).

The small participant pool makes it hard to generalize these results. It was unclear how the website was used as a reminder in the exam rooms, how it specifically worked for reminding clinicians to be more present. Having a website may take away from the personable patient-provider experience if the clinician needs to be on the website. It was not stated if this website was beneficial or if clinicians have continued access after the study was completed. Overall, this study showed positive results for clinicians using mindfulness to decrease burnout, anxiety, and depression which can be common occurrences for the health care community along with having sustainable long term effects.

Another study was conducted in order to assess the association of clinician mindfulness with quality of interpersonal care (Beach et al, 2013). Theoretically, mindfulness improves the well-being of healthcare professionals and in turn, "This

critical self-reflection enables physicians to listen attentively to patients' distress, recognize their own errors, refine their technical skill, make evidence-based decisions, and clarify their values so they can act with compassion, technical competence, presence, and insight" (Beach et al, pg. 422). The researchers hypothesized that mindfulness should improve the quality of care given to patients along with clinicians well-being.

In the study, the participants included patients infected with HIV and their clinicians. Forty-five clinicians and 437 patients participated (Beach et al, 2013). There were 10 patients per clinician. Clinicians completed the Mindful Attention Awareness Scale (MAAS) as a baseline questionnaire. Clinicians were compared at the end for high self-rated mindfulness clinicians compared to low self-rated mindfulness clinicians. Audio-recording devices were put in the examination room to record the patient-clinician encounter. The audiotapes were analyzed using the Roter Interaction Analysis System (RIAS), which assess patient and clinician communication behaviors and has a high reliability and predictive validity. It assigns each complete thought of the clinician to one of 37 categories, such as rapport building, biomedical talk, psychosocial/lifestyle talk, etc. This produces a summary measure of patient-centeredness as a ratio of patient centered categories of talk divided by physician-centered categories of talk. Emotional tone is also calculated using RIAS. Patient evaluation was self reported and included the patients perception of clinician communication and patients overall satisfaction. The Interpersonal Processes of Care Instrument was used for these measures (Beach, et al).

Overall the results indicated that mindfulness among health care clinicians was associated with more patient-centered communication (Beach et al, 2013). The high self-rated mindful clinicians made 30 more rapport building statements and 16 more statements related to psychosocial issues. They also had a more positive affect. It was shown that clinicians with high mindfulness spent on average 5.8 minutes longer with patients. Rapport building and a positive emotional atmosphere creates a reciprocal communication dynamic which allows mindful practitioners to listen attentively and patients to feel empowered and voice their concerns. Using mindfulness may allow the clinician to deeper appreciate the patients experience and emotions by being understanding, compassionate, and empathetic. In an attempt to decrease burnout for clinicians and increase patient-centered communication and satisfaction, as the researchers stated, "Mindfulness may be a more humanistic, effective, and satisfying practice of medicine" (Beach et al, p. 427).

The participant pool of this study was larger than most studies on mindfulness and health care providers. Beach et al's (2013) study provides more substantial evidence that it positively effects a large pool of people. The measures used had been used before and had evidence of being predictable and valid. One thing that could have been different, is making the patient and clinician unaware that they are being recorded. They were aware that the RIAS was in the room so that could have caused them to communicate differently. Overall this study shows the positive benefits of using mindfulness in the healthcare field to increase patient rapport and satisfaction.

Chronic Pain and Mindfulness

Along with PA's, mindfulness assists patients in reducing stress as well. Furthermore, it can benefit patients through alleviating pain, better managing chronic diseases, and offering more control over our bodies and emotions. Developing pain management through mindfulness allows for a healthier, happier life and can decrease suffering.

Chronic diseases and conditions include heart disease, stroke, cancer, diabetes, obesity, and arthritis. These ailments are the most common, costly, and preventable of all health problems (Centers for Disease Control and Prevention, 2015). Seven in ten deaths in the U.S. are related to preventable diseases and three quarters of our health care dollars are spent treating such diseases (American Public Health Association (APHA), 2012). However, only 3 cents of each dollar spent on health care in the U.S. go toward prevention (APHA).

Pain is a symptom that often is part of chronic diseases, but eventually can end up being its own chronic condition. Dealing with chronic pain is a reality that goes side by side with chronic diseases. 25.3 million American adults suffer from daily pain (Nahin, 2015). 25.4 million adults experience category 3 pain, while 14.4 million adults experience the highest level of pain in category 4. Adults with category 3 or 4 pain are more likely to use more health care, suffer more disabilities, and have a worse health status (Nahin). Practicing mindfulness makes coping with the pain more manageable.

