

The Effects of Patient-Physician Interaction Time on Overall Visit Satisfaction and Prevention of
Physician Burnout

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Abstract

With an increasingly commercialized healthcare setting, today's physicians are often forced to reduce their patient examination times drastically. There has also been a greater shift in the administration of primary care to allied health professionals such as physician assistants and nurse practitioners. However, these changes may not be sustainable in the long-term. This study investigates the relationship between time spent with a physician (M.D. or D.O.) during an examination and overall patient satisfaction. Moreover, mental health concerns, namely burnout, have become more prevalent among physicians. Studying this under the lens of accelerated modern medicine could help shed light on strategies to maintain lasting mental well-being for doctors.

Introduction

Upon formally entering the medical field during the white coat ceremony, student-doctors often recite the Hippocratic Oath or a similar variant. In doing so, they promise to "...apply, for the benefit of the sick, all measures [that] are required..." and "to remember that...warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug" (Physician Oaths). The definition of medicine itself states that it is "the science and art dealing with the maintenance of health and the prevention, alleviation, or cure of disease" (Merriam-Webster). While this paradigm seems obligatory and possibly obvious for physicians to follow, it unfortunately is not universal within modern medical practices. If one were to visit a variety of clinical settings throughout the US, one would be sure to find at least one over-worked, cantankerous, rude, and/or error-prone physician. This prompts a hard look into the point when the occupation of physician became a burden.

Burnout physicians are not few and far between, but rather a commonplace reality which requires urgent attention. In a 2020 survey recording statistics of physician burnout and suicide, 42% of respondents reported experiencing feelings of burnout (Kane, 2020). Even more startling, male physicians have a 40% higher suicide rate compared to the general population and female doctors have one up to 130% higher (Kalmoe et al, 2019). Many gradual shifts in the culture and responsibilities of physicians may be the causes of these statistics, leaving doctors at odds with the very profession they chose. Less time spent with patients, increased pressures from government agencies and insurance companies, administrative burdens, workloads almost double the standard 40-hour-workweek, and a systematic restructuring of health care are all major contributing factors.

There are two sides to this problematic coin, moreover. Rushed visits with burned out physicians decrease the quality of patient care, resulting in dissatisfied or mistreated patients, thus contributing to a vicious cycle of stressed physicians treating a higher volume of unhappy patients. The patient-physician relationship, defined as “a consensual relationship in which the patient knowingly seeks the physician’s assistance and in which the physician knowingly accepts the person as a patient,” has become oft forgotten and replaced by a contractual business model instead (Chipidza, Wallwork, and Stern, 2015). Patients are viewed as a set of diseases, tests, and procedures that will reap the highest possible insurance reimbursement: a means to an end, which will diminish the benefits of the whole health care system if not addressed promptly. This review aims to analyze the complex interplay of factors affecting the modern patient-physician relationship. It will focus specifically on the broader patient-physician relationship and investigate medical examination interaction time’s influence on the prevention of physician burnout and optimization of patient satisfaction, with the overall aim of contributing to a knowledge base that can promote well-being within the healthcare sector.

Patient-Physician Relationship

A Historical Timeline

As previously mentioned, the patient-physician relationship (otherwise referred to as the doctor-patient relationship) has been altered recently. The origins of this relationship and the changes it has accrued through various historical civilizations are worth exploring. To begin, there are three basic models of the doctor-patient relationship: 1) active-passivity, 2) guidance-co-operation, and 3) mutual participation (Szasz and Hollender, 1956). These models have taken on unique variants in five major time periods: 1) Ancient Egypt (4000-1000 B.C.), 2) Greek

enlightenment (600-100 B.C.), 3) Medieval Europe and the inquisition (1200-1600 A.D.), 4) The French revolution (late 1700s), 5) 1700s to present day (Kaba and Sooriakumaran, 2007).

Medicine within Ancient Egypt followed the active-passivity relationship model. The doctor-patient relationship largely reflected the priest-suppliant relationship. Doctors were healers as well as magicians and priests that could address patient events on their behalf. While Egyptian medicine was more spiritual, medicine in Ancient Greece was one of the first to develop an empirico-rational approach which emphasized naturalistic observation and experience. The aforementioned Hippocratic Oath was also written, outlining the ethical standards physicians were to obey and the rights patients were to be granted. These humanistic qualities therefore place Ancient Greek medicine within the guidance-co-operation and mutual-participation categories of doctor-patient relationships (Kaba and Sooriakumaran, 2007).

Progressing through history, Medieval Europe experienced significant challenges to, and weakening and regression of, the doctor-patient relationship (Kaba and Sooriakumaran, 2007). The regaining popularity of supernatural beliefs meant doctors were once again considered magical. Patients were merely passive recipients of the power vested in doctors, seen in the activity-passivity model. Continuing, the events of the Renaissance, Protestant Reformation, and political reforms greatly affected medicine. The noteworthy change during the French Revolution period concerned the dignity of life found in the patient: the mentally ill and destitute were no longer jailed, thus marking a shift to the guidance-co-operation model.

Finally, medicine from the 1700s onward has experienced numerous changes to the doctor-patient relationship. The overall theme can best be summarized by the statement, "The relationship between the doctor and patient has a very pronounced association with the model of illness that dominates at any given time" (Jewson, 1976). Illness was defined by symptoms

during the 18th century , which gave rise to a symptom-based model of medicine in which the doctor treated the symptoms of the mostly passive patient (Kaba and Sooriakumaran, 2007). The emergence of hospitals and growth of microbiological knowledge in the late 18th century, however, redefined the *illness* as *pathology*. Thus, the biomedical model of illness was born. Symptoms were no longer the illness, but indicators of a larger pathology. As both careful examination of the patient and expert knowledge by the physician were required, the patient-physician relationship was between a more dominant/active doctor and mostly passive patient, also known as the activity-passivity (paternalistic) model.

Paternalistic medicine continued through the 18th century, until introduction of psychology in the late 19th century changed the relationship once more. The focus on patient personality and dialogue returned an active role to patients, leading to patient-centered medicine which has dominated medicine today. Only time will tell whether the modern changes in medicine will result in a new model that will be analyzed in history books.

Modern Changes: Patient as Commodity

According to a 2010 Center for Disease Control study, the complexity of clinical issues has increased, as 40% of patients are taking three or more medications, but there has been no corresponding increase in time allotted for more difficult cases (Linzer et al, 2015). In fact, more patients have been scheduled within the workday, with the average primary care visit rounding out at 20 minutes or less. This begs the question of why practitioners would purposely overwork themselves at a risk to both themselves and the patients they treat. A redefinition of the patient-physician relationship must be at play.