Mindfulness meditation has been shown to be helpful with chronic pain (Goldstein & Stahl, 2010). In fact, modern mindfulness research began with Jon

Kabat-Zinn's MBSR program. How mindfulness works with pain is done by identifying where pain and tension is held, working and becoming aware of emotions felt during pain, and being in the present moment (Goldstein & Stahl). Doing a body scan meditation can help to identify where and how tension and pain is being felt throughout the body. Next, rather than fighting the emotions that come with feeling pain, allow and acknowledge the waves of emotions. "Acknowledging is to see things as they are, whether you like it or not, and acceptance is being ok or at peace with things the way they are" (Goldstein & Stahl, p. 71). Changing emotional responses to pain can reduce suffering (Goldstein & Stahl). Finally, mindfulness teaches one to live in the here and now. It lets one deal with the pain one moment at a time, as it arising, instead of wondering what the future will bring of your pain which increases suffering. If one focuses on the future of their pain too much, it becomes too large and may feel like it is a death sentence, this causes suffering. "Pain is a natural part of life, but suffering is only one response to pain and we can help ourselves suffer less" (Kelly, 2011, p. 2.)

Mindfulness offers more control over pain by listening to our bodies and being aware of our emotions that come with it. "The goal of pain management is to increase function and quality of life while reducing sense of suffering" (Conte, 2011, p. 5). By using mindfulness and living in the present moment, pain is seen as a more manageable issue, improving quality of life, instead of as a life sentence of suffering.

In one of the first studies of MBSR and chronic pain, Jon Kabat-Zinn and colleagues delivered a 10-week MBSR program and they found significant reduction in pain and in mood disturbances (Kabat-Zinn, Lipworth, & Burney, 1985). His

program involves teaching self-regulation of pain through mindfulness meditation (Bailey & Beaulac). Participants of the study included 90 chronic pain patients and were physician referred. They were trained in mindfulness meditation which was completed over 10 weeks. The program was described to the participants and it was emphasized that patient discipline was required since the program was based on intensive, daily practices of meditation. It was required that participants meditate for a minimum of 45 minutes per day, 6 days a week (Kabat-Zinn et al). The courses in the program consist of 2 hour classes once a week where varieties of mindful meditations are taught and practiced. The courses were taught by instructors that have practiced mindfulness meditation regularly for years. Outcomes were compared between pain patients trained in meditation and pain patients with traditional treatment and no training in self-regulation (Kabat-Zinn et al).

Measures included self reporting, the McGill-Melzack Pain Rating Index, Body Parts Problem Assessment Scale, Body Pain Map, Profile of Mood States, and the Table of Levels of Interference (Kabat-Zinn, Lipworth, & Burney, 1985). Lastly, a summary outcome questionnaire was used for follow up. Results showed a significant reduction in present-moment pain, negative body image, anxiety, depression, mood disturbance, and inhibition of activity by pain (Kabat-Zinn et al). Pharmaceuticals normally taken for pain were decreased; 17 reported reduced drug dosages and an additional 11 reported rarely or never using medication for pain relief by the end of the program. Patients in pain who did not complete the MBSR training did not show improvement after traditional treatment (Kabat-Zinn et al). It was shown that the benefits were maintained up to 15 months after the meditation

training for all measures except present-moment pain. More than 70% of the individuals reported that they still meditate after the end of the training (Kabat-Zinn et al).

This study shows the effectiveness of the MBSR program. It displayed the benefits of MBSR by reducing pain, although it was not maintained for present-moment pain after 15 months (Kabat-Zinn, Lipworth, & Burney, 1985). Not only did it help to reduce pain but it also increased self esteem and mood, showing psychological and behavioral benefits as well (Kabat-Zinn et al). Pain is a difficult issue to treat, often resorting to medications, MBSR is an alternative to help decrease suffering and improve quality of life.

A study was done by Julie Beaulac and Matthew Bailly (2014) researching the effects of an eight week Mindfulness Based Stress Reduction treatment on chronic pain. Participants included 26 individuals living with chronic pain, such as lower back pain, fibromyalgia, arthritis, and others. An eight week group treatment plan was developed which consisted of weekly two hour sessions that involved two 30 minute meditations and a discussion where participants could share their experiences, challenges, and growth (Bailly & Beaulac, 2014). Participants were also provided with CD's of meditations, it was recommended that they practice meditations at home for five days out of the week. Handouts were provided to record challenges and growth.