The relative value unit (RVU) payment model was made popular in the 1990s after Medicare adopted it. An example of a fee-for-service (FFS) system, the RVU model designates

higher values for testing and procedures, diminishing the value of cognitive care often the keystone of well-administered primary care. Physicians are therefore faced with growing pressure to treat patients in accordance with these new standards or face serious financial burdens. The patient-physician relationship has not only been altered, where patients are seen as commodities, but there is a new middleman: bureaucracy in the form of insurance companies and the US government, whose roles will be later discussed.

Aftermath of the Redefinition of the Patient-Physician Relationship

Time Allocation and Electronic Health Records

The redefinition of the patient-physician relationship through history has led to a restructuring of health care in many areas. Most applicable to this review is the amount of time physicians allocate to various tasks. Doctors are spending more hours completing non-clinical tasks such as charting (including the use of electronic health record (EHR) management), consultations, and billing than face-to-face patient interaction. An *Annals of Internal Medicine* study found physicians only spent 27.0% of their time on face-to-face patient interactions but 49.2% of their time on EHR tasks (Sinsky et al, 2016). First-year doctors (interns) also spend up to 87% of their work away from patients, and half of this time away is EHR-focused time (Desai, 2019). Even within the exam room doctors spend 52.9% and 37.0% of their time on direct face time and EHR/desk work, respectively. When compared to a study completed only eleven years earlier, 55% of the day was spent on face-to-face care (Gottschalk and Flocke, 2005). This highlights the rapid decline in examination time as a piece of total physician duties.

These changes point to the possibility that EHRs have exacerbated the issue of decreased time devoted to patients. EHRs have existed, if only in parts, since the 1970s (Evans, 2016). With the ability to store patient demographics, family and patient histories, testing, and images in

a paperless format, they appear to be invaluable tools. Moreover, their integration has required many physicians to switch their focus from the patient to the computer, if only to meet standards set by the EHR software, insurance agency, or hospital/government health system to which they report.

On February 17, 2009, the Health Information Technology for Economic and Clinical Health (HITECH) Act was signed into national law (“HITECH Act Enforcement Interim Final Rule”, n.d.). As of November 30, 2009, HITECH enforces compliance with EHR standards in accordance with HIPAA (Health Insurance Portability and Accountability) privacy laws (HIPAA Journal, 2021). The act itself was created “to promote and expand the adoption of health information technology, specifically, the use of electronic health records (EHRs) by healthcare providers.” By providing financial incentives for EHR implementation coupled with increased HIPAA penalties, the act has encouraged a vast majority of healthcare providers to swap pen and paper for mouse and keyboard. In fact, by 2017, 86% of private-practice physicians and 96% of private acute care hospitals had employed the use of certified health IT (HIPAA Journal, 2021).

Another example of legislative encouragement of EHR is provided by Medicare’s Merit-based Incentive Payment System (MIPS). To quote part of their mission, “This consolidation reduced the aggregate level of financial penalties physicians otherwise faced, and it also provides a greater potential for bonus payments” (“Understanding Medicare’s Merit-based Incentive Payment System (MIPS)”, n.d.). Although in order to receive reimbursements, relevant patient data must be submitted in regular intervals or performance periods (*2020 Quality Payment*, 2019). Physicians are faced with the choice of manually submitting data from paper charts or simply inputting EHR data. MIPS also claims to be in support of EHR adoption, stating:

Establishment of MIPS provides an opportunity to revise, rework, and improve the existing Medicare programs focused on quality, costs, *and use of electronic health records* to improve their relevance to real-world medical practice and reduce administrative burdens for physicians (“Understanding Medicare’s Merit-based Incentive Payment System (MIPS)”, 2021).

Though increasing numbers of physicians are fully integrating EHR into their practices, it may be at the disadvantage of physicians and their patients. Specifically, the decreased time spent with patients has effects on both the quality of patient care and the perceptions and involvement of patients themselves. Disproportionate gazes (directed more toward the computer) have been associated with lower levels of patient satisfaction, less effective physician communication (evaluated by an objective observer), and poorer understanding of patient concerns (Street et al, 2018). After statistically evaluating (via multivariable analysis) the correlation between number of EHR mouse clicks, keyboard strokes, and gaze time with exam communication, one study’s findings are telling. Independent of visit length, more keyboard clicks were associated with less active patient communication ($p=0.02$) (Street et al, 2018). Additionally, longer gazes at computer screens were correlated with greater lengths of silence and therefore less active patient participation. Overall, this study suggested the way physicians interact with the computer can have varying effects on patient-conversation flow, in ways that might limit patient engagement. The impacts of EHRs must be cautiously weighed and pitfalls actively fought against if the patient-physician relationship is to withstand modern changes to medicine

Advanced Practice Providers' Roles

The 2021 US News and World Report “Best Jobs” ranking places physician assistant (PA) as the first job in both the *Best Jobs* list and *Best Health Care Jobs* list. Nurse practitioner (NP) does not fall too far behind, at third in *Best Jobs* and second in *Best Health Care Jobs* (“US News Reveals the 2021 Best Jobs”, 2021). Both occupations outrank the title of Physician as well, which falls fifth and third within the respective lists. These advanced practice providers’ (APPs) roles provide one more layer to the increasingly complex patient-physician-relationship-cake, which is worth exploring because of these providers’ growing presence in health care settings.

Both NPs and PAs are independent or semiautonomous health care providers and integrally contribute to health care teams, and both require a minimum of a master’s degree and national certification (Hooker et al, 2016). Nurse practitioners must first complete a Bachelor of Science in Nursing (BSN) and become a registered nurse (RN), before entering a graduate master’s or doctoral nursing program and successfully pass the NP board exam (The Path to Becoming a Nurse Practitioner (NP), 2020). The PA path offers slightly more flexibility. After completing a valid bachelor’s degree and prerequisites, students complete a PA master’s degree program that averages about 26 months and includes both coursework and supervised clinical work (Physician Assistant, 2021).

PAs and NPs are found in a variety of health care settings, with 2019 estimates stating 115,500 PAs and 248,000 NPs practice within the United States (Sarzynski and Barry, 2019). Although these advanced practice providers are limited in their scope of practice in comparison to physicians, they are still able to prescribe medication, treat and diagnose illness, and provide quality care to most patients. Patient perceptions of care by APPs vary, and comparison studies

between patient health outcomes of physicians and APPs have mixed results. Some studies have suggested a similar level of trust by patients with physicians and APPs, but the research is not yet generalizable (Hooker et al, 2019).

With less schooling and student- debt as well as limited restrictions on their scope of practice compared to physicians, it is no wonder why APPs are growing health care careers. The PA profession is expected to grow by 31% and NPs by 45% from 2019-2029, according to the US Bureau of Labor Statistics (2020). Is this growth benefitting overworked physicians, however? NPs and PAs first emerged in the 1960s as a proposed solution for the shortage of primary care physicians (Sarzynski and Barry, 2019). Moreover, further research is needed in regard to the specific causes of modern physician shortages and their resulting outcomes. Questions remain, such as: Is the appeal of the APP lifestyle shifting more primary care focused prospective healthcare workers to pursue careers as NPs or PAs, thus contributing to a physician shortage (especially in primary care)? Are the remaining physicians' workloads more manageable because of this tiered level of care, or do more middlemen contribute to workplace anxiety? More detailed organizational psychology studies should be completed in order to answer these questions and optimize patient care outcomes and physician workloads.

Physician Burnout

Background Information

The next topic required for a complete and thorough analysis of health care changes is that of physician burnout. In the broadest definitional terms, burnout is not a medical condition, but an occupational phenomenon that is included within the most current International Classification of Diseases (ICD-11) (World Health Organization, 2019). It is a "syndrome conceptualized as resulting from chronic workplace stress that has not been successfully

managed” and is “characterized by three dimensions”: a) feelings of energy depletion or exhaustion; b) increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job; and c) reduced professional efficacy (WHO, 2019).

There is no doubt that burnout is negatively affecting modern society, especially physicians (Kane, 2021). Energy depletion or exhaustion manifests. Though improvements have been made and reports have shown slight decreases in burnout rate, there is still much work to be accomplished (Berg, 2019). The 2021 annual Medscape investigation records 42% of the responding 15,181 physicians reported feeling burnout (Kane, 2021). When probed further, 36% of Millennials, 46% of Generation X, and 50% of Baby Boomer physicians say their burnout “has strong/severe impact on my life” as opposed to “moderate” or “little or no” impact categories. As briefly discussed earlier, there are a variety of factors that are contributing to this burnout. Although proper coping mechanisms are necessary, addressing the root of the problem is also imperative. Other expert testimonies agree stating, “finding solutions requires that we address the problem for what it really is: a challenge inherent in the structure of the healthcare industry” (Kane, 2021). The effects of physician burnout are far-reaching and are not limited to only the medical community. They must be handled with care and properly addressed if our healthcare system is to thrive.

Changing Physician Responsibilities

The first factor that must be examined in reference to physician burnout is the increasing number of responsibilities physicians are expected to manage in modern practice. The United States’ population is ever-expanding, and with it, brings new challenges for physicians. A larger aged population (due to the Baby Boom generation) has placed a unique strain on physician care (Institute of Medicine, 1983). The aforementioned physician shortage is now met with a larger,

more elderly patient cohort with more complex chronic diseases. In the US overall, the focus on care has largely shifted from acute infectious disease cases to health management/chronic disease; this, of course, is setting aside the recent COVID-19 epidemic, the effects of which will be discussed later.

One such chronic ailment that physicians are increasingly met with is the mental health epidemic. The medical community and private interest clinical groups have successfully brought awareness to mental health issues in recent times, but with this comes more responsibilities for primary care physicians. Mental health issues for the most part, are no longer delegated solely to psychiatrists or psychologists. Primary care physicians are faced with increasing numbers of mentally-ill patients, with inadequate training to properly address their concerns. Some estimates suggest DSM mental health disorders are 25% of all cases in outpatient clinics, which is more than hypertension and diabetes cases combined (Smith et al, 2014). As with any unknown situation this creates stress for doctors. Thus, many primary care physicians are compromising their own mental health in order to treat the mental health of their patients: a classic catch-22.

An increased emphasis on the role of physician as educator has also been seen over time (Institute of Medicine, 1983). The central focus of physicians is to “make an accurate diagnosis by identifying the problem that the patient presents as it affects that particular patient, and to work out a relevant plan of action for that patient,” and proper education and instruction of patients is seen to fit within this central focus. Following a proper diagnosis, physicians must effectively communicate a patient’s treatment regimen in clear, understandable language. Linking this once more to the current crisis of EHR-enslaved doctors, this presents a challenge for physician expression and education to ensure beneficial patient outcomes.

Physician Burnout Demographics and Contributing Factors

Gender. The Medscape 2021 Physician Burnout Report found 51% of surveyed female physicians reported burnout, in comparison to 39% of surveyed male physicians (Kane, 2021). Moreover, 37% of the physicians in this survey were female, whereas 61% were male; therefore, the higher percentage of burnout female physicians could be skewed. Other studies have detailed gender differences in burnout as well. One study reported a 20-60% higher prevalence of burnout in women physicians than among men (Templeton et al, 2019). This may be due, in part, to more measurable indicators of burnout in women, relating to the gendered expression of emotion. Regardless, multiple factors could be responsible for this higher reported burnout rate.

Firstly, the work-life balance has placed a heavier burden on women physicians, who often perform the majority of domestic work. For comparison, full-time employed women average 8.5 additional hours per week, or about two extra hours per day, on childcare and domestic tasks while men of similar employment level report an extra 40 minutes per day for these tasks (Yavorsky et al, 2015). Women physicians also experience higher levels of workplace discrimination and bias, often due to stigmas surrounding these domestic responsibilities. Discrimination is disrespectful treatment and/or actions that include “lack of career promotion; disparaging or disrespectful treatment or comments; and disparities in resources, rewards, and reimbursement” (Templeton et al, 2019). Over 70% of female physicians report experiencing some form of discrimination, and minority women report facing additional discrimination. Bias, the more subtle and often unconscious displays of attitudes, also manifests itself in lower wages, less frequent promotions, and less financial support for women physicians. Motherhood is another substantial cause of bias: one-third of surveyed women physicians reported experiencing discrimination directly related to their maternal role. Ninety percent of

these respondents noted pregnancy/maternity leave was the primary concern related to this bias. Female physicians are often made to feel as if they are being punished for having children, adding to the already stressful work of a physician. Finally, sexual harassment affects female physicians more than male physicians (Templeton et al, 2019). Such experiences have been linked to depression, anxiety, and other mental health issues that place women physicians at higher risk of burnout.

Women physicians also experience cognitive distress relating to their perceived autonomy and workload. As they generally approach medicine differently than men (“the motherly approach”), women report spending an average of two minutes more per patient visit than men. Overtime, this can become draining and can lead to *compassion fatigue*. Also, institutional discrimination and gender bias stemming from patients leave women physicians feeling less in-control of their medical practice. Subsequent *stereotype perception*, the fear of confirming a certain (often negative) stereotype about a subgroup to which one belongs, creates a level of distress as well, but further research needs to be completed to confirm this. For instance, one study utilized the Implicit Association Test and concluded that surveyors implicitly and explicitly associated men with career and surgical specialties and women with family and family medicine (Salles et al, 2019). Women in surgical specialties thus must work against implicit bias in the medical community. Finally, *impostor syndrome*, a distortion of the way that people view the world and themselves, can exacerbate traumatic experiences women physicians go through and can compound feelings of burnout. Overall, the effects of gender should not be ignored when evaluating and addressing physician burnout.