The Kessler Psychological Distress Scale, Pain Disability Index, Visual Analogue Pain Intensity Scale, and a Chronic Pain Acceptance Questionnaire were given at orientation and at the end of the final session (Bailly, & Beaulac, 2014). Of

the 26 patients, 15 completed six or more sessions and the average attendance rate was 5.5 out of 8 sessions. Participants that completed six or more sessions reported a lower baseline level of pain compared to participants that completed 5 or less sessions. It was shown that the patients reported significant and relevant improvements. Overall, results showed improvements in level of pain disability, psychological distress, engagement in life activities, and willingness to experience pain (Bailly & Beaulac).

Limitations to this study include the small participant pool of only 26, and the attendance rate where the average sessions attended was 5.5 out of 8. The attendance rate should be higher to get more accurate results of the effectiveness of a full 8 week program. This study showed the benefits to practicing mindfulness meditation and the MBSR program in lowering pain levels. Also, there was no control group to compare to. Further research would need to be done on a larger pool, longer time period, and include a control group (Bailly & Beaulac, 2014).

In another study done on older adults with chronic low back pain, it was shown that a mind-body program improved short-term function and long-term current and most severe pain (Glynn et al, 2016). This study was a single-blind, randomized clinical trial and included 282 participants. Eligible participants were 65 years and older with functional limitations due to their lower back pain. An 8 week group program was given, which was modeled after the MBSR, followed by monthly follow ups for six months. The control program was based on the "10 Keys" to healthy aging (Glynn et al). The Roland and Morris Disability Questionnaire along with Numeric Pain Rating Scale were used as measures. Compared to the control

group, participants in the MBSR group had higher improvement scores on the Disability Questionnaire as well as on the Pain Rating Scale for current and most severe pain. Long term functional improvement was not sustained during the six month follow up period (Glynn et al).

This study indicated positive results for treating severe and current pain with a program modeled after MBSR program. This study showed that long term improvement was not sustained, benefits may be more effective depending on the person. More studies would need to be completed to generalize the long term effects.

Prevention Model of Health Care and Mindfulness

With the Affordable Care Act increasing the number of people that have insurance, PA's are an efficient, economical solution to the physician shortage (Fortney, Luchterhand, Rakel, Zakletskaia, & Zgierska 2013). As a result, stress levels of PA's may increase due to a higher demand for services and increasing their scope of practice. Taking on a prevention-first approach would be beneficial to not only PA's to help reduce stress and burn out but also to help reduce the number of preventable diseases that patients have by using mindfulness techniques, wellness coaches, and educating on prevention.

Dr. Tracy Orleans a health psychologist discovered that two thirds of physicians were pessimistic about their patients ability to change (2006). This pessimism is the single biggest obstacle to getting physicians to help their patients with health problems. Studies show that if doctors take preventative medicine more

seriously they can double the number of patients who change their habits at the end of the year (Diclemente, Norcross, & Prochaska, 2006).

According to a study done on physicians' attitudes towards prevention, it has been shown that there are a number of barriers that hinder preventative health interventions (Carlantonio, Cornuz, Ghali, Paccaud, & Pecoud, 2000). A few of these barriers include not enough time, lack of training, inadequate reimbursement, specific characteristics of the physician including age, specialization, their own health habits, and attitude can prevent them from educating on preventative care. A questionnaire was given to 496 doctors to assess barriers. Lack of patient interest and lack of time seemed to be the two largest barriers (Carlantonio et al). Results also showed that physician's characteristics and their own personal health habits predict their attitudes toward prevention (Carlantonio et al). 100% of the physicians agreed that prevention is one of their responsibilities and 84% said they find it easy to incorporate preventative health interventions into daily medical practice. Relationship-based preventative interventions are difficult to implement due to lack of time and patient interest when an intervention can be as simple blood test for measurement of cholesterol levels for example (Carlantonio et al).

Mindfulness can help to reduce pessimism and increase positive thoughts and emotions. It was hypothesized that positive emotions are indicators of well-being and causes of it (Carlson & Shapiro, 2010). A research was completed to find the effects of intensive compassion meditation on the brain. Electrical activity of the brains was scanned in experienced Tibetan Buddhist monks. It was discovered that the activation in the brain areas connected with positive emotions was much higher

compared to individuals not trained in meditation (Lutz, Greischar, Rawlings, Ricard, & Davidson, 2004).