Age/Generational Identification. Burnout also manifests itself differently in different age brackets/generations. These differences are not as clear-cut as those relating to gender,

however. Certain studies have reported higher rates of burnout in younger physicians, while others conclude older physicians are suffering more. For instance, one survey stated Millennials (25-39 years old) are 75% likely to report burnout “having a negative effect on their relationships”, in comparison to 74% of Generation X (40-54 years old) and 66% of Baby Boomers (55-73 years old) (Kane, 2021). This seems to conflict with research citing younger physicians’ comfort level with modern technology, relating to lower levels of experienced anxiety in comparison to their older counterparts (Nakagawa and Yellowlees, 2020). A series of future research questions might spring from current gaps in knowledge. Firstly, are the results of the first survey due to generational differences in relationship dynamics? Have older physicians learned to cope with burnout slightly more effectively, in a way that does not impact their relationships as much as in the lives of younger physicians? For the second study: will reported rates of overall physician burnout drop once the Baby Boomer generation retires, or will the demands of EHR continue to plague younger physicians, still causing burnout? Linking the results of these studies would be a worthwhile future endeavor.

Sleep. It would be fitting that overworked physicians are also sleep-deprived. Multiple theoretical research studies have been developed to assess the detrimental impacts of sleep deprivation on physician burnout, but there is very little experimental research conducted in this area. The 80-hours-per-week restriction set by the Accreditation Council for Graduate Medical Education prevents the occurrence of greater than 24-hour work shifts that were frequent in past years, but this cap has not effectively addressed chronic physician sleep deprivation (Kancherla et al, 2020). This poses a threat to physicians, exacerbating burnout, which should not be ignored. To quote one hypothetical study:

Physicians at any career stage [resident, attending, chief physician, etc.] may experience sleep deprivation, irregular sleep patterns, and circadian misalignment due to extended work hours, night shifts, and on-call duty. Therefore, the physical, cognitive, and emotional effects of chronic insufficient sleep could contribute to burnout at any career stage (Kancherla, 2020).

Although most adults do not sleep the recommended 8 hours per night, physicians average only about 6.5 hours (Stewart and Arora, 2019). The resulting 1.5 hour per night of sleep deprivation banks to a concerning 10.5 hours by the end of the week: more than one average night's worth of sleep missed per week. The 24-hour nature of medicine also is to blame for circadian rhythm disorders amongst physicians, including "delayed sleep-wake phase disorder, advanced sleep-wake disorder, irregular sleep-wake rhythm disorder, and jet lag disorder." Studies in mice have connected such altered sleep to reductions in circulating hormones and failed negative feedback loops (Everson and Crowley, 2004). Other studies have also detailed the altered enzymatic levels in the heart, liver, and lung in sleep-deprived rodents (Everson, Laatsch, and Hogg, 2005).

Multiple models have thus been constructed, with the effects of occupational sleep loss, health conditions, and burnout factors all interacting with each other (Stewart and Arora, 2019). One has suggested that a stressed state may play an integral role in burnout and may involve increased hypothalamic-pituitary-adrenal (HPA) axis activation, resulting in a chronic increased allostatic load and further increasing burnout and sleep deprivation symptoms. Chronic sleep deprivation effects have also been documented in residents, often the most overworked population of medical professionals. Study participants exhibited low-grade systemic inflammation (hs-CRP) and impaired HPA axis function, resulting in delayed cognitive

processing, greater impulsivity, and impaired executive functioning (Choshen-Hillel, 2021).

Finally, a study completed in a non-medical environment has reported that the main risk factor for developing burnout is receiving less than 6 hours of nightly sleep (Söderström et al, 2012).

Further analysis and treatment of physicians' sleep disorders could therefore be a concrete stepping-stone for addressing physician burnout.

Medical Specialty. The demographics related to physician burnout also differ according to their chosen specialty. 2021 numbers report critical care, rheumatology, infectious diseases, urology, and pulmonary medicine as the top five specialties with highest burnout rate, with 51%, 50%, 49%, 49%, and 48% of respondents reporting burnout, respectively, seen in **Figure 1** (Kane, 2021). This is quite different from 2020's report of urology, neurology, nephrology, endocrinology, and family medicine as the top 5, suggesting possible disproportionate impacts of COVID-19 . On the other end of the spectrum, oncology (33%), orthopedics (33%), otolaryngology (33%), pathology (35%), and general surgery (35%) had the lowest burnout rates, with ophthalmology and public health/preventive medicine almost tying general surgery at approximately 35% burnout rate as well.

These numbers are curious: no trend seems apparent. Surgically-focused, medically-focused, and primary-care-focused specialties fall into a mixed list and do not seem to be grouped in their respective cohorts. Work setting might therefore have larger determining effects on burnout rates: 47% of physicians in healthcare organizations are burned out, while only 40% of office-based solo practice doctors are burned out. Personality factors might also affect these rates more so than chosen specialty, as a high-risk personality profile- one with high neuroticism, low agreeableness, introversion, and negative affectivity- plays a key role in burnout.

(Wiederhold et al, 2018). Personality analysis may therefore prove useful in properly addressing physician burnout with an individualized approach.



Figure 1. Burnout rate among surveyed physician specialties.
(Kane, 2021)

Also important to note are the statistics regarding rates of suicidal thoughts among different specialties (often connected with burnout). Once again, no apparent trend is found: obstetrics/gynecology reports 19%, orthopedics 18%, otolaryngology and plastic surgery 17%, and diabetes and endocrinology 15%. In fact, a few of these specialties, orthopedics and otolaryngology, were at the lower end of the burnout spectrum. This suggests that either burnout and suicidal ideation are not intimately connected, there are confounding variables, or the survey method itself was not reliable (i.e. skewed results in self-reporting a personal topic like suicidal ideation). Additional research could shed light on these gaps in knowledge.

COVID-19. An analysis of physician burnout would not be complete without discussing the recent impacts of COVID-19. Starting with the 2021 Medscape survey, there has been a clear shift in attitudes among doctors pre- and post-pandemic (Kane, 2021). Seen in **Figure 2**, physicians' attitudes have shifted towards the negative end of the spectrum following the onset of the COVID-19 pandemic. Positive sentiments, "very happy" and "somewhat happy", decreased after the onset of the pandemic: 28% to 15% and 41% to 34%, respectively; negative

sentiments, “very unhappy” and “somewhat unhappy”, increased post-pandemic: 4% to 10% and 15% to 24% , respectively; and the neutral sentiment of “neither happy nor unhappy” saw an increase in responses following COVID-19 onset (12 to 17%).



Figure 2. Satisfaction of physicians pre- and post-pandemic.
(Kane, 2021)

As this pandemic is still progressing, in-depth studies on this topic have only just begun. Current information describes multiple factors such as “limited resources, longer shifts, and disruptions to work-life balance/sleep” increasing burnout in today’s physicians (Sansongahar et al, 2020). Lack of personal protective equipment (PPE) also has increased stress and subsequent burnout levels. In the height of the pandemic (April 2020), it was estimated that only 10-25% of requested PPE was being delivered to US states. A more thorough statistical analysis found that adequate access to PPE had protective effects against burnout (RR= 0.88, 95% CI= 0.79-0.97, P= 0.01) (Morgantini et al, 2020). Time will only tell whether physician burnout rates will decrease following a more permanent resolution of the COVID-19 crisis.

Electronic Health Records. The advent of electronic health records and its impact on patient participation and satisfaction is discussed above. However, electronic health records also

greatly affect physician burnout. Various research studies, including one conducted by the Mayo Clinic in 2016, found that, in a univariate analysis, physicians who used EHRs and CPOE (computerized physician order entry) were less satisfied with the amount of time spent on clerical tasks and had higher burnout rates. (Shanafelt et al, 2016). This study also reported a correlation between the use of CPOE and a higher risk of burnout (OR=1.29; 95% CI, 1.12-1.48; P<.001) after statistical adjustments for age, sex, specialty, practice setting, and hours worked per week were completed. A total of 6560 physicians were surveyed, providing a varied and thorough sample. However, as this study's findings were largely based on self-reported assessments, its findings cannot be used in generalization.

Unfortunately, many studies on the topic of burnout have been conducted this way. For instance, Dr. Tania Tajirian conducted another cross-sectional survey of 208 physicians which reported EHR usage is a contributor to physician burnout (Tajirian, 2020). Despite even the best statistical analyses, the self-reported sampling methodology can only reach so far in its effectiveness. This methodology inhibits studies' ability to objectively inform legislation and public policy efforts in this field. Rather, future research should assess physicians' burnout levels objectively via the three aforementioned diagnostic indicators.

Coping Mechanisms

With the crisis of physician burnout thoroughly examined, the next pertinent topic is physician coping strategies. These strategies are varied but some are concerning. According to the Medscape 2021 report, 48% of responding physicians exercise and 43% talk with family members/close friends to cope with burnout (Kane, 2021). Other positive coping mechanisms include sleeping (39%) and playing or listening to music (36%). However, alarming statistics are seen in the percentage of doctors who isolate themselves (43%), eat junk food (35%), drink

alcohol (26%), and binge-eat (21%). Although all of these detrimental behaviors can harm physicians, the statistic regarding self-isolating is very worrisome. Isolation can place already emotionally fatigued physicians at a higher risk of suicidal ideation or action; in fact, 13% of respondents in the current physician burnout and suicide report admitted to having suicidal thoughts and 1% had attempted suicide (Kane, 2021). It is therefore imperative to address mental health and burnout in physicians, now more than ever.

Impact on Patient Satisfaction

According to a 2007 BMC Health Services study, “time spent with the physician was the strongest predictor of patient satisfaction” (Anderson et al, 2007). Additional research has shown that positive views of physicians have been linked to positive patient effects and positive ratings of physician communication efforts (Passalacqua and Segrin, 2012). In an effort to detail the effects of burnout on patient satisfaction, one research team developed a five-part physician-patient cycle model; the five interrelated variable sets are 1) physician stress and satisfaction 2) physician mental health 3) physician-patient encounter 4) patient satisfaction and compliance and 5) patient demands (Williams, Savage, and Linzer, 2006).

This model has two possibilities: a “vicious” cycle or a “virtuous” one. More well-adjusted, mentally healthy, and positive physicians are more likely to engage in behaviors that reflect their attitudes. They explain concepts more thoroughly with more information and use humor, among other positive behaviors. This in turn, results in patient reciprocity in the form of increased patient satisfaction, compliance, understanding, and decreased anxiety/stress. On the other hand, burned out physicians’ emotional state is further weakened by patient demands which add to physician stress. “If physicians distance themselves from their patients either as a result of emotional exhaustion, depersonalization or as a way of coping with ‘demanding

patients', patients may perceive this as rejection". If the cycle is closely followed, patients may reciprocate by demanding more (explanations, advice, etc.) from the perceived distant physician, only exacerbating the experienced stress for the physician and poor emotional outcomes for the patient. It follows that low patient satisfaction levels, like many other factors previously discussed, are not affected solely by a single dominating issue. The interwoven nature of situational, emotional, and behavioral factors of both the physician and patient has become quite evident.

Impact on Patient Health Outcomes/Safety

Intricately linked to patient satisfaction, patient health outcomes and safety levels are also seen to be affected by physician burnout. Physicians who are burned out are more likely to make medical errors, are at an increased risk of committing malpractice, and can fail to properly sustain interpersonal relationships, as previously discussed (Patel et al, 2018). A statistically significant association between burnout and increased medical errors was found in four separate studies (Dewa et al, 2017). Specific associations between high burnout and "diagnostic error, therapeutic error, suboptimal psychosocial care, suboptimal diagnosis and treatment and suboptimal quality assurance" were also discovered (Klein et al, 2010). These findings are alarming because medical errors are the third largest cause of death in the United States: an estimated 440,000 lives are taken each year due to medical errors (Cheney, 2020). Once again, this points to the need for reform within the health care system.

Suggested Practical Solutions in the Medical Field

With the multifaceted physician burnout issue now thoroughly examined, where should the United States' health care sector go from here? From increasing access to therapy and mental

health interventions (including destigmatizing their use) to reducing physician workloads to restructuring EHR, there are numerous possibilities for reform which will be detailed later.

Therapy and Mental Health Interventions for Physicians. Returning once again to the 2021 Medscape survey, 35% (the largest sub-section) of surveyed physicians reported having done nothing to address their burnout, seen in **Figure 3**. When probed further, 52% of respondents reported not seeking help because their “symptoms are not severe enough”, 46% stated, “I can deal with this without help from a professional”, and 40% said they were “too busy” (Kane, 2021). This self-reported survey suggests that physicians may have subjectively different views of their own burnout that stand in contrast with their decreased quality of work.