Another study hypothesized that intensive meditation practices may result in changes in brain functioning towards more positive emotional states and ability to feel compassion towards others (Davidson et al, 2003). Employees of a high-tech company were recruited instead of experienced individuals in meditation. They were split up between a control group and a group that completed the MBSR program. The MBSR participants showed a greater decrease in self-rated negative thoughts and also had increases in brain activation in areas that identify with positive affect (Davidson et al, 2003).

These two studies show the shift towards positive thoughts and emotion through meditation in both experienced and inexperienced individuals. This displays that mindfulness may help clinicians reduce pessimistic attitudes and thoughts and shift to more positive and compassionate states of mind.

Understanding the Impact of Stress

The American Psychological Association's found that Generation X, people that were born between 1966 and 1979, was the most stressed out generation yet (Mindful Life 2015). The children of the generation X are currently now labeled the most stressed out age group. (American Psychological Association, 2015). During everyday life there is an accumulation of minor stresses that can affect the body. Little stresses such as traffic, deadlines, waiting in line, and other occurrences can seem minor but can cause headaches, insomnia, muscular tension, and gastrointestinal upset over time. As these minor stressors add up the long-term

stress can have more serious health impacts such as cancer, heart disease, and dementia (Goldstein & Stahl, 2010). By developing mindfulness it can help to recognize the minor stresses, respond in a more healthy way, in turn alleviating stress and better managing our health.

In order to understand why stress has such a harsh effect on the body over time the physiology of stress on the body needs to be explained. The autonomic nervous system is made up of a dual innervating system, the sympathetic system and parasympathetic system (Sherwood, 2014). These systems are involuntary and help us in possible threatening situations. It is a natural and healthy protection mechanism that wild animals and prehistoric human beings such as cavemen used to survive. The brain will assess a situation and if it believes there is a threat it will activate the sympathetic system, which is often referred to as the fight-or-flight response. This occurs when a stressful or dangerous situation occurs and you need to have a quick response (Sherwood).

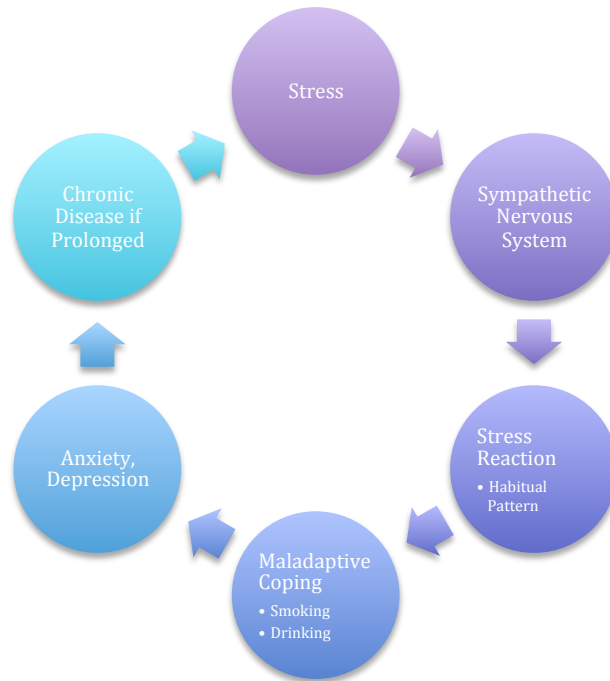
When the sympathetic nervous system is activated by a stressful or threatening event, the blood vessels constrict, the heart pumps more forcefully to get more oxygen to the organs, blood pressure increases, bronchioles dilate to take in more oxygen, eyes dilate to better take in more of your surroundings, and the digestive and urinary systems are inhibited (Sherwood, 2014). These physiological changes allow heightened response and ready the body to fight or flee. For example, when a saber tooth tiger threatened a caveman in prehistoric times, the caveman's sympathetic nervous system was activated to help him prepare and survive this danger (Goldstein & Stahl, 2010).

When the threat has subsided the parasympathetic system will take over. This system is often referred to as rest-and-digest. It goes back into housekeeping mode and activates the digestive and urinary systems, decreases heart rate and blood pressure, the pupils and bronchioles constrict, going back into a calm, relaxed state (Sherwood, 2014). Going back to the cave man example, when the sabre tooth tiger has gone and there is no longer an imminent threat, the body will return back to its resting state. The two systems allow balance of the body, but when the body is in a prolonged state of stress, in the sympathetic system, the body doesn't get a chance to rebalance (Sherwood).

The autonomic nervous system is an important mechanism, but with the modern day lifestyle many people become stuck in prolonged sympathetic stimulation (Settle Down, Pay Attention, Say Thank You: A How-To, 2012). This makes their bodies have the same chemical reactions as if they are encountering a saber tooth tiger and leaving their bodies in that heightened state leads to chronic stress. By practicing mindfulness we can help our bodies to return to the state of rest by activating the parasympathetic nervous system. Mindfulness decreases stress, as well as improves relationships, memory, regulates emotions, develop empathy, and increases attention span (Settle Down...).

Becoming aware of when you are feeling stressed can be an important skill. Jon Kabat-Zinn explained the difference between a stress reaction and a stress response (Goldstein & Stahl 2010). Stress reactions are unconscious habitual patterns that are learned from past experiences (See Table 1 below) (Goldstein & Stahl).

Table 1: Stress Reaction Cycle



The patterns often include maladaptive coping techniques such as smoking or substance abuse (Goldstein & Stahl). A stress response involves awareness and acknowledging emotion rather than suppressing them. By becoming aware of these emotions that trigger stress, it can allow one to break the old maladaptive coping techniques and develop new, healthier ways to cope (Goldstein & Stahl). For example, you are driving and it is rush hour, traffic has triggered your stress to increase and with that a stress reaction occurs such as road rage and smoking. By switching to a stress response, you feel your bodies response and become aware that you are becoming irritated and angry. Instead of acting out on your road rage you acknowledge the emotions and regulate them, calming you down and preventing those maladaptive coping strategies. It allows one to respond more

skillfully to stress (See Table 2 below). This is why mindfulness can be a vital tool to use in stress management.

Table 2: Stress Response



Prevention Model for PA's

As referenced earlier, there are many barriers and stressors that impact PA's. A prevention model for the work PA's engage in is suggested. Time limitations are a barrier when it comes to appointments. As shown in a study explained above, mindful clinicians spend 5-8 minutes longer with patients (Beach et al, 2013). To help patients continue preventative approaches, physicians could work with wellness coaches. Incentives could be given to PA's that refer patients to a wellness coach, and also for seeing one themselves. Wellness coaches avoid the fear based programs that many physicians use. Instead, they ask clients to come up with outcomes they want out of life and encourage clients to take responsibility for their own health and wellbeing (Aroloski, 2014). A wellness coach empowers the patient and assesses their willingness and readiness to change. This allows the patient to make the change they want and have the support and guidance of a professional health coach, as well as getting information on preventative approaches (Aroloski). A wellness coach could be integrated into the office so that the PA can refer the patient right then to the wellness coach and it will be a convenient location for the

patient. Through working together with the mindful PA, wellness coach, and patient, prevention practices and lifestyle changes may be more successful.

It was found that many doctors have a lack of interest that prevents them from incorporating mindfulness into their practices (Beach, et al, 2013). Continuing medical education (CME) is required for physician assistants (American Academy of Physician Assistants). The maintenance process consists of two-year cycles where 100 CME credits must be logged. Since CME is required for PA's, a course on integrated health should be incorporated or required. Integrative health programs educate health care professionals on prevention-focused topics such as nutrition, complementary and alternative practices, mind-body medicine, and integrative approaches. There are integrative health programs that are available after graduation such as the Arizona Fellowship for Integrative Health (<http://integrativemedicine.arizona.edu/education/fellowship/>) and the Susan Samueli Center for Integrative Medicine in California (<https://www.sscim.uci.edu/Medical-Education/index.asp>), which are longer, 1-2 year programs. Shorter courses such as the University of California at San Diego Center for Mindfulness (<http://health.ucsd.edu/specialties/mindfulness/Pages/default.aspx>) or the Center for Mindfulness at the University of Massachusetts (<http://www.umassmed.edu/cfm/training/oasis-course-schedules/>) offer a wide variety of training sessions in MBSR including mind-body medicine, mindfulness meditation retreats, and many other training courses that are about a week long in length. These trainings, whether long or short, would introduce PA's to the topic of

mindfulness and integrative practices. Offering incentive to continue their education in a prevention focused program could help by creating more knowledgeable PA's, in turn educating patients and referring them to appropriate alternative medicine providers. Creating an interdisciplinary, team-based approach to change towards a preventative-first approach.

Working on and building relationship centered skills in order to build rapport between provider and patient is important as well. It was found that patients were more satisfied and more open with clinicians that were more mindful and practiced mindfulness (Beach et al, 2013). Mindful clinicians are more upbeat, and focused on conversation, trying to strengthen the relationship between the two (Beach et al). Having stronger relationships with the patient will make for more effective appointments and patients more apt to listen to what the PA prescribes or educates. This makes encounters more patient centered and improves communication.