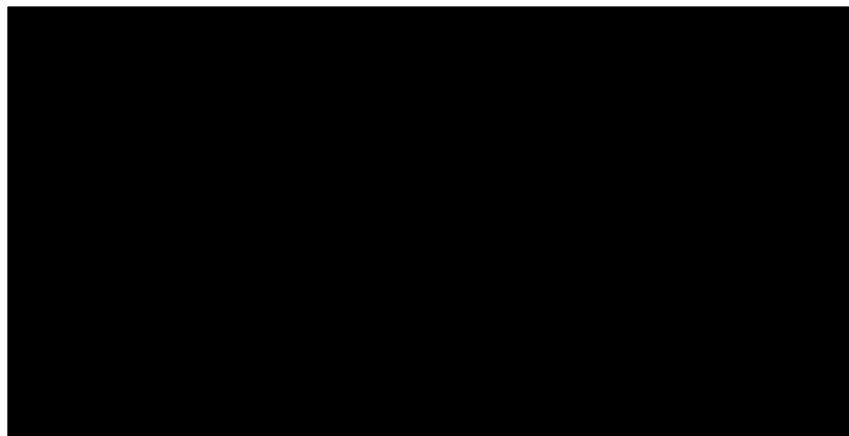


Figure 3. Reported reasons physicians do not seek professional help (Kane, 2021)

Increasing availability of therapy and mental health interventions could therefore help address the incipient aspects of physician burnout. Several therapy options have been tested, with both group and individualized approaches. Group interventions have been proven to be especially efficacious in addressing physician mental health issues, and MBSR (mindfulness-based stress reduction) or CBT (cognitive behavioral therapy) were found more effective than other types of therapies (McFarland, Hlubocky and Riba, 2019). Additionally, professional coaching was proven to be effective at decreasing emotional exhaustion in physicians that

participated in a randomized trial (Dyrbye et al, 2019). Following 6 months of professional coaching, “emotional exhaustion decreased by a mean (SD) of 5.2 (8.7) points in the intervention group compared with an increase of 1.5 (7.7) point in the control group by the end of the study ($P<.001$).” Absolute rates of high emotional exhaustion and overall burnout at 5 months also decreased by 19.5% and 17.1% in the intervention groups, respectively.

As each case of physician burnout is individualized and complex, combinatorial strategies could best address specific burnout manifestations (McFarland et al, 2019). However, such approaches have rarely been put through clinical trials; this therefore offers an area for continued research. It would be advisable, going forward, for hospitals and health care organizations to provide therapy resources or at least recognize the needs of physicians to employ the use of these resources. Decreasing burnout rates would reduce the chances of negative aftermath, resulting in a more positive experience for everyone involved in the health care exchange.

Reduction in Workloads. Decreasing physician workloads also has promise in burnout prevention. In fact, other than suffering quietly without addressing it, physicians are most likely to reduce work hours if they experience burnout (Kane, 2021). Twenty-eight percent of respondents reduced their work hours, while 21% changed their work settings. Taking an extended leave of absence, or sabbatical leave, is also a possibility. Organizational policies greatly vary in this area, but it can be argued that all health care organizations should develop a sabbatical policy that respects the contributions of their physicians. For instance, Stanford Medicine faculty members’ sabbatical policy is as follows:

Faculty can accrue sabbatical at 2.5 days per month for full time effort (FTE), and use sabbatical at 30 days per month at 100%. Faculty may take sabbatical at a reduced FTE,

which will cause them to receive salary and to use sabbatical at a similarly reduced rate...

However, no matter the rate of pay, faculty are always expected to be completely relieved from all clinical teaching, and administrative duties for the part of their FTE that is committed to sabbatical (Stanford Medicine Office of Academic Affairs, 2021).

Physicians such as Dr. Scott L. Friedman have described the uplifting nature of their sabbatical experiences, encouraging other physicians to take one as well. For instance, Friedman states, “The opportunity to step away from the grind of real life and explore new questions, a new culture, and spend quality time in sharing memorable experiences with one’s family is a priceless gift” (Friedman, 2018). He continues, citing the “case-control analysis of 258 faculty members, of whom half took a sabbatical”: “the sense of well-being of sabbaticants was consistently increased.” (End quote here?) Sabbaticals overall offer the opportunity to reset and recharge for a more positive work/life experience in the future.

Restructuring of EHR. If the healthcare system is to continue using electronic health records, restructuring is necessary for long-term sustainability. Physicians and their employers should first prioritize the patient above the computer; EHR should be a tool and not a hindrance. Therefore, examination routines may have to be altered slightly. For example, physicians can facilitate follow-up patient conversation questions such as “any other concerns?” and “how have things been going otherwise?” while simultaneously working with the computer” (Street et al, 2018). The ultimate goal should be to optimize patient interactions and reduce extended periods of silence. If patients take the opportunity to speak shortly after a period of silence, physicians might need to stop computer work and redirect their focus on what the patient is saying.

Additionally, reform of EHR software may be warranted. An EHR optimization “Sprint” process at the University of Colorado Health was able to significantly increase EHR satisfaction

and reduce clinician documentation time (Shah et al, 2020). Other positive examples of EHR reform include health systems such as Erlanger Health System in Chattanooga, Tennessee; Hawaii Pacific Health in Honolulu, Hawaii; Nemours Children's Health System; Oregon Health & Science University; and Allina Health. Incorporating feedback from clinicians is essential in the development of EHR systems that optimize workplace flow and benefit the physician.

Increasing the use of medical scribes or allied health professionals (nurses, PAs, etc.) to replace physician's input of EHR data and collaborate on patient care has also been shown to significantly improve physician productivity and job satisfaction. Furthermore, proper training of physicians on EHR usage and features is integral for efficiency maximization and burnout risk reduction. (Shah et al, 2020). Finally, training and education are the major predictors of positive physician user experiences (Longhurst et al, 2019). The implementation of any or all of these suggestions could help physicians sustainably use EHR in a healthcare society where it is becoming unavoidable.

Key Role of Health Care Organizations. Finally, health care organizations must take an active role in advocating for physician well-being. As previously mentioned, it has been found that physician burnout is very often linked to organizational pressures stemming from healthcare administration. In such cases, interventions spearheaded by the healthcare organizations themselves were more likely to reduce burnout (De Simone et al, 2019). "Organization-directed [changes] on workload and schedule (e.g. shift rotation, alternation of night and day, redefining staff schedules) were more important to reduce depersonalization and improve personal accomplishment..." Other organizational changes, including job resource enhancement ("social support, autonomy, performance feedback, and opportunities for development") can moderately influence workload and related burnout.

Final Remarks and Conclusions

The aim of this literature review was to analyze the complex issue of physician burnout in accord with the patient-physician relationship. Now having explored the various contributing factors, one must go forward not with despair, but with hope. This thesis has contributed to the knowledgebase on this topic, which can hopefully be used to inform and encourage physicians, health care administrators, and patients nationwide.

References

2020 *Quality Payment Program (QPP) Measure Specification and Measure Flow Guide for Medicare Part B Claims Measures* [PDF]. (2019, November). Centers for Medicare & Medicaid Services.