Physician Assistants should be strongly encouraged to practice mindfulness so that they can improve their well being in order to prevent burnout, depression, anxiety, and allow them to be more focused and present. The demands of patients, medical knowledge, advancing technologies, and other stressors build up for health care providers and mindfulness will help to alleviate this stress. By attending to the PA's own health and wellbeing first by practicing mindfulness will improve quality of care to patients as well. It has been shown that providers that practice mindfulness are more empathetic and focused, make less errors, and are more present and aware (Beach et al 2013).

The heart pumps blood first to itself, before pumping to the rest of the body. If it didn't, it would die and then the rest of the body would die. The art of caring for others is learning how to first care for yourself (Carlson & Shapiro, 2010, p. 108).

By incorporating mindfulness into the health field, specifically PA, it will benefit society as a whole by decreasing healthcare costs. It will also benefit individuals on a more personal level by allowing them to live less stressful, healthier, and more meaningful lives by preventing chronic diseases. Physician assistants will also benefit from incorporating mindfulness into their life by decreasing their likelihood of burnout, having more efficient appointments, being more compassionate and improving listening. This is an important shift in healthcare that could make a positive impact in our healthcare system.

Conclusion and Implications

Overall, a paradigm shift needs to occur in healthcare. Chronic diseases that are preventable are costing the US billions of dollars. A prevention approach needs to be taken. It has been shown that practicing mindfulness could offer a step in this direction.

Mindfulness can benefit the PA profession, as well as other healthcare professions. Demands are high on PA's and continue to increase due to the Affordable Care Act insuring millions of additional individuals. Mindfulness can help to alleviate stress, decrease burnout and compassion fatigue, depression, anxiety, and increase overall well-being of PA's. Not only does mindfulness help with self care of the PA, it also allows more efficient appointments with patients. Mindful PA's make less errors, stay in the present moment and actively listen to the patient.

Pessimism of clinicians can also be decreased through practicing mindfulness. This will create a more positive environment and help to build patient centered relationships. Patients will be more open to the PA and may be more apt to listen to the PA's treatment and recommendations. Patients are more satisfied with mindful clinicians since they feel "heard".

Mindfulness also is used to help reduce chronic pain. The MBSR program is commonly used for chronic pain and stress reduction, along with helping to manage other chronic diseases. This program helps to increase overall quality of life and learn how to live with the pain.

Some challenges that face PA's in integrating mindfulness include elements of the current healthcare model. Time constraints on PA's for each appointment are a limitation. Mindful PA's do take more time with each patient so this may be difficult to overcome. The outcomes need to be weighed: taking a few extra minutes with clients to reduce chronic diseases and lower healthcare costs, or continue with the current increasing healthcare costs trend.

Research on mindfulness with larger participant pools need to be completed in order to generalize results more broadly. Longer periods of time for the study should be considered, such as one or more years, to go along with the MBSR program to show long term effects of mindfulness on quality of life. Another beneficial research study could be done on clinicians that have continually practiced mindfulness for years and show their patient satisfaction as well how their quality of life, burnout rate, and compassion fatigue.

Self care and mindfulness should be incorporated either into the program while becoming a PA by offering classes to emphasize the importance of self care and ways to practice self care, or through the training at the office or hospital being hired. Educating and training on mindfulness and the benefits while PA's are still in school will instill the importance of it early on, instead of after they are set in their ways.

Integration of western and eastern professions in the same health office should be considered. Such as having an office that has a physician, PA, therapist, wellness coach, and an eastern practitioner that offers guided meditations, acupuncture, or other eastern practices. This will allow for working together to prevent chronic diseases, in turn lowering healthcare costs of returning patients with chronic diseases or pain. A limitation to this is that insurance does not cover the majority of CAM.

Finally, as a future Physician Assistant with a background in holistic health, I have the opportunity to impact the profession as a whole. As a practicing PA I will need to practice and incorporate mindfulness into a lifestyle so that I am a mindful and compassionate healthcare provider. It will be also critical to educate my patients on the MBSR program and offer it as an additional treatment option. Building patient centered relationships with my patients so they trust me and feel open with me by asking patient centered questions along with physician centered questions. I would like to create a practice that integrates different healthcare professionals. The utility of mindfulness is far reaching for the PA profession and patients. The benefits of practicing mindfulness are numerous; integrating

mindfulness will help create more compassionate physician assistants, reduce errors, improve relationship centered care, and produce more efficient appointments.

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