(2017, June 16). HITECH Act Enforcement Interim Final Rule. Retrieved from

<https://www.hhs.gov/hipaa/for-professionals/special-topics/hitech-act-enforcement-interim-final-rule/index.html>

Anderson, R.T., Camacho, F.T. & Balkrishnan, R. Willing to wait?: The influence of patient wait time on satisfaction with primary care. *BMC Health Serv Res* **7**, 31 (2007).

<https://doi.org/10.1186/1472-6963-7-31>

Berg, S. (2020, January 21). Physician burnout: Which medical specialties feel the most stress.

Retrieved from <https://www.ama-assn.org/practice-management/physician-health/physician-burnout-which-medical-specialties-feel-most-stress>

Burn-out an “occupational phenomenon”: International Classification of Diseases. (2019). *World*

Health Organization. Retrieved from <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>

Cheney, C. (2020). Welcome: HEALTHLEADERS Media. Retrieved from

<https://www.healthleadersmedia.com/welcome-ad?toURL=%2Fclinical-care%2Ftop-10-patient-safety-concerns-2020>

- Chipidza, F. E., Wallwork, R. S., & Stern, T. A. (2015). Impact of the Doctor-Patient Relationship. *The primary care companion for CNS disorders*, 17(5), 10.4088/PCC.15f01840. <https://doi.org/10.4088/PCC.15f01840>
- Choshen-Hillel, S, Ishqer, A, Mahameed, F, et al. Acute and chronic sleep deprivation in residents: Cognition and stress biomarkers. *Med Educ*. 2021; 55: 174– 184. <https://doi.org/10.1111/medu.14296>
- Desai, S. (2019). First-Year doctors spend almost 90 percent of their time away from patients. Retrieved from <https://www.pennmedicine.org/news/news-releases/2019/april/first-year-doctors-spend-almost-90-percent-of-their-time-away-from-patients>
- De Simone, S., Vargas, M., & Servillo, G. (2019). Organizational strategies to reduce physician burnout: A systematic review and meta-analysis. *Aging Clinical and Experimental Research*. doi:10.1007/s40520-019-01368-3
- Dewa, C. S., Loong, D., Bonato, S., & Trojanowski, L. (2017). The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. *BMJ open*, 7(6), e015141. <https://doi.org/10.1136/bmjopen-2016-015141>
- Everson C.A., Crowley W.R. Reductions in circulating anabolic hormones induced by sustained sleep deprivation in rats. *Am J Physiol Endocrinol Metab*. 2004;286(6):E1060–E1070.
- Everson, C. A., Laatsch, C. D., & Hogg, N. (2005). Antioxidant defense responses to sleep loss and sleep recovery. *American journal of physiology. Regulatory, integrative and*

comparative physiology, 288(2), R374–R383.

<https://doi.org/10.1152/ajpregu.00565.2004>

Evans R. S. (2016). Electronic Health Records: Then, Now, and in the Future. *Yearbook of medical informatics, Suppl 1*(Suppl 1), S48–S61. <https://doi.org/10.15265/IYS-2016-s006>

Friedman S. L. (2018). A Sabbatical: The Gift That Keeps on Giving. *Cellular and molecular gastroenterology and hepatology*, 5(4), 656–658.

<https://doi.org/10.1016/j.jcmgh.2018.01.010>

Gottschalk, A. (2005). Time spent in face-to-face patient care and work outside the examination room. *The Annals of Family Medicine*, 3(6), 488-493. doi:10.1370/afm.404

Hooker, R. S., Moloney-Johns, A. J., & McFarland, M. M. (2019). Patient satisfaction with physician assistant/associate care: an international scoping review. *Human resources for health*, 17(1), 104. <https://doi.org/10.1186/s12960-019-0428-7>

Institute of Medicine (US) Division of Health Sciences Policy. Medical Education and Societal Needs: A Planning Report for the Health Professions. Washington (DC): National Academies Press (US); 1983. Chapter 4, THE PHYSICIAN'S ROLE IN A CHANGING HEALTH CARE SYSTEM. Retrieved from:

<https://www.ncbi.nlm.nih.gov/books/NBK217690/>

Jewson, N. D. (1976). The disappearance of the sick-man from medical cosmology, 1770-1870. *Sociology*, 10(2), 225-244.

- Kaba, R., & Sooriakumaran, P. (2007). The evolution of the doctor-patient relationship. *International journal of surgery (London, England)*, 5(1), 57–65.
<https://doi.org/10.1016/j.ijsu.2006.01.005>
- Kalmoe, M. C., Chapman, M. B., Gold, J. A., & Giedinghagen, A. M. (2019). Physician Suicide: A Call to Action. *Missouri medicine*, 116(3), 211–216.
- Kancherla, B. S., Upender, R., Collen, J. F., Rishi, M. A., Sullivan, S. S., Ahmed, O., . . . Gurubhagavatula, I. (2020). What is the role of sleep in physician burnout? *Journal of Clinical Sleep Medicine*, 16(5), 807-810. doi:10.5664/jcsm.8412
- Kane, L. (2021). 'Death by 1000 Cuts': Medscape National Physician Burnout & Suicide Report 2021. Retrieved from <https://www.medscape.com/slideshow/2021-lifestyle-burnout-6013456>
- Klein, J., Grosse Frie, K., Blum, K., & von dem Knesebeck, O. (2010). Burnout and perceived quality of care among German clinicians in surgery. *International journal for quality in health care : journal of the International Society for Quality in Health Care*, 22(6), 525–530. <https://doi.org/10.1093/intqhc/mzq056>
- Linzer, M., Bitton, A., Tu, S. P., Plews-Ogan, M., Horowitz, K. R., Schwartz, M. D., Association of Chiefs and Leaders in General Internal Medicine (ACLGIM) Writing Group*, Poplau, S., Paranjape, A., Landry, M., Babbott, S., Collins, T., Caudill, T. S., Prasad, A., Adolphe, A., Kern, D. E., Aung, K., Bensching, K., & Fairfield, K. (2015). The End of the 15-20 Minute Primary Care Visit. *Journal of general internal medicine*, 30(11), 1584–1586. <https://doi.org/10.1007/s11606-015-3341-3>
- Longhurst, C. A., Davis, T., Maneker, A., Eschenroeder, H. C., Jr, Dunscombe, R., Reynolds, G., Clay, B., Moran, T., Graham, D. B., Dean, S. M., Adler-Milstein, J., & Arch

- Collaborative (2019). Local Investment in Training Drives Electronic Health Record User Satisfaction. *Applied clinical informatics*, 10(2), 331–335. <https://doi.org/10.1055/s-0039-1688753>
- McFarland, D. C., Hlubocky, F., & Riba, M. (2019). Update on addressing mental health and burnout IN Physicians: What is the role for Psychiatry? *Current Psychiatry Reports*, 21(11). doi:10.1007/s11920-019-1100-6
- Medicine. (n.d.). In *Merriam Webster*. Retrieved from <https://www.merriam-webster.com/dictionary/medicine>
- Morgantini, L. A., Naha, U., Wang, H., Francavilla, S., Acar, O., Flores, J. M., . . . Weine, S. M. (2020). Factors contributing to healthcare professional burnout during the covid-19 pandemic: A rapid turnaround global survey. doi:10.1101/2020.05.17.20101915
- Nakagawa, K., & Yellowlees, P. (2020). Inter-generational Effects of Technology: Why Millennial Physicians May Be Less at Risk for Burnout Than Baby Boomers. *Current psychiatry reports*, 22(9), 45. <https://doi.org/10.1007/s11920-020-01171-2>
- Office of Academic Affairs. (n.d.). Sabbatical/professional development leave. Retrieved February 24, 2021, from <https://med.stanford.edu/academicaffairs/faculty/faculty-leaves/sabbatical-pdl.html>
- Passalacqua, S. A., & Segrin, C. (2012). The effect of resident Physician Stress, burnout, and empathy on patient-centered communication during the Long-Call Shift. *Health Communication*, 27(5), 449-456. doi:10.1080/10410236.2011.606527

Patel, R. S., Bachu, R., Adikey, A., Malik, M., & Shah, M. (2018). Factors Related to Physician Burnout and Its Consequences: A Review. *Behavioral sciences (Basel, Switzerland)*, 8(11), 98. <https://doi.org/10.3390/bs8110098>

Physician assistant. (2021). Retrieved from <https://money.usnews.com/careers/best-jobs/physician-assistant>

Physician assistants : Occupational outlook handbook. (2020, September 01). Retrieved from <https://www.bls.gov/ooh/healthcare/physician-assistants.htm>

Salles, A., Awad, M., Goldin, L., Krus, K., Lee, J.V., Schwabe, M., Lai, C. (2019). Estimating Implicit and Explicit Gender Bias Among Health Care Professionals and Surgeons. *JAMA Netw Open*. 2(7):e196545. doi:10.1001/jamanetworkopen.2019.6545

Sasangohar, F., Jones, S. L., Masud, F. N., Vahidy, F. S., & Kash, B. A. (2020). Provider Burnout and Fatigue During the COVID-19 Pandemic: Lessons Learned From a High-Volume Intensive Care Unit. *Anesthesia and analgesia*, 131(1), 106–111. <https://doi.org/10.1213/ANE.0000000000004866>

Sarzynski, E., & Barry, H. (2019). Current Evidence and Controversies: Advanced Practice Providers in Healthcare. *The American Journal of Managed Care*, 25(8).

Shah, K., Chaudhari, G., Kamrai, D., Lail, A., & Patel, R. S. (2020). How Essential Is to Focus on Physician's Health and Burnout in Coronavirus (COVID-19) Pandemic?. *Cureus*, 12(4), e7538. <https://doi.org/10.7759/cureus.7538>

Sinsky, C., Colligan, L., Li, L., Prgomet, M., Reynolds, S., Goeders, L., . . . Blike, G. (2016).

Allocation of Physician time in Ambulatory Practice: A time and motion study in 4 specialties. *Annals of Internal Medicine*, 165(11), 753. doi:10.7326/m16-0961

Smith, R. C., Laird-Fick, H., D'Mello, D., Dwamena, F. C., Romain, A., Olson, J., Kent, K.,

Blackman, K., Solomon, D., Spoolstra, M., Fortin, A. H., 6th, Frey, J., Ferenchick, G.,

Freilich, L., Meerschaert, C., & Frankel, R. (2014). Addressing mental health issues in primary care: an initial curriculum for medical residents. *Patient education and*

counseling, 94(1), 33–42. <https://doi.org/10.1016/j.pec.2013.09.010>

Söderström, M., Jeding, K., Ekstedt, M., Perski, A., & Akerstedt, T. (2012). Insufficient sleep

predicts clinical burnout. *Journal of occupational health psychology*, 17(2), 175–183.

<https://doi.org/10.1037/a0027518>

Street, R. L., Jr, Liu, L., Farber, N. J., Chen, Y., Calvitti, A., Weibel, N., Gabuzda, M. T., Bell,

K., Gray, B., Rick, S., Ashfaq, S., & Agha, Z. (2018). Keystrokes, Mouse Clicks, and

Gazing at the Computer: How Physician Interaction with the EHR Affects Patient

Participation. *Journal of general internal medicine*, 33(4), 423–428.

<https://doi.org/10.1007/s11606-017-4228-2>

Stewart, N. H., & Arora, V. M. (2019). The Impact of Sleep and Circadian Disorders on

Physician Burnout. *Chest*, 156(5), 1022–1030. <https://doi.org/10.1016/j.chest.2019.07.008>

Szasz, T. and Hollender, M. (1956) A contribution to the philosophy of medicine: the basic

model of the doctor-patient relationship. *Arch Int Med*, 97. pp. 585-592

Understanding Medicare's Merit-based incentive payment System (MIPS). (2021). Retrieved from <https://www.ama-assn.org/practice-management/payment-delivery-models/understanding-medicare-s-merit-based-incentive-payment>

The Path to Becoming a Nurse Practitioner. (2020). Retrieved from <https://www.aanp.org/news-feed/explore-the-variety-of-career-paths-for-nurse-practitioners>

Templeton, K., Bernstein, C. A., Sukhera, J., Nora, L. M., Newman, C., Burstin, H., . . . Busis, N. (2019). Gender-based differences in burnout: Issues faced by women physicians. *NAM Perspectives*. doi:10.31478/201905a

U.S. news & World Report unveils the 2021 best jobs. (2021). Retrieved, from <https://www.usnews.com/info/blogs/press-room/articles/2021-01-12/us-news-unveils-the-2021-best-jobs>

Various physicians oaths. (n.d.). Retrieved from <https://www.aapsonline.org/ethics/oaths.htm>

What is the HITECH Act. (2020, August 18). Retrieved from <https://www.hipaajournal.com/what-is-the-hitech-act/>

Wiederhold, B. K., Cipresso, P., Pizzioli, D., Wiederhold, M., & Riva, G. (2018). Intervention for Physician Burnout: A Systematic Review. *Open medicine (Warsaw, Poland)*, *13*, 253–263. <https://doi.org/10.1515/med-2018-0039>

Williams, E. S., Savage, G. T., & Linzer, M. (2006). A proposed physician–patient cycle model. *Stress and Health*, *22*(2), 131-137. doi:10.1002/smi.1088

Yavorsky, J. E., Kamp Dush, C. M., & Schoppe-Sullivan, S. J. (2015). The production of inequality: The gender division of labor across the transition to parenthood. *Journal of Marriage and Family*, 77(3), 662-679. doi:10.1111/jomf.12